ACCOUNTING (009)

200 Foundations of Accounting (2) Introduction to financial and managerial accounting theory and practice with emphasis on the role of accounting information in business decisions. Prerequisite to all other courses in Accounting.

207 Honors: Foundations of Accounting (3) Introduction to financial accounting theory and practice with emphasis on the role of financial information in business decisions. The course will make extensive use of computer technology for retrieving and analyzing financial information. Eligibility: 28 ACT Composite or 1250 recentered SAT Composite.

301 Financial Reporting (3) Theory and practice for preparing and using financial statements. Introduction to professionalism and ethics in accounting. Prereq/Coreq: Finance 301 and Business Administration 342 or consent of the instructor.

311 Financial Reporting and Analysis (3) Theory and practice that underlies the preparation, analysis, and use of financial statements. Prereq: 301 with a grade of C or better or consent of instructor.

321 Cost Management (3) Cost information for products, services, and how cost information is recorded, analyzed, reported, and used in decision making. Topics include cost concepts and behavior, cost systems, budgeting, activity-based costing and management, and strategic cost management. Prereq/Coreq: 301 or consent of instructor.

411 Financial Compliance and Operational Auditing (3) Auditing’s role in society from an internal and external perspective, audit methodology, role of internal control and statistical sampling in auditing, fraud auditing, operational auditing, compliance auditing, and application of auditing procedures to specific transaction cycles. Prereq/Coreq: 301 with a grade of C or better or consent of instructor.

414 Advanced Financial Reporting (3) Accounting standards for advanced financial reporting topics such as statement of cash flows, income taxes, leases, accounting changes, consolidated financial statements, and foreign operations. Prereq: 311 with a C or better.

431 Federal Income Taxation (3) Fundamentals and concepts of federal income taxation. Emphasis on tax strategy, business taxation, and individual taxation. Topics include tax strategy modeling, gross income, deductions, credits, tax determination, property transactions, business entities, and basics of international taxation. Prereq/Coreq: 301 with a grade of C or better or consent of instructor.

451 Operational Auditing and Consulting (3) Approaches auditors might use to evaluate an entity’s efficiency and effectiveness in a variety of settings and techniques auditors might use in consulting to provide the entity a competitive advantage.

492 Accounting Internship (1-6) Prereq: Consent of instructor. May be repeated. Maximum 6 hours. Satisfactory/No Credit grading only.

ADVERTISING (012)

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

310 Advertising and Public Relations Design (3) Study, use, and application of design, color, type, and layout styles as they affect concept development in the creation of promotional materials. Analysis of organizational goals and how they mold strategic and conceptual development. Application of relevant computer software for creation of promotional material. Prereq: 250 or Public Relations 270 and admission to the School of Advertising and Public Relations.


350 Advertising Creative Strategy (3) Basic concepts of creative strategy with intensive practice in developing creative strategy statement, writing and designing advertisements, and judging creative work. Prereq: 250, 310, Communication and Information 150.

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 School of Advertising and Public Relations.

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, 360.

470 Advertising Campaigns (3) Group-based development, execution and evaluation of an advertising campaign for a regional or national client. Prereq: 450, Public Relations 270.

480 Advertising Issues (3) Examination of the role of advertising in society and controversies surrounding economic, social, cultural and ethical aspects of advertising. Emphasis on written and oral exposition of different viewpoints. Prereq: 360.

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

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

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

AEROSPACE ENGINEERING (018)

201 Aerospace Seminar (1) An overview of aerospace engineering with lectures, laboratory demonstrations, and field trips. Aerospace history, aircraft and space flight fundamentals, propulsion techniques, wind tunnel testing, biomedical issues in aviation and space flight. Prereq: Sophomore standing in Aerospace Engineering or consent of instructor. Satisfactory/No Credit grading only.

341 Fluid Mechanics I (3) Introduction to fluid flow concepts; hydrostatics; development of mass, momentum, and energy conservation laws in integral and differential form; dimensional analysis and similitude; viscous laminar and turbulent flows in pipes; introduction to boundary layers. Prereq: Mechanical Engineering 231. coreq: Mathematics 241.

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

351 Compressible Flow (3) One-dimensional internal flow with shocks, friction and nonadiabatic conditions. Two-dimensional external flows. Prereq: 341, Mechanical Engineering 332.


410 Professional Development (2) Topics relating to professional responsibility, communications, and organization. Formal oral presentation by each student on an engineering topic chosen by the student and approved by the instructor. Prereq: English 102, Senior standing. (OC)

422 Aerodynamics (3) Theory and design of aerodynamic bodies for desired characteristics. Potential flow theory, viscous effects, compressibility effects. Subsonic, transonic, and supersonic airfoils. Prereq: 351, 370.

424 Astronautics (4) Solar system, orbital mechanics, propulsion, atmospheric entry including thermal protection materials, human factors in space flight, the space environment, and current topics. Prereq: 351. Coreq: Mechanical Engineering 331.


429 Aerospace System Design (3) Synthesis and design of a complete aerospace system. Participation in team design effort including formal presentations and design report. Prereq: 422, 425, 426.

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, 425.

494-495 Selected Topics in Aerospace Engineering (1-4) Problems and topics related to developments and practice in aerospace engineering. Prereq: Consent of instructor.

AFRICAN AND AFRICAN-AMERICAN STUDIES (022)

162 Art of Africa, Oceania, and Pre-Columbian America (3) (See Art History 162.) (AH)

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

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

233 Major Black Writers (3) (See English 233.) (AH)

235 Introduction to African Studies (3) Multidisciplinary approach to the study of African traditions, cultures, religions, political economies, precolonial democracies, and states form the first through the sixteenth century. Writing-emphasis course. (CC)

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

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

315 The African Diaspora (3) (See Anthropology 315.)

319 Caribbean Cultures and Societies (3) (See Anthropology 319.)

331 Race and Ethnicity in American Literature (3) (Same as English 331.)

333 Black American Literature and Aesthetics (3) (Same as English 333.)

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

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

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

371-372 African History (3,3) (See History 371-372.)

373 African Religions (3) (See Religious Studies 373.)

379 Geography of Africa (3) (See Geography 379.)

381 History of South Africa (3) (See History 381.)

421 Comparative Studies in African and African-American Societies (3) Comparative studies of African and African-American societies in such areas as education, religion, and social stratification. Includes the respective views African-Americans and Africans have of each other and the concept of Pan-Africanism. Writing-emphasis course. (Same as History 421.)

429 History and Philosophy of African-American Education (3) Focuses on attempts by African-Americans to secure an education for themselves and their children from the era of slavery to the Brown decision in 1954. Examines black perceptions of the importance of education and special obstacles confronting African-Americans who seek education on the primary, secondary, college, or graduate level. Writing-emphasis course.

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

442 Comparative Poverty and Development (3) (See Sociology 442.)
443 Topics in Black Literature (3) (See English 443.)
445 The African-American Experience from the Colonial Period to the Civil War (3) (See History 445.)
446 The African-American Experience from the Civil War to the Present (3) (See History 446.)
450 Issues and Topics in African-American Studies (3) Topics vary, but include a variety of problems, issues, and individuals from the field of African-American Studies. May be repeated. Maximum 6 hours.
452 Black African Politics (3) (See Political Science 452.)
461 Art of Southern and Eastern Africa (3) (See Art History 461.)
462 Art and Archaeology of Ancient Africa (3) (See Art History 462.)
463 Arts of the African Diaspora (3) (See Art History 463.)
473 Black Male in American Society (3) Examines historical images, myths and stereotypes which have developed concerning African-American males in American society. Includes the impact of such critical factors as black feminism, violence, concepts of masculinity, the family, white males, white females, homosexuality, nationalism, and athletics on African-American males in America.
480 African-American Communities in Urban America (3) Evaluates the benevolent and historical influence of three major institutions: the church, the family, and the school upon the African-American struggle to survive. Includes political, economic, and social factors utilized by black people in developing coping strategies and mechanisms. Writing-emphasis course.
483 African-American Women in American Society (3) Focuses on historical and contemporary social, economic and political factors in American society as they relate to the black woman. Writing-emphasis course. (Same as Women's Studies 483.)
491 Foreign Study (1-15) Prereq: 201-202 and consent of instructor.
492 Off-Campus Study (1-15) Prereq: 201-202 and consent of instructor.
493 Independent Study (1-15) Prereq: 201-202 and consent of instructor.
496 Biology of Human Variability (3) (See Anthropology 496.)

AGRICULTURAL AND EXTENSION EDUCATION (042)

201 Field Experience in Agricultural and Extension Education (1) Field observation/experience in potential agricultural and extension education career fields. Grade requirements: daily journal, formal written report, complete required hours, seminar. Prereq: Consent of instructor (may include off-campus experience). May be repeated if changing concentrations.
211 Foundations of Agricultural and Extension Education (3) History and philosophy of agricultural education and extension education. Major areas of emphasis include, the historical development of agricultural education in the public schools and the federal extension education system, formal and non-formal methods of education used, audiences served, organizational structure, and programming emphases will be studied by students. Foundation course for departmental majors and service course for those interested in related careers.
301 Non-Formal Youth Development Programs (1-2) Structured experience in administrating, organizing, conducting, and evaluating youth education programs in agricultural and extension education. Prereq: Consent of instructor.
345 Program Planning in Agriscience Education (3) Overview of the historical and philosophical aspect of agriculture education, the role of teacher and learner, emphasis on SAE, FFA, community service, and summer programs. Course will include a lab component. Prereq: 201, 211 or consent of instructor.
420 Methods of Teaching Agricultural Mechanics (2) Methods for teaching high school agricultural education students. Special competencies for planning, conducting and evaluating an agricultural mechanics program. Prereq: Biosystems Engineering Technology 202 or consent of instructor.
434 Methods of Teaching Agriscience (3) Methods and techniques for teaching agriculture, preparing lesson plans and units of instruction, developing activities for agriculture programs, and utilization of resources, multimedia, and computer technology into instruction. Course will include a lab component. Taken in the fall prior to student teaching. Prereq: 201, 211, 345 or consent of instructor.
435-436 Student Teaching in Agricultural and Extension Education (6,6) Full-time teaching practicum in an approved high school program. Applied practices needed by agricultural education teachers. Prereq: Admission to Teacher Education and 201, 211, 345, 434.
440 Communication Techniques in Agriculture (3) Elements of effective use of mass media in Agricultural and Extension Education. Effective technical writing and presentation strategies for agricultural audiences. Prereq: English 101 and 102, junior standing. (WC)
450 Agricultural Leadership Development (3) Identification of styles and roles of leadership; development of leadership techniques and skills required in working with organizations and youth groups; methods of resolving conflict, of communicating, of guiding and evaluating; and ethical considerations for leaders. Prereq: Junior standing.
492 Internship In Agricultural and Extension Education (1-6) Pre-approved off-campus supervised experience in county Extension offices, agricultural businesses, or agricultural related agencies. Requires living off-campus for a specified time. Prereq: 211, or consent of instructor. May be repeated. Maximum of 6 hours.
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. Prereq: Consent of instructor. May be repeated. Maximum 6 hours.

AGRICULTURAL ECONOMICS (047)

110 Opportunities in Agricultural Economics and Business (1) Overview of current issues and career opportunities. For majors and non-majors.
212 The Agribusiness Firm (3) Introduction to agribusiness firm characteristics and decision-making. Overview of economic principles and the basic functions of management: planning, organizing, controlling, and directing. Specific topics include firm structure, forecasting, marketing and selling, budgeting, breakeven analysis, use of financial statements, capital investment, supervision, staffing, and evaluation.
310 The Agricultural Employment Process (1) Career planning, job markets in the agricultural industry, and techniques to obtain employment including recruitment/placement services, resume construction, personal interviewing, and job offer evaluation/analysis.
315 Agricultural Law (3) Survey of legal topics related to agribusiness operations and production agriculture in Tennessee. Topics include introduction to legal system, torts, property, contracts, farm and business organization, environmental and natural resource regulation, estate planning, and effective utilization of legal counsel. Prereq: Junior standing.
320 Agricultural Microeconomics (3) Application of microeconomics to agriculture. Production, consumption, firm behavior, and efficiency in the food and fiber industries. Prereq: 212, Economics 201.
330 Economics of Agricultural Biotechnology (3) Analysis of economic issues and impacts associated with the development and adoption of agricultural biotechnology, especially the introduction of genetically modified organisms. Specific topics include farm level adoption decisions, changes in agribusiness industry structure, changes in the marketing system, consumer attitudes and the role of labeling, international trade issues, and agricultural development in the Third World. Prereq: Economics 201, junior standing.
337 Honors: Economics of Agricultural Biotechnology (3) Meets at same time as Agricultural Economics 330 but requires additional work in the form of article reviews and a research paper. Prereq: Economics 201, junior standing.
342 Farm Business Management I (3) Principles and procedures for determining most profitable business organizations and systems of operation; attention to traditional and nontraditional agricultural enterprises and businesses; nature of managerial processes; business records and their uses; budgeting; acquisition and management of capital, land, labor and machinery; farm business planning. Prereq: 212, Economics 201.
350 The Agricultural Marketing System (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: 212, Economics 201.
355 Agribusiness Marketing and Professional Selling (3) Role of marketing in the agribusiness organization, planning marketing efforts, and the strategic selling process. Topics include identification of market opportunities, targeting, marketing mix, and personal selling in agribusiness. Prereq: 212, Economics 201.
356 Marketing Team Participation (1-2) Participation in the development of a total marketing plan for a product sold to or by farmers. Includes product identification, market research, and development of an action plan including an extensive promotional plan, financial analysis, and evaluation. Requires preparation of final plan for presentation in written, oral and visual formats. Plan presented in national competition during the National AgriMarketing Conference. Prereq: Consent of instructor. May be repeated. Maximum 6 hours.

360 Rural Economic Development (3) Use of economic principles and analytical concepts in understanding the theory and process of rural economic development at the regional and subregional levels. Integrating historical and current information, students will explore the impetus of efficiency and equity as driving forces behind public sector and private sector initiatives to induce, manage and forecast development. Prereq: Economics 201.

410 Seminar in Agricultural Economics and Business (1) Restricted to Agricultural Economics and Business majors in their senior year. Practice of critical thinking, ethical behavior, teamwork, and conflict resolution within the content of agribusiness decision making. Analysis of contemporary issues in the field of agricultural economics.

412 Agricultural Finance (3) Macroe-finance, financial objectives, acquisition of debt and equity funds, capital investments, capital allocation, debt repayment, credit analysis, borrower and lender loan application analysis, insurance strategies, computer applications, kinds and sources of agricultural credit, and financial intermediation. Prereq: 212, Economics 201.

420 International Agricultural Trade and Marketing (3) Introduction to real and monetary aspects of international trade effect on agricultural commodity flows; partial equilibrium analysis of international trade in agricultural products; institutional aspects of international marketing of agricultural products. Prereq: 320 or consent of instructor.

430 Agricultural Policy (3) Values, goals and policy process. Economic rationale and effects of policy. Historical development and current characteristics of commodity, credit, food, and trade policy. Prereq: 320 or consent of instructor.

444 Economics of Precision Farming Technologies (3) Economic rationale for precision farming technologies. Topics include technology adoption, production economics, development of decision-making tools and the use of spatial data for management of crop production systems. Prereq: Economics 201, Agriculture and Natural Resources 290.

450 Agricultural Industry Analysis and Forecasting (3) Analytical tools for decision making in the agricultural sector; analysis of commodity supply and demand conditions; economic modeling, market forecasting, analysis of temporal and spatial patterns. Prereq: 320, Statistics 201 or consent of instructor.

470 Natural Resource Economics (3) Nature of natural resources; economic efficiency as a basis for natural resource use; externalities in natural resource use; factors influencing environmental quality; alternative public policy tools for influencing natural resource use or improving environmental quality. Prereq: Economics 201.

492 Off-Campus Internship (1-3) Pre-approved supervised experience with firm or organization in the field. Prereq: Junior standing or consent of advisor. May be repeated for a different experience up to a maximum of 6 hours. Satisfactory/No Credit grading only.

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

AGRICULTURE AND NATURAL RESOURCES (088)

100 Orientation to Studies in Agriculture and Natural Resources (1) Orientation to academic advising and procedures in, and information about the College will be emphasized. Various invited guests will review University resources available to help students succeed at their studies. Student-to-student and advisor-to-student sessions are included to discuss the CASNR experience. Enrollment is restricted to freshmen and transfer sophomores. A, B, C, No Credit grading only.

290 Computer Applications to Problem Solving (3) Use of computer technology to analyze and report problems related to agricultural sciences and natural resources. The use and integration of computer applications such as spreadsheets, databases, presentation graphics, word processing, and other applicable software as needed for problem analysis and reporting. 2 hours and 1 lab. Prereq: Satisfactory performance on a skills/placement test. For details, see advisor.

317 Agriculture and Natural Resources Honors Seminar (1) Discussion of selected topics, issues and problems influencing national and international food, agriculture and natural resources systems. Primarily for College Scholars students. May be repeated. Maximum 4 hours. A, B, C, No Credit grading.

330 Leadership Development in Agriculture and Natural Resources (1) Readings on leadership and personal development, communication techniques, and/or personality types. Enrollment limited to College Ambassadors. May be repeated. Maximum 4 hours. A, B, C, No Credit grading.

333 Food, Forests and the Environment (3) Overview of the environmental tradeoffs that have been, are, and will be required to produce the food, fiber and other products needed to feed, clothe, and house a growing world population. Topics to include basic natural resources, current practices in agriculture, forestry, and food handling, and practices related to quality of life issues such as wildlife and landscape design. May not be used to satisfy directed elective requirements.

349 International Experience in Agriculture and Natural Resources (1-15) Credit for formalized international experiences related to agricultural sciences and natural resources. Determination of credit based on nature of the proposed experience. Students should discuss the opportunity with their faculty advisor prior to the trip to determine if it is appropriate for credit. Credit hours will be determined by the department and college depending on the extent of activity and types of projects and/or presentations to be completed by the student upon return.

497 Honors: Independent Project (1-6) For students participating in the CASNR Honors Research and Creative Achievements Program. Consists of independent work with a faculty member. Prereq: Participation in the CASNR Honors Program.

498 Honors Presentation (1) For students participating in the CASNR Honors Program. Final written report and oral presentation of the honors project. Prereq: Participation in the CASNR Honors Program.

AIR FORCE AEROSPACE STUDIES (094)

101-102 The Air Force Today (1,1) Survey that focuses on the organizational structure and missions of the Air Force; officeranship and professionalism, and includes an introduction to communicative skills. A weekly Leadership Laboratory (LLAB) consisting of Air Force customs and courtesies, health and physical fitness, and drill and ceremonies is mandatory.

103-104 Leadership Laboratory (1,1) Includes a study of Air Force customs and courtesies, drill and ceremonies, and giving military commands; instructing, correcting, and evaluating the preceding skills; studying the environment of an Air Force officer; and learning about opportunities available to commissioned officers. Satisfactory/No Credit grading.

201-202 The Development of Air Power (1,1) Focuses on factors contributing to the development of air power from its earliest beginnings through two world wars; the evolution of air power concepts and doctrine; and a assessment of communicative skills. A weekly Leadership Laboratory (LLAB) consisting of Air Force customs and courtesies, Air Force environment, drill and ceremonies, and field training orientation is mandatory.

203-204 Leadership Laboratory (1,1) Includes a study of Air Force customs and courtesies, drill and ceremonies, and giving military commands; instructing, correcting, and evaluating the preceding skills; studying the environment of an Air Force officer; and learning about opportunities available to commissioned officers. Satisfactory/No Credit grading.

205 Field Training (Academic Program) (1) Role of United States military forces in contemporary world, with particular attention to the United States Air Force, its organization and mission, various component forces of U.S. military power, organization of America’s defense structure, policies of major powers, and elements and processes in making of defense policy. Conducted at Field Training bases throughout the country. Open only to 2-year program applicants.
301-302 Air Force Leadership and Management (3,3) Study of leadership and quality management fundamentals, professional knowledge, leadership ethics, and communicative skills required of an Air Force officer. Case studies are used to examine Air Force leadership and management situations as a means of demonstrating and exercising practical application of the concepts being studied. A mandatory weekly Leadership Laboratory (LLAB) provides advanced leadership experiences in office-type activities and gives students the opportunity to apply leadership and management principles to this course.

303-304 Leadership Laboratory (0.0) Consists of activities classified as advanced leadership experiences. They involve planning, organizing, staffing, coordinating, directing, and controlling the military activities of the cadet corps; preparation and presentation of briefings and other oral and written communications; and providing interviews, guidance, and information which will increase the understanding, motivation, and performance of other cadets.

401-402 National Security Forces in Contemporary American Society (3,3) Examines the need for national security, analyzes the evolution and formulation of the American defense policy, strategy, and joint doctrine; investigates the methods for managing conflict; and overviews regional security, arms control, and terrorism. Special topics of interest focus on the military as a profession, officership, the military justice system, and current issues affecting military professionalism. Within this structure, continued emphasis is given to the refinement of communicative skills. A weekly Leadership Laboratory (LLAB) consisting primarily of advanced leadership experiences in office-type activities is mandatory.

403-404 Leadership Laboratory (0.0) Consists of activities classified as advanced leadership experiences. They involve planning, organizing, staffing, coordinating, directing, and controlling the military activities of the cadet corps; preparation and presentation of briefings and other oral and written communications; and providing interviews, guidance, and information which will increase the understanding, motivation, and performance of other cadets.

AMERICAN STUDIES (099)

310 Introduction to American Studies (3) Explores dynamics and nature of the culture(s) of the United States through interdisciplinary study and interpretation. Considers both mainstream and minority cultures. Writing-emphasis course.

312 Popular Culture and American Politics (3) (See Cinema Studies 312: Political Science 312.)

320 American Cultures (3) (See Anthropology 320.)

334 Film and American Culture (3) (See Cinema Studies 334; English 334.)

343 Race and Ethnicity (3) (See Sociology 343.)

345 Collective Behavior and Social Movements (3) (See Sociology 345.)

355 Religion and Culture in the United States (3) (See Religious Studies 355.)

356 The 1960s in America (3) (See History 356.)

381 Introduction to Folklore (3) (See English 381.)

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

420 Political Attitudes and Behavior (3) (See Political Science 420.)

423 Geography of American Popular Culture (3) (See Geography 423.)

442 American Humor (3) (See English 442.)

450 Seminar in American Studies (3) Intensive study of a major issue in American Studies scholarship.

469 Freedom of Speech (3) (See Communication Studies 469.)

491 Foreign Study (1-15)

492 Off-Campus Study (1-15)

493 Independent Study (1-15)

ANIMAL SCIENCE (113)

160 Introduction to Animal Science (3) Preparation of academic plans and career decisions. Introduction to structure and production principles of the food animal and horse industries. Overview of companion and alternative livestock. Market classes and grades of cattle, poultry and poultry products, lamb and wool, and swine. 3 labs.

220 Anatomy and Physiology of Farm Animals (3) Skeleton and joints; muscles; blood and microcirculation; the nervous, endocrine, cardiovascular, respiratory, and digestive systems; demonstrations of physical-chemical phenomena. 2 hours and 1 lab. Prereq: Biology 102 or 130.

280 Biotechnology and Management Practices in Animal Production (3) Exposure to current animal agriculture management practices and biotechnology techniques as they affect beef, dairy, horse, poultry, sheep and swine industries. Includes animal behavior, restraint and welfare, computer applications, nutrients and nutrient utilization, waste management, food safety, animal reproduction, health and well being, and emerging technologies and opportunities in animal agriculture. Two 3 hour labs.

285 Horse Handling and Care (3) Proper procedures for horse-human interaction and the recommended management procedures for horse care. The basic behavioral characteristics of the horse, an understanding of his physical and mental parameters and their use in horse-human communication. Interactions include imprinting, haltering, halter training, lousing, long-line driving, bridling, bitting, round pen training, saddling and teaching to guide. Basic care includes feed selection and management, post-natal care, restraint, foot care, dental care, grooming, loading and trailering, stall maintenance, internal and external parasite control, credit for both horse and handler will be emphasized. Three 2-3 hour labs.

320 The Physiology of Reproduction and Lactation (3) Biology of sex and sexual differentiation, functional anatomy of male and female, reproduction and lactation, gametogenesis, neuroendocrinology and endocrinology of reproduction and lactation, sex cycles, folliculogenesis, ovulation, spermatogenesis, fertilization, embryonic development, implantation, pregnancy, parturition, initiation of lactation and maintenance of the dry period, artificial control of reproduction and lactation. 2 hours and 1 lab. Prereq: Biology 102 or 130. (Same as Biochemistry and Cellular and Molecular Biology 320.)


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


380 Animal Health Management (3) Characteristics, symptoms, prevention, and treatment of major diseases and parasites. Immunization, health regulations and herd health programs for all farm livestock species and poultry. 2 hours and 1 lab. Prereq: 220.

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

395 Careers Seminar (1) Preparing students for career opportunities in animal agriculture including both industry and academic advancement. Topics will include resume preparation, interview skills, internship opportunities, and Web-based employment search guides. Prereq: Junior standing.

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

430 Nutrient Evaluation and Ration Formulation (3) Ration nutrient analysis and formulation for beef and dairy cattle, sheep, horses, swine, poultry, laboratory, zoo and companion animals. Mathematics and computer solutions and applications to formulating complex rations with constraints. 2 hours and 1 lab. Prereq: 330 and introductory computer course.
461 Advanced Beef Cattle, Dairy Cattle, Horse, Poultry, Sheep and Swine Judging (1) Specialization in judging; evaluation, selection and presentation of oral reasons for classes of beef cattle, dairy cattle, horses, poultry, sheep, and swine. 2 labs. Prereq: Consent of instructor. Satisfactory/No Credit grading only.

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

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

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

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

485 Horse Production and Management (3) Integration of principles of nutrition, breeding, physiology and ethology into complete production and management programs. Types of enterprises, management of feed and pasture resources, health maintenance and first aid, breeding and foaling, farm structures and equipment. 2 hours and 1 lab. Prereq: Consent of instructor.

489 Companion, Zoo, and Lab Animal Management (3) Principles of nutrition, physiology, breeding, handling, and history of breeds of common household pets, zoo animals, and animals used in scientific research. Specific species requirements and peculiarities. Laws and agencies governing use of laboratory animals. Laboratory analysis of blood and tissue samples. Specific species requirements and peculiarities. Laws and agencies governing use of laboratory animals. Laboratory analysis of blood and tissue samples. Specific species requirements and peculiarities. Laws and agencies governing use of laboratory animals. Laboratory analysis of blood and tissue samples. Specific species requirements and peculiarities. Laws and agencies governing use of laboratory animals. Laboratory analysis of blood and tissue samples. Specific species requirements and peculiarities. Laws and agencies governing use of laboratory animals. Laboratory analysis of blood and tissue samples. Specific species requirements and peculiarities. Laws and agencies governing use of laboratory animals. Laboratory analysis of blood and tissue samples.

492 Animal Science Field Study (1-6) Off-campus work experience approved by the department. Objectives include learning and participation in projects and teaching experiences in the field. 6 credit hours. Prereq: Consent of instructor.

493 Independent Study in Animal Science (1-3) Approved supervised study in areas not formally presented in a course offered in the department. Written proposal of study is approved by the Department of Animal Science Undergraduate Committee. After completion of study, a written report is required and this report is maintained on file in the reference room of the department. May be repeated. Maximum 6 hours. Prereq: Senior standing and consent of instructor and department head.

494 Animal Science Teaching Assistant (1) Assist the primary instructor in laboratory instruction and demonstrations. Prereq: Senior standing and consent of the instructor and department head. Satisfactory/No Credit grading only.

495 Ethics in Animal Agriculture (1) Discussion and presentations on issues related to ethics in animal research and industry. Prereq: Senior standing.

ANTHROPOLOGY (122)

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

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, southwest Asia, and the Americas from earliest dated human cultures to rise of complex civilizations. (CC)

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


302 Anthropology of Religion (3) (See Religious Studies 302.)

304 Genetics and Society (3) (See Biochemistry and Cellular and Molecular Biology 306.)

305 Evolution and Society (3) (See Ecology and Evolutionary Biology 305.)

310 North American Indians (3) Comparative overview of Indian cultures of North America. Topical coverage ranges from prehistory and aboriginal lifeways to problems resulting from contact and acculturation. Writing-emphasis course. Prereq: 130 or consent of instructor.

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. Writing-emphasis course. Prereq: 130 or consent of instructor.

313 Peoples and Cultures of Mesoamerica (3) Pre-Columbian and Hispanic cultures of Mexico, Guatemala, Belize, El Salvador and Honduras. Patterns of cultural continuity and cultural change throughout Mesoamerica’s history. Writing-emphasis course. Prereq: 130 or consent of instructor. (Same as Latin American Studies 313.)

315 The African Diaspora (3) An overview of anthropological perspectives on people of African descent and the impact of an African presence on societies in the Americas. The sociocultural experiences of U.S. Africans and their counterparts elsewhere in the hemisphere are situated in the context of a broader diaspora. Writing-emphasis course. Prereq: 130 or consent of instructor. (Same as African and African-American Studies 315.)

316 Peoples and Cultures of South America (3) An introduction to contemporary analysis and debate on South America that places the concept “culture” in historical perspective and discusses the anthropological notion of “people” within the complexity of indigenous and black social formations. Writing-emphasis course. (Same as Latin American Studies 314.)

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

320 American Cultures (3) Anthropological perspectives on cultural diversity in America, including the immigrant experience and expressions of ethnicity, intercultural relations, occupational and interest group subcultures. Writing-emphasis course. (Same as American Studies 320.)

321 Indians of Northwest North America (3) Survey of American Indian cultures found in the Northwest Coast, Columbia Plateau, and Northern Great Basin culture areas. Writing-emphasis course.

322 Topics in Ethnography (3) Overview of culture patterns and ethnographic research on selected social groups or culture areas. Prereq: 130 or consent of instructor. May be repeated. Maximum 6 hours.

357 Junior Honors in Anthropology (3) Analytical, integrative review of current directions of research and theory in anthropology. Open to students with an overall GPA of 3.2 who have fulfilled progression requirements to declare a major in anthropology.

360 North American Prehistory (3) Prehistoric cultures of North America from initial occupation of the continent to European contact. Writing-emphasis course.
361 Historical Archaeology (3) Historical archaeology of Euro-American, African-American, and Asian American cultures in the United States from 15th to 20th 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.

363 Prehistory of Tennessee (3) Archaeological principles and theory illustrated in history of archaeological research in Tennessee and through survey of prehistoric Indian cultures from initial occupation of the state to European contact. Writing-emphasis course. Prereq: 360 recommended.

373 African Religions (3) (See Religious Studies 373.)

400 Readings in Anthropology (1-6) Problem-oriented directed readings 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 and illustration of major concepts, theories, and methods in cultural anthropology, with application to analysis of specific ethnographies. Prereq: 130.

411 Linguistic Anthropology (3) Basic linguistic concepts applied to research in cultural anthropology, particularly investigation of relationships between language and culture. Prereq: 150, Linguistics 200. (Same as Linguistics 411.)

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

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

414 Political Anthropology (3) Examination of the organization and dynamics of power and politics in both stateless and state-level societies. The role of symbols, rituals, and ideologies in producing and reproducing power relations. The relationship between actors (individuals) and structures. The encapsulation of traditional political forms and systems within modern states. Writing-emphasis course. Prereq: 130 or consent of instructor.

416 Applied Anthropology (3) Introduction to principles, practice and ethics of anthropology applied to practical problems in non-academic settings. Overview of career opportunities in various domains of applied anthropology. Prereq: 130 or consent of instructor.

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

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

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

436 Cities and Sanctuaries of the Greek and Roman World (3) (See Classics 436.)

442 Intensive Survey of the Archaeology of the Prehistoric Aegean (3) (See Classics 442.)

443 Intensive Survey of the Archaeology of Greece (3) (See Classics 443.)

444 Intensive Survey of the Archaeology of Etruria and Rome (3) (See Classics 444.)

450 Current Trends in Anthropology (3) Analytical, integrative review of current directions of research and theory in anthropology. May be repeated. Maximum 6 hours.

457 Senior Honors in Anthropology (3) Research and writing of the senior honors thesis. Open to students with overall GPA of 3.2 and an anthropology GPA of 3.5 who have completed 357 with a grade of B or better.

459 Selected Topics in Anthropology (3) Theoretical issues in anthropology for undergraduate students. Topics may include practical experience or laboratory study of anthropological materials. Prereq: Either 110, 120, 130 or consent of instructor. May be repeated. Maximum 6 hours.

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. Writing-emphasis course. Prereq: 120 or consent of instructor.

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. Writing-emphasis course. Prereq: 120 or consent of instructor.

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

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

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

481 Museum Studies I: Museums, Purpose and Function (3) (See Art 481.)

482 Museum Studies II: Exhibition Planning and Installation (3) (See Art 482.)

484 Museum Studies III: Field Projects (1-12) (See Art 484.)

485 Oral Biology (4) Intense examination of human dentition and oral skeletal structures including dento-facial embryology/growth, histology, gross tooth morphology and pathology. Prereq: 480 or consent of instructor.

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

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) Intensive survey of the human fossil record from the earliest hominid remains to the earliest origins of modern human form. Prereq: 110 or consent of instructor.

496 Biology of Human Variability (3) Introduction to human populations; human adaptation, biological features of major human races, relationships of major groups to one another. Prereq: 110 or consent of instructor. (Same as African and African-American Studies 496.)

ARABIC (127)

121-122 Elementary Standard Modern Arabic I, II (5.5) (See Asian Studies 121-122.)

221-222 Intermediate Modern Standard Arabic I, II (5.5) (See Asian Studies 221-222.) (CC)

ARCHITECTURE (133)

101 Introduction to the Built Environment (3) Scope and definition of the built environment in relation to contemporary society, building industry, and allied-design professions. Architectural design as a creative process. Orientation to courses and programs of the school. Coreq: 171.


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

121 Drawing and Perception (2) Exploration of drawing as a means of visual thinking and method of communication, addressing perceptual phenomenon. Exploration of different media, concentrating on freehand drawing. Includes line drawing, tone, shade, shadow, depth cues. Compositional principles will be introduced. Drawings based on observation, including figure drawing and campus visits. Coreq: 171.

122 Drawing and Abstraction (2) Exploration of drawing as a means of visual thinking and method of communication, addressing process of abstraction and transformation inherent in drawing. Exploration of different media and techniques of representation. Drawings based on observation, abstraction, and transformation. Coreq: 172.


180 Introduction to Architecture (2) Introduction to architecture as an intellectual discipline. Design as a creative endeavor central to the discipline and its profession.

211 History and Theory of Architecture I (3) Architecture and ideas of building and community form in major world cultures from the prehistoric era to about 1500 AD. (AH)

212 History and Theory of Architecture II (3) Architecture and ideas of building and community form from 1500 AD to the mid-twentieth century. Prerequisite: 211. (AH)

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. (WC)

231 Computer Applications in Design I (3) Introduction to computer systems, software and hardware, and their application in architecture. Emphasis on learning how the computer can assist in the design process by modeling, visualizing and analyzing building designs. Introduction to drafting, three-dimensional modeling, and desktop publishing. Prereq: Physics 161.


272 Architectural Design II (6) Studies in architectural space. The role of function, habitation, movement, structure and scale as determinants of spatial form explored through a series of design projects ranging in scale from furniture to dwellings. Development of design processes, including analytical skills, diagramming, and determining design organizational strategies. Use of computer aided visualization techniques. Prereq: 271.

281 Principles of Architectural Form (6) Principles of architectural form emphasizing building configuration and order. Design of simple buildings which explore possibilities of site, use, shape materials and color. 1 credit hour seminar and 5 credit hours studio. Prereq: 182 or equivalent.

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


332 Architectural Structures 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 tables—selection of structural members. Prereq: 331.


336 Structures in Architecture II (3) Continuation of analysis and design of simple structures in wood, steel and concrete. Introduction of building codes, loading tables and handbooks for selection of structural members. Prereq: 335 or special permission.

341 Environmental Control Systems I (4) Heating, ventilating, and air-conditioning systems, including passive and active solar energy systems. Plumbing and fire protection systems. Prereq: 231, 232.


346 Principles of Environmental Control II (3) Introduction to electrical design and wiring, lighting and acoustics in buildings. Prereq: 180, Master of Architecture admission.


401 Architectural History/Theory I (3) Architectural History/Theory I (3) Survey of architectural history and theory from earliest beginnings to about 1600 in Europe, Asia, and the Americas. Examination of theoretical ideas, building forms, and urban patterns in cultural and historical context. Prereq: Master of Architecture admission or consent of instructor.

402 Architectural History/Theory II (3) Architectural History/Theory II (3) Survey of architectural history and theory from about 1600 through the present day. Examination of theoretical ideas, building forms, and urban patterns in cultural and historical context. Prereq: 401 and Master of Architecture admission or consent of instructor. Open to undergraduates with consent of instructor.

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. Prereq: 403.

406 Ideas in Architecture (3) Historical and critical review of the major ideas of architecture through the ages. Open to all students.

410 History and Theory of Urban Form (3) Patterns of community development. Selected historical and contemporary examples. Basic urban design issues and exemplary design approaches examined through lectures, readings, essays, and sketch studies including historical change in urban form and design.

412 Non-Western and Indigenous Architecture (3) Building responsive to climate, material availability, and economic level, as designed by anonymous builders. Examples from prehistoric times to the present including the fertile crescent; the Indus Valley; Hindu, Buddhist, and Mughal architecture of India, China, and Japan.

415 Medieval Architecture (3) History of architecture from the decline of Rome to the beginning of the Renaissance. (Same as Medieval Studies 415.)

417 The International Style (3) A survey of architecture of the early modern movement, primarily in Europe and America, covering the years 1900 to 1940.

420 History of American Architecture (3) Consideration of architecture and city planning in the United States from the pre-Columbian period until the mid-twentieth century.

425 Special Topics in Architecture (1-6) Faculty initiated courses. Topics vary. Prereq: consent of instructor. May be repeated. Maximum 12 hours.

431 Structural and Mechanical Applications (3) Case study analysis and selection of structural and mechanical systems, investigating the conceptual integration of technical information into a unified design solution. Prereq: 332, 342. Coreq: 471.

432 Computer Applications in Design II (3) Advanced computer-aided design using three-dimensional modeling software. Design analysis using computer animation, rendering techniques, visualization, and video. Prereq: 231.

433 Computer Applications in Design III (3) Advanced course that integrates three-dimensional modeling and technical analysis using computers to augment building design. Independent studies under faculty direction. Prereq: Consent of instructor.
445 Advanced Lighting (3) In-depth analysis and innovative concepts in design of lighting. Prereq: 342.

462 Professional Practice (4) Management and organizational theories and practices for delivering professional design services. Included are assessment of the building industry and its influence on practice; analysis of the basic management functions within professional firms; and legal and ethical concerns facing practitioners today. Special obligations and privileges of the design professional.

463 Architectural Development (3) Principles and practice of the architect as a developer. Impact of economics, finance and urban policy on the design and development of real estate. Open to all students.


472 Architectural Design VI (6) Order and form in complex buildings developed to address programmatic, structural, energy and environmental issues. Prereq: 471.

473 Architectural Photography (3) Photography as a design, research, and presentation medium. Application of photographic techniques, printing and processing. Color, black and white.

480 Preparation and Programming for Projects (3) Formation of project statement, documentation and analysis of project data. Preparation of background and program information. Goals and concepts set forth. To be taken the semester preceding 482.

481 Advanced Architectural Design Topics (6) Faculty initiated design projects. Advanced architectural topics not covered under 483, 484, 485, 486, or 489. Prereq: 471.

482 Self-directed Design Project (6) Student-selected project under faculty direction. Exploration of design hypothesis that informs the character of a substantial building design. Completed project will address issues of environment, structure, enclosure, use and ethical consideration of design appropriateness. Design is expected to stand up to rigorous scrutiny regarding strength of idea, economy of means, durability, validity for stipulated use, quality of cultural expression, and character of setting. Prereq: 480, satisfactory completion of a self-directed project proposal and program for that project, satisfactory completion of all design courses.

483 Urban Design (6) Urban design projects responding to specific community conditions. Exploration of urban issues in making and understanding the architecture of the city. Prereq: 471.

485 Development and Design (6) Exploration of image making, consumerism and the allocation of scarce resources. Issues of finance, economics, urban economics, and marketing are analyzed in relation to urban and architectural design. Application of financial feasibility models. Prereq: 471, 463 or consent of instructor.

486 Design of Sustainable Architecture (6) Architectural design studio emphasizing concern for the environment, consideration of energy conservation techniques, and use of renewable resources. Prereq: 471.


491 Foreign Study (1-15) Research and design projects conducted in various locations abroad.

492 Off-Campus Study (1-15) Studies conducted under direction of architect or expert in an allied profession, in service to public service organizations or agencies of government, and public groups. Not a design course elective.

493 Independent Study in Architecture (1-6) Individual studies and projects under faculty direction. Credit adjusted to complexity and level of effort required. May be repeated once. Prereq: Consent of dean.

494 Foreign Studies Sketchbook (1-3) Investigations of historic urban fabric and architecture in various locations abroad. Analysis and sketch records in sketchbook format required.

496 Design Studies in Krakow (6) Studio meets in Krakow, Poland. Design studies responding to specific community conditions in an European city.

497 Sketchbook Study of Architecture in Central Europe and Krakow (3) Analysis and sketch records in sketchbook format required. Lectures and field trips related to Krakowian, Polish, and European architectural and urban traditions.

498 Fine Art Studies in Krakow (3) Studio meets in Krakow, Poland. Fine arts investigations related to architectural design.

ART (140)

101 Studio Fundamentals: Drawing and Design (3) Introduction to basic drawing media, concepts and techniques and to the elements and principles of pictorial organization.

103 Studio Fundamentals: Three-Dimensional Design (3) Projects dealing with real space and three-dimensional materials. Primarily for art, architecture, art education, and interior design and housing majors.

150 The Idea of Graphic Design (3) An overview of design as visual message-making and as an act of cultural interpretation. Contemporary and historic design and its forms are examined, along with an introduction to design and creative concepts, and the role of criticism and theory. Student assessment will come from exams, short writings and visual laboratory projects. Open to non-majors.

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

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

299 Special Topics (3) Student- or instructor-initiated course offered at convenience of department. May be repeated. Maximum 12 hours.

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

482 Museum Studies II: Exhibition, Planning and Installation (3) Exhibition concept development and implementation. Exhibition design and installation techniques. Publicity, production, mounting and framing, shipping and storage. Prereq: 481 or consent of instructor. (Same as Anthropology 482.)

484 Museum Studies III: Field Projects (1-12) Special field projects including restoration, preservation, registration, and other related research on or off campus. Prereq: 481 and 482 and consent of instructor. May be repeated. Maximum 12 hours. (Same as Anthropology 484.)

491 Foreign Study (1-15)

492 Off-Campus Study (1-15)

493 Independent Study (1-15) Prereq: Consent of instructor.

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

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

499 Special Topics (3) Student- or instructor-initiated course offered at convenience of department. May be repeated. Maximum 12 hours.

ART CERAMICS (135)

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

221 Ceramics: Handbuilding I (3) Introduction to handbuilding, glazing, clay preparation and firing. Prereq: Art 101, 103.


225 Portfolio Practicum—Handbuilding (3) Intense post-introductory studio experience to develop work for application to Ceramics Portfolio Review 320. Art majors only. Prereq: 221, 222, and consent of department.

226 Portfolio Practicum—Throwing (3) Intense post-introductory studio experience to develop work for application to Ceramics Portfolio Review 320. Art majors only. Prereq: 221, 222, and consent of department.

229 Ceramics: Special Topics (3) Student or instructor initiated courses to be offered at convenience of department. Prereq: Consent of instructor. May be repeated. Maximum 12 hours.

320 Ceramics: Portfolio Review (0) Review of prior work in ceramics. Successful completion required prior to registration for junior and senior courses. Prereq: Art 101, 103; Art History 172, 173, 162, 183 (choose two); Art Ceramics 221; Art Sculpture 241; all with a grade of C or better. Prereq/Coreq: Art 295. Coreq: 222. Satisfactory/No Credit grading only.

322 Ceramics: Throwing II (4) Continued investigation of throwing with an emphasis on the development of individual ideas and expression. Prereq: 320.


424 Ceramics: Clays and Glazes (3) Clay chemistry, clay bodies, glaze theory, and calculation. Formulating, mixing and testing of clay bodies and glaze formulas. Prereq: 320.

429 Ceramics: Special Topics (3) Student or instructor initiated courses to be offered at convenience of department. Prereq: Consent of instructor. May be repeated. Maximum 12 hours.

493 Independent Study (1-15) Prereq: Consent of instructor.

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

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

ART DESIGN/GRAPHIC (136)

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

251 Beginning Graphic Design I (3) Introduction to the elements and principles of graphic design including typography and layout. Survey of graphic design tools, materials and processes. Emphasis on visual problem-solving. Prereq: Art 101, 103, 150, Art History 162 or 172 or 173 or 183. In special circumstances, permission of instructor may be granted in place of prerequisite. May be repeated. Maximum 6 hours.

252 Beginning Graphic Design II (3) Continuation of 251 and the exploration of the elements and principles of graphic design including typography and layout. Survey of graphic design tools, materials and processes. Emphasis on visual problem-solving. Prereq: 251. Prereq/Coreq: 151 or permission of instructor. May be repeated. Maximum 6 hours.

254 Black and White Illustration (3) Black and white media and production techniques as applied to product and editorial illustration. Prereq: Art 101.

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

259 Special Topics: Graphic Design (3) Student or instructor initiated course offered at discretion of department. Prereq: Consent of instructor. May be repeated. Maximum 12 hours.

350 Graphic Design Portfolio Review (0) Review of prior work in graphic design. Successful completion required prior to registration for junior and senior courses. Prereq: Art History 172 and 173 with a grade of C or better; Art 150. Coreq: Art Design/Graphic 252. May be repeated. Satisfactory/No Credit grading only.

351 Intermediate Graphic Design I (3) Concept development and the study of graphic design elements including typography and imagery and their interrelationships within the graphic design layout. Prereq: Art 295. Coreq: 350, 356.

352 Intermediate Graphic Design II (3) Investigation of sign, symbols, marks and identity systems. Prereq: 351 with a grade of C or better.

354 Color Illustration (3) Flat and process color media and production techniques as applied to product and editorial illustration. Prereq: 254 and successful completion of any portfolio review.

356 Graphic Design Production (3) Traditional and computer-generated techniques for the production of print media in graphic design. Introduction to computer systems, software and techniques.

396 Airbrush Painting (3) Techniques of airbrush painting; skills and creative applications emphasized. Prereq: Art Drawing 211.

405 Computer Enhanced Graphic Design (3) Exploration of new technologies and their significance to graphic design. Prereq: 351, 356 with a grade of C or better and consent of instructor. May be repeated. Maximum 12 hours.

444 Graphic Design Center Practicum (3) Practical work experience in a student-managed, on-site studio. Prereq: 350 and consent of instructor. May be repeated. Maximum 6 hours.

505 Design in Culture (3) A consideration of design as an act of cultural interpretation. Historic and contemporary design and design issues are examined through presentations, discussions, readings, and writings. Required of all upper-division graphic design majors on the BFA track. Open to other students by consent of instructor. Student assessment will come from writing, projects, presentations and contributions to class discussion.

451 Advanced Graphic Design (3) Theory and techniques of visual problem-solving as applied to advanced applications of graphic design. Prereq: 352 with a grade of C or better.

452 Graphic Design Seminar (3) Discussion of design and professional issues including politics, economics, and ethics for the graphic designer. Culminates in a student-initiated project. Prereq: 451 with a grade of C or better.

453 Advertising Illustration (3) Media and techniques as applied to advertising illustration. Prereq: 254 and successful completion of any portfolio review.

454 Editorial Illustration (3) Media and techniques as applied to editorial illustration for books, magazines, and newspapers. Prereq: 254 and successful completion of any portfolio review.

455 Graphic Design Professional Seminar (3) Professional practices including client relationships, design management and business practices. Assembly, organization and editing of the professional portfolio. Prereq/Coreq: 452.

456 Graphic Design Practicum (1-12) Practical work experience in the graphic design field. Only by pre-arrangement with the department. Prereq: Consent of instructor. May be repeated. Maximum 12 hours.

459 Special Topics in Graphic Design (3) Student or instructor initiated course offered at discretion of department. Prereq: Consent of instructor. May be repeated. Maximum 12 hours.

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

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

ART DRAWING (137)

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


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

219 Special Topics in Drawing/Painting (3) Student or instructor-initiated course offered at discretion of department to enhance and expand the painting, drawing, and watercolor curriculum. Prereq: Consent of instructor. May be repeated. Maximum 12 hours.

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

312 Drawing Portfolio Review (0) Review of prior work in drawing. Successful completion required prior to registration for junior and senior courses. Prereq: Art History 172, 173 with a grade of C or better. Satisfactory/No Credit grading only.

411 Drawing IV (6) Individualized pursuit of personal drawing techniques and concepts, supplemented by individual and group critiques and weekly life drawing sessions. Prereq: 8 hours of Art Drawing 311 with a grade of C or better or consent of instructor. Total of 12 hours required for undergraduate students in the drawing concentration. 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 enhance and expand the painting, drawing, and watercolor curriculum. Prereq: Consent of instructor. May be repeated. Maximum 12 hours.

493 Independent Study (1-15) Prereq: Consent of instructor.

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

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

ART EDUCATION (141)

301 Foundation of Art Education (3) Basic philosophy and structure including directed learning activities in two and three dimensional design, art appreciation, and teaching methodology.

302 Multiculturalism in Visual Art (3) Selected cognitive and productive experiences involving multicultural visual art. Prereq: Permission of instructor.

303 Concepts of Sculpture and Crafts (3) Processes in teaching of sculpture and crafts including pertinent literature and research. Prereq: 301.

350 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 grading only.

400 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.

ART HISTORY (139)

162 Art of Africa, Oceania, and Pre-Columbian America (3) Survey of the traditional arts of the cultures of Black Africa, the Pacific and the Americas (focusing primarily on the period before the European conquest). Sculpture, painting, pottery, textiles, architecture and human adornment will all be examined. (Same as African and African-American Studies 162.) (AH)

167 Honors: Art of Africa, Oceania, and Pre-Columbian America (3) Consent of instructor required. Survey of the traditional arts of the cultures of Black Africa, the Pacific and the Americas. Study grounded in reading, writing and discussion. Writing-emphasis course. (AH)

172 Western Art I (3) Major monuments in western art with emphasis on Europe from prehistory through the Middle Ages. Two-hour lecture and one-hour discussion each week. (AH)

173 Western Art II (3) Major monuments in the history of European and American Art from the Renaissance to the present. Two-hour lecture and one-hour discussion section each week. (AH)

177 Honors: Western Art I (3) Consent of Department required. Major monuments in Western Art with emphasis on Europe from prehistory through the Middle Ages. Study grounded in reading, writing, and discussion. Writing-emphasis course. (AH)

178 Honors: Western Art II (3) Consent of Department required. Major monuments in the history of European and American art from the Renaissance to the present. Study grounded in reading, writing, and discussion. Writing-emphasis course. (AH)

183 Asian Art (3) Selected works of painting, sculpture, architecture, and other forms in India, China, Japan, and to a lesser extent, Korea and Southeast Asia from antiquity through the 19th century. (AH)

187 Honors: Asian Art (3) Consent of instructor required. Selected works of painting, sculpture, architecture and other forms in India, China, Japan, Korea and Southeast Africa, from antiquity through the 19th century. Study grounded in reading, writing, and discussion. Writing-emphasis course. (AH)

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.

376 Seminar in Art History (3) Variable theme; emphasis on methodology and skills in writing. Required for art history majors. Prereq: junior or senior standing and completion of at least 12 hours in art history, or consent of instructor. Writing-emphasis course. May be repeated with consent of instructor. Maximum 6 hours.

403 History of Photography (3) Survey of the history of photography from the introduction of the daguerreotype and calotype to more recent trends. Emphasis will be placed on aesthetics and the use of photography as a medium for artistic expression.

411 Art of South and Southeast Asia (3) A survey of the art and architecture of the Indian subcontinent and Southeast Asia from 2000 BC to the 20th century. The major achievements of each period are examined in relation to their religious, political, and social contexts. Writing-emphasis course.

415 Art of China (3) A survey of the art and architecture of China from the neolithic period to the 20th Century. The major achievements of each period are examined in relation to their religious, political, and social contexts. Writing-emphasis course.

416 Chinese Art of the 20th and 21st Centuries (3) Survey of Chinese art from the late nineteenth century through the present. Hong Kong, Taiwanese, and expatriate artists are also considered. Writing-emphasis course.

419 Art of Japan (3) A survey of the art and architecture of Japan from the neolithic period to the 20th century. The major achievements of each period are examined in relation to their religious, political, and social contexts. Writing-emphasis course.

425 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. Writing-emphasis course. (Same as Judaic Studies 425.)

431 Medieval Art of the West, 800-1400 (3) Western European art of the Dark Ages, Romanesque, and Gothic periods. Writing-emphasis course. (Same as Judaic Studies 431; Medieval Studies 431.)

441 Northern European Painting, 1350-1600 (3) From courtly art of late Middle Ages to Northern Renaissance. Jan van Eyck, Roger van der Weyden, and Durer; early printmakers. Writing-emphasis course. (Same as Medieval Studies 441.)

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

451 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. Writing-emphasis course. (Same as Medieval Studies 451.)


453 Art of Southern Europe, 1575-1700 (3) Concentrated study of Caravaggio, Bernini, and Italian Baroque developments in all media. Spanish Baroque painting and sculpture with special attention to Velazquez. Writing-emphasis course.

454 Renaissance and Baroque Theory (3) Addresses the theory of Western art in the early modern period with emphasis on the development and evolution in European art during the Renaissance and Baroque periods. Writing-emphasis course. Prereq: 172, 173 (or their Honors equivalents) or consent of instructor.

461 Art of Southern and Eastern Africa (3) Art traditions of the eastern and southern regions of Africa. Sculpture, painting, pottery, textiles, architecture and human adornment will be examined. Some ancient Stone and Iron Age traditions will be examined, but the main emphasis will be on the diverse ethnic and regional art traditions practiced in the area from the 19th century to the present. Writing-emphasis course. (Same as African and African-American Studies 461.)

462 Art and Archaeology of Ancient Africa (3) Historical art traditions of sub-Saharan Africa. Topics to be covered include prehistoric rock paintings; art from archaeological sites and ancient kingdoms. The time period covered ranges from the first and second millennia B.C. for some of the early terracotta sculpture and rock paintings, the 11th through 19th centuries AD for the later ancient kingdoms. Writing-emphasis course. (Same as African and African-American Studies 462.)

463 Arts of the African Diaspora (3) Examines the aesthetic, philosophical and religious patterns of the African descendants of Brazil, Surinam, the Caribbean and the United States. Emphasis will be placed on the full range of art forms, including the sculptural and performance traditions as well as architecture, textile, basketry and pottery art forms. Writing-emphasis course. (Same as African and African-American Studies 463.)
464 Oceanic Art (3) Concentrated study of selected sculpture, textiles, architecture and other traditional art forms of Polynesia, Micronesia and Melanesia. Objects are discussed on the basis of style, style relationship, iconography and the uses to which they were put in their traditional religious, political, and social contexts. Writing-emphasis course.

471 History of North American Art (3) Survey of landmarks in painting, architecture, sculpture, and design from prehistory to 1900. Writing-emphasis course.

472 History of 20th-Century American Art (3) Developments in architecture, painting, and design from 1900. Writing-emphasis course.

473 19th-Century American Painting (3) From West and Copley to emergence of “The Eight.” Writing-emphasis course.

474 Theory of 20th-Century Art in Europe and America (3) Addresses the theoretical basis for the modern movement. Emphasis on analyzing and discussing individual works of art in light of contemporary writings by artists and theorists. Writing-emphasis course. Prereq: 172, 173 (or their Honors equivalents), or consent of instructor.


476 History of 20th-Century Painting and Sculpture in Europe (3) Development of the Modern and Post-Modern movements in Europe. Investigation of the progression of abstraction through more recent conceptual trends. Analysis of the work of individual artists such as Picasso, Matisse, and many others. Writing-emphasis course.

479 Special Topics in Art History (3) Student or instructor-initiated course offered at convenience of department. May be repeated. Maximum 12 hours.

483 History of American Sculpture (3) American sculpture from prehistory to the 1960s. Writing-emphasis course.


489 Studies in Art History (3) Concentration in individually selected area. Prereq: Consent of instructor. May be repeated. Maximum 6 hours.

493 Independent Study (1-15) Prereq: Consent of instructor.

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

ART MEDIA ARTS (134)

191 Introduction to Studio Art: Various Media (3) Individual sections for various artistic disciplines. For non-majors only. Courses may be repeated, medium may not 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.

235 Introduction to Cinematography as Art (3) Development of basic concepts and techniques for the creation of film as an art form. Prereq/Coreq: 231 or consent of instructor. (Same as Cinema Studies 235.)

236 Introduction to Video Art (3) Development of basic concepts and techniques for the creation of video works as an art form. (Same as Cinema Studies 236.)

239 Special Topics in Media Arts (3) Student or instructor-initiated course offered at convenience of department. May be repeated. Maximum 12 hours.

330 Media Arts Portfolio Review (0) Review of prior work in media arts. Successful completion required prior to registration for junior and senior courses. Prereq: Art History 172, 173 with a grade of C or better. Satisfactory/No Credit grading only.


342 Large Format Photography I (4) Studio course introducing theory and practice of photography using large format view camera. Prereq: 231, 311, 330, 331, and consent of instructor.


433 History of Film and Modern Art (3) Study of the development and interaction between the cinematic arts and the visual arts within the context of modern art history. Available for art history credit. (Same as Cinema Studies 433.)

435 Cinematography as Art (3) Continued development of concepts and techniques for the creation of film as an art form with an emphasis on individual projects. Prereq: 235, 330 or permission of instructor. May be repeated. Maximum 9 hours. (Same as Cinema Studies 435.)

436 Video Art (3) Continued development of concepts and techniques for the creation of video works as an art form with an emphasis on individual projects. Prereq: 236, 330 or permission of instructor. May be repeated. Maximum 9 hours. (Same as Cinema Studies 436.)

439 Special Topics in Media Arts (3) Student or instructor initiated course offered at convenience of department. May be repeated. Maximum 12 hours.

441 Digital Photography II (4) Continuation of exploration and implications of use of computer in photography. Prereq: 330, 341, and consent of instructor.

442 Large Format Photography II (4) Studio course that continues the exploration of the use of the large format camera in photography. Prereq: 330, 342, and consent of instructor.

493 Independent Study (1-15) Prereq: Consent of instructor.

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

495 Visiting Artist Seminar (3) Study and discussion of contemporary art issues conducted by different visiting artists each semester. Does not apply toward art history requirement. May be repeated. Maximum 12 hours.

ART PAINTING (138)

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

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

214 Painting II (3) Techniques of expression in oil and/or acrylic. Prereq: Painting 213. May be repeated. Maximum 6 hours.


216 Watercolor II (3) Capacities of transparent watercolor, with attention to individual exploration of surface, space, and concept. Prereq: Painting 215. 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: Consent of instructor. May be repeated. Maximum 12 hours.

313 Painting III (4) Individual expression with varied media on canvas. Prereq: 214, 314 or consent of instructor. May be repeated. Maximum 8 hours. Total of 8 hours required for students in the painting concentration.

314 Painting Portfolio Review (0) Review of prior work in painting. Successful completion required prior to registration for junior and senior courses. Prereq: Art History 172, 173 with a grade of C or better. Satisfactory/No Credit grading 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. Total of 8 hours required for students in the watercolor concentration.

316 Watercolor Portfolio Review (0) Review of prior work in watercolor. Successful completion required prior to registration for junior and senior courses. Prereq: Art History 172, 173 with a grade of C or better. Satisfactory/No Credit grading only.

413 Painting IV (6) Advanced painting stressing individual concepts and personal expression with varied media. Total of 12 hours required for undergraduate students in the painting concentration. Prereq: 313. May be repeated. Maximum 12 hours.

415 Watercolor IV (6) Advanced painting with water-based media on paper stressing individual concepts and personal approaches. Total of 12 hours required for undergraduate students in the watercolor concentration. Prereq: 315. 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 enhance and expand the painting, drawing, and watercolor curriculum. Prereq: Consent of instructor. May be repeated. Maximum 12 hours.

493 Independent Study (1-15) Prereq: Consent of instructor.

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

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

**ART PRINTMAKING (132)**

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

262 Intaglio I (3) Metal plate intaglio printing in traditional and contemporary techniques of etching, softground, drypoint, aquatint, and color methods. Prereq: Art 101.

263 Lithography I (3) Stone and aluminum plate lithography applying traditional and contemporary techniques of crayon, tusche, transfer methods, state proofs and photolithography. Prereq: Art 101.

264 Screen Printing I (3) Screen printing as a fine art medium including development and application of various basic stencils in compositional printing. Prereq: Art 101. May be repeated. Maximum 6 hours.

265 Relief (3) Relief printing in traditional and contemporary techniques from wood, linoleum and plastics. Prereq: Art 101.

266 Monoprint and Monotype (3) Investigation of traditional and contemporary techniques. Prereq: Art 101.

269 Special Topics in Printmaking (3) Student or instructor-initiated course offered at convenience of department. Prereq: Art 101 and 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, imbedding, laminating, embossing, pulp dyeing, inlaying, casting, and other related techniques. Emphasis on development of a personal form.

360 Printmaking Portfolio Review (8) Review of prior work in printmaking. Successful completion required prior to registration for junior and senior courses. Prereq: Art History 172, 173 with a grade of C or better. Satisfactory/No Credit grading only.

361 Intermediate Print Workshop (1-6) Individual and collaborative studio work encompassing theory and practice in intaglio, lithography, relief printing, screenprinting, monoprint, papermaking, book arts and/or photoprint processes. Prereq: One of the following: 262, 263, 264, 265, 266, 269, 291 and 360 or consent of instructor. May be repeated. Maximum 12 hours.

461 Advanced Print Workshop (1-6) Individual and collaborative studio work encompassing theory and practice in intaglio, lithography, relief printing, screenprinting, monoprint, papermaking, book arts and/or photoprint processes. Prereq: 361 or consent of instructor. May be repeated. Maximum 12 hours.

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

**ART SCULPTURE (143)**

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

240 Techniques and Tools (1) Introduction to the equipment in metal shop, wood shop, and foundry. Instruction includes shop safety, operation of tools, and handling of hazardous materials. All students must pass proficiency tests.

241 Beginning Sculpture (3) Introduction to the materials, concepts, technical processes, and history of sculpture. Materials include wood, plaster, steel and plastics. Prereq: Art 103.

242 Figuring the Body (3) Sculpture that involves the human figure, directly or indirectly. Issues relating to the body and personal identity will be explored through various media. Prereq: Art 101, 103; Art Sculpture 241, or consent of instructor.

243 Mold-Making and Casting (3) Examines possibilities and processes related to mold-making. A variety of casting materials will be explored including metals, wax, rubber, plaster, and ceramic shell. Prereq: Art 103; Art Sculpture 240, 241.

245 Metal Fabrication (3) Introduction to steel as a material for the creation of sculpture. Development of welding techniques, design of cold connections, and engineering of structural components. Prereq: Art 103; Art Sculpture 240, 241.

246 Mixed Media Sculpture (3) Includes installation art, performance, and conceptual art. Contemporary issues and materials related to sculpture are examined through research and studio projects. Prereq: Art 103; Art Sculpture 241

249 Special Topics in Sculpture (3) Instructor initiated course offered at convenience of department. Prereq: Art 101, 103; and Art Sculpture 241 with a grade of C or better. May be repeated. Maximum 12 hours.

340 Sculpture Portfolio Review (0) Review of prior work in sculpture and development of new work. Successful completion required prior to registration for junior and senior courses. Prereq: Art 101, 103; Art History 172, 173, 162, 183 (choose two); Art Sculpture 240, 241, 245 and 246 with a grade of C or better. Satisfactory/No Credit grading only.

341 Intermediate Sculpture (3) Students begin defining and developing their visual vocabulary relative to contemporary sculptural issues. Emphasis on studio projects, research, and discussion. Prereq: Art 103; Art Sculpture 240, 241, 245, 246 and 340; or consent of instructor. May be repeated. Maximum 6 hours.

343 Advanced Mold-Making and Casting (3) Further exploration of casting methods with an emphasis on metals including bronze and aluminum. Prereq: 340 or consent of instructor.

345 Advanced Metal Fabrication (3) Advanced exploration of construction in steel and other metals through welding, design of cold connections, and engineering of structural components. Prereq: Art 103; Art Sculpture 240, 245 and 340, or consent of instructor.

346 Advanced Mixed Media Sculpture (3-6) Advanced investigation into the sculptural possibilities of installation art, performance, and multimedia. Contemporary issues are examined through research and studio projects. Prereq: Art 103; Art Sculpture 241, 246 and 340, or consent of instructor.

441 Advanced Sculpture (3-6) Individual development of sculptural problems and techniques. Students work independently while participating in group projects, critique, and discussion. Prereq: 6 hours of 300-level sculpture. May be repeated. Maximum 12 hours.

442 Senior Seminar (2) Investigation of professional practices and career opportunities in the field of sculpture. Includes portfolio development, preparation for exhibitions, and public commissions.

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

**ASIAN LANGUAGES (144)**

131-132 Elementary Chinese I, II (5.5) Must be taken in sequence. (Same as Chinese 131-132.)
## COURSES OF INSTRUCTION

### ASIAN STUDIES (145)

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>101-102</td>
<td>Asian Civilization (3,3)</td>
<td>Comparative study of development of religion, social institutions, and high culture in India, China, Japan, and the Islamic world. 101-India and the Islamic World. 102-China and Japan. Writing-emphasis course. (CC)</td>
</tr>
<tr>
<td>121-122</td>
<td>Elementary Modern Standard Arabic I, II (4,4)</td>
<td>Taped language program. Must be taken in sequence. Enrollment by permission of instructor. (Same as Arabic 121-122.)</td>
</tr>
<tr>
<td>141-142</td>
<td>Elementary Modern Hebrew I, II (4,4)</td>
<td>Taped language program. Must be taken in sequence. Enrollment by permission of instructor. (Same as Hebrew 141-142.)</td>
</tr>
<tr>
<td>161-162</td>
<td>Elementary Persian I, II (4,4)</td>
<td>Taped language program. Must be taken in sequence. Enrollment by permission of instructor. (Same as Persian 161-162.)</td>
</tr>
<tr>
<td>221-222</td>
<td>Intermediate Modern Standard Arabic I, II (4,4)</td>
<td>Taped language program. Must be taken in sequence. Enrollment by permission of instructor. (Same as Arabic 221-222.) (CC)</td>
</tr>
<tr>
<td>241-242</td>
<td>Intermediate Modern Hebrew I, II (4,4)</td>
<td>Taped language program. Prereq: 141-142 or equivalent or consent of instructor. Must be taken in sequence. (Same as Hebrew 241-242.) (CC)</td>
</tr>
<tr>
<td>261-262</td>
<td>Intermediate Persian I, II (4,4)</td>
<td>Taped language program. Prereq: 161-162 or equivalent or consent of instructor. Must be taken in sequence. (Same as Persian 261-262.) (CC)</td>
</tr>
</tbody>
</table>

### ASIAN STUDIES (145) Continued

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>300</td>
<td>Introduction to Communication Disorders (3)</td>
<td>Nature, etiology, and incidence of speech, hearing and language disorders.</td>
</tr>
<tr>
<td>431</td>
<td>Readings in Chinese Literature (3)</td>
<td>(Same as Chinese 331.)</td>
</tr>
<tr>
<td>491</td>
<td>Chinese and Japanese Foreign Study (1-15)</td>
<td>Satisfactory/No Credit grading only. Business Director. For Language and World Business majors only. International cultural awareness in the program in Language and World Business. See director for further information.</td>
</tr>
<tr>
<td>490</td>
<td>Chinese and Japanese Internship (1-15)</td>
<td>Career-related experiences in intermediate-level Japanese or consent of instructor.</td>
</tr>
<tr>
<td>452</td>
<td>Readings in Modern Japanese Literature (3)</td>
<td>(Same as Japanese 452.)</td>
</tr>
<tr>
<td>313-314</td>
<td>Japanese Literature in English Translation (3,3)</td>
<td>313-314: Classical literature. 312-Vernacular and modern literature. Writing-emphasis course. (Same as Chinese 311-312.)</td>
</tr>
<tr>
<td>315</td>
<td>Asian Film (3)</td>
<td>An examination of Asian national cinemas in historical and cultural context. Taught in English. Writing-emphasis course. (Same as Cinema Studies 315.)</td>
</tr>
<tr>
<td>331-332</td>
<td>Advanced Chinese I, II (4,4)</td>
<td>Prereq: 251-252 or consent of instructor. Must be taken in sequence. (Same as Chinese 331-332.)</td>
</tr>
<tr>
<td>335-352</td>
<td>Advanced Japanese I, II (4,4)</td>
<td>Includes conversation, drill, and composition practice with native speaker as well as reading and translation. Prereq: 251-252. Must be taken in sequence. (Same as Japanese 351-352.)</td>
</tr>
<tr>
<td>410</td>
<td>Toples in Japanese Literature (3)</td>
<td>When content varies, may be repeated for credit. In English with readings in Japanese for minors. Writing-emphasis course. (Same as Japanese 410.)</td>
</tr>
<tr>
<td>431 Readings in Chinese Literature (3)</td>
<td>Prereq: Mastery of intermediate-level of Chinese or consent of instructor. May be repeated. Maximum 9 hours. (Same as Chinese 431.)</td>
<td></td>
</tr>
<tr>
<td>451 Readings in Pre-Modern Japanese Literature (3)</td>
<td>Prereq: Mastery of intermediate-level Japanese or consent of instructor. (Same as Japanese 451.)</td>
<td></td>
</tr>
<tr>
<td>452 Readings in Modern Japanese Literature (3)</td>
<td>Prereq: Mastery of intermediate-level Japanese or consent of instructor. (Same as Japanese 452.)</td>
<td></td>
</tr>
<tr>
<td>490 Chinese and Japanese Internship (1-15)</td>
<td>Career-related experiences in the United States or abroad with permission of the Language and World Business Director. For Language and World Business majors only. Satisfactory/No Credit grading only.</td>
<td></td>
</tr>
<tr>
<td>491 Chinese and Japanese Foreign Study (1-15)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
302 Acoustics and Perception (3) Basic acoustics. Introduction to psychoacoustics and speech perception.


305 Phonetics (3) Basic phonetics including recognition and production of spoken English sounds with analysis of their formation; phonetic transcription of speech; phonetic aspects of dialect variation.

306 Anatomy and Physiology of Speech (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.

431 Stuttering (3) Nature, appraisal and treatment. Prereq: 300 or consent of instructor.

433 Observation of Clinical Practice (1) Prereq: 320 or consent of instructor.

434 Clinical Practice in Speech-Language Pathology II (1–4) Prereq: 433 and consent of instructor. Enrollment for fewer than 2 semester hours must have prior departmental approval. May be repeated. Maximum 4 hours.

435 Introduction to Speech Sound Disorders (3) Etiology, diagnosis, and treatment of articularatory and phonological disorders. Prereq: 300, 305 or consent of instructor.


445 Clinical Practice in Audiology (1–4) Prereq: 473, 494. May be repeated. Maximum 6 hours.

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

461 Introduction to Language Pathology in Children (3) Etiology and diagnosis, and treatment of language impairments in children. Prereq: 320 or consent of instructor.

473 Introduction to Audiologic Assessment (3) Basic principles of clinical audiology; pure tone, speech, masking and overview of special auditory tests. Prereq: 303.

475 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: 300, consent of instructor, and senior standing.

491 Foreign Study (1–15)

492 Off-Campus Study (1–15)

493 Independent Study (1–15)

494 Introduction to Aural Habilitation/Rehabilitation of the Hearing Impaired (3) Introduction to psychosocial aspects, amplification components/characteristics, assistive devices, speech acoustics, speech perception, speechreading, parent-infant, pre-school school years of children, communication impairments/ handicaps/ remediation of adults, effects of aging/remediation on the elderly, and case studies. Prereq: 305, 473 or equivalents or consent of instructor.

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

BIOCHEMISTRY AND CELLULAR AND MOLECULAR BIOLOGY (188)

230 Human Physiology (5) Fundamentals of human physiology, primarily from the perspective of cellular and organ-system interactions. 4 hours and one lab. Prereq: One year of college chemistry. Credit may not be applied toward BCMB major.

280 Modern Medicine and You (3) New biomedical advances in internal medicine, surgery, obstetrics and gynecology, infectious diseases, cancer treatment, genetic disorders, psychiatry, health promotion, and disease prevention. Team-taught by academic clinicians in their area of specialty. Class meets 2 hours a week. Each session will include: basic biological principles/processes; scientific advances and current status about new diagnostic and treatment procedures of the particular disease state. Prereq: Biology series for majors or non-majors. Satisfactory/No Credit grading only.

306 Genetics and Society (3) Introduction to genetics, anthropology and evolution with emphasis on their implications for human society. (Same as Anthropology 304.)

310 Physiological Chemistry (4) Biochemical principles underlying physiological events in animals. Metabolism of carbohydrates, lipids, proteins and nucleic acids. Role of vitamins and minerals as coenzyme and prosthetic groups. Action of drugs and hormones. Prereq: Chemistry 100-110 or 120-130; Biology 130-40 or BCMB 230. Not available for credit if credit has been previously received for BCMB 401 or 410 or 420. Credit cannot be counted toward BCMB concentration. (Same as Nutrition 310.)

320 Physiology of Reproduction and Lactation (3) (See Animal Science 320.)

321 Introductory Plant Physiology (4) Cell and organismal physiology of plants; metabolic processes, water relations, mineral nutrition, morphogenesis. Effects of age, light, natural rhythms, temperature and other environmental factors on plant growth. Prereq: One year general chemistry and one year biological science.

330 Mechanisms of Development (3) A survey course on cellular and molecular basis of embryonic development; differentiation via transcription, RNA processing, and translation; sex determination in humans. Intended for Biology majors in BCMB concentration, but also open to other Biology majors. Prereq: Biology 140, 240 or consent of instructor.

331 Mechanisms of Development Laboratory (2) 2 labs. Coreq: 330.

401–402 Biochemistry-Molecular Biology I, II (4,4) A two-course sequence providing in-depth coverage of biochemistry and molecular biology, intended for Biology majors concentrating in BCMB, but also open to Biology majors in other concentrations. First semester covers amino acid structure and chemistry, protein structure and chemistry, protein folding, enzyme behavior and function, reaction mechanisms, catabolism and energy transfer, synthetic metabolism including photosynthesis, and protein transport. Second semester covers structure of DNA and RNA, experimental methods of analyzing nucleic acids, mechanisms of RNA and protein synthesis, mechanisms of DNA replication, repair and recombination, genome structure and function, regulation of gene expression, genome structure and genomics, and mechanisms of biological regulation. Prerequisites: Biology 240, Chemistry 350-360-369.


404 Plant Molecular Biology (4) Introduction to current research approaches and methodologies in plant developmental biology and molecular genetics. Laboratory and lecture. Prereq: Biology 140 and 240 or equivalent.

405–406 Minicourse in Biochemistry and Cellular and Molecular Biology (2, 2) Select advanced topics in biochemistry, cell biology, genetics, neurosciences, or developmental biology concentrated in time and subject matter. Consult departmental listing for topics offered. Prereq: As announced. Maximum 4 hours may apply toward BCMB major. May be repeated.

409 Perspectives in Biochemistry and Cellular and Molecular Biology (3) Current issues in biochemistry, cell biology and molecular biology. Emphasis on current developments and their applications, societal and economic impacts and moral and ethical implications. An oral presentation and a referenced library-research essay are required. A capstone course. Writing-emphasis course.

411 Advanced Cellular Biology (3) Cellular structure and function at the molecular and supramolecular level. Topics include protein structure and function, membrane structure and function, signal transduction and cell regulation, mitosis and the cell cycle, cytoskeleton and cell motility, cell-cell interactions and tissues. Prereq: 401 or 410.

415 Foundations in Neurobiology (3) Basic nerve cell physiology, nervous system organization, sensory and motor systems, neural basis of behavior, and nervous system development and plasticity. Prereq/Coreq: Physics 221-222; Chemistry 120, 130; Biology 140.

416 Neurobiology Laboratory (2) Experiments designed to illustrate concepts of modern neurobiology using electrophysiological, historical, and behavioral neurobiological techniques. Prereq/Coreq: 415.

419 Cellular and Comparative Biochemistry Laboratory (2) Experiments with enzymes, nucleic acids, and membranes and organelles. Chromatography, kinetics, hybridization, sequencing, and immunochemical methods. Prereq/Coreq: 401 or 410.
**BIOLOGY (190)**

101-102 Humankind in the Biotic World (4,4) Introduction to the principles of biology from the perspective of the impacts of plants, animals, and microbes on human life, and the impact of humans on the biosphere, intended for students not majoring in the biological or pre-health sciences. 101 surveys life from the cell to topics in human health. Topics include: macromolecules and cells, energy flow in biological systems, genetics and information flow from generation to generation, reproduction, biotechnology and genetic engineering, sex and sexuality, human physiology, cancer, drugs—use and misuse. 102 focuses on the diversity of the Earth’s biota and the interdependence among components. Topics include: surveys of biodiversity from bacteria to higher plants and animals, genetics and evolutionary processes, population biology, ecology, ecosystems, environmental issues including world population, and global climate change. Each course is 3 hours lecture and 1 hour discussion/laboratory. Laboratories involve a mix of skills-oriented exercises and assignments focused on topics. Although not required, it is strongly recommended that 101-102 be taken in sequence. **(NS)**

111-112 General Botany (4,4) 111 – Introduction to taxonomy through tree identification: basic organization and function of cells, respiration, photosynthesis, genetics (including meiosis, mitosis, Mendelian inheritance); survey of plant kingdom (bacteria, algae, fungi, mosses, ferns, conifers, and flowering plants). 112 – Plant growth, anatomy, growth regulation; uptake and transport; origin of life and mechanisms of evolution; ecology, importance to humans and environmental concerns. Students receiving credit for 111-112 may not receive credit for Biology 101-102. **(NS)**

130 Biodiversity (4) Unifying concepts and principles of biology, illustrated with diversity of life, intended for science majors. Properties of life, molecular basis, origin of life, cells, genetics, introduction to kingdoms, origins of multicellularity, multicellular plants and animals, ideas about evolution, man’s place in nature. Emphasis on common themes in living systems (e.g., metabolism, protein and nucleotide sequence similarities, morphology), phylogeny construction, fossils, and the major plant and animal groups. Writing and analysis of lab activities required. 3 hours lecture and 1 hour lab each week. Credit not available for students with credit for both 101 and 102. **(NS)**

140 Organization and Function of the Cell (4) Topics include: basic organic chemistry and biomolecules, cell structure—membranes, cell walls, and internal organelles; energetics—respiration and photosynthesis; cell division mitosis; and molecular biology. Labs will stress basic laboratory skills and procedures such as measuring pipetting and mixing solutions, as well as introduce modern methods for analysis of cell components such as electrophoresis and centrifugation. Prereq: 111-112 or 130; Chemistry 120. Coreq: Chemistry 130. **(NS)**

157 Honors Experimental Biology (4) Integrated lecture/laboratory practicum designed as an inquiry-based course with hands-on experimentation to explore the nature of scientific research and unifying concepts and principles of Biology. Properties of life and common themes in living systems using plant and animal subjects for experimentation. Prereq: Permission of Instructor. Credit not available for students with credit for Biology 101 and 102. **(NS) (OC)**

202-203 Inside the Biological Sciences (1,1) Presentations by faculty and other biology professionals emphasizing applied biological research. Familiarizes students with diverse nature and current applications of biology. Open to freshmen and sophomores. Satisfactory/No Credit grading only. May be repeated.

240 General Genetics (4) Classical and modern principles of heredity. Topics include meiosis and transmission genetics; molecular genetics and gene expression; population and evolutionary genetics. Laboratories will alternate with problem-solving sessions and will include both computer based simulations and hands-on experience with model genetic systems. Emphasis on development of analytical skills. Prereq: 111-112 or 130-140 or Chemistry 120-130.

250 General Ecology (4) Relations between organisms and their environment, including human environmental problems. Topics include populations, communities, and ecosystems. 3 hours lecture, 1 hour discussion, field problems or computer simulations. A working knowledge of college algebra is required. Prereq: 111-112 or 130-140 or Chemistry 120-130.

307-308 Honors: Colloquy in Biological Research (1,1) Presentations by professional biologists emphasizing rewards of careers in different areas of biology. Nationally recognized speakers invited each term. Open to sophomores, juniors and seniors; required of Threshold Biology Scholars. Prereq: 8 hours of 200 or above, admission to an honors program or permission of the instructor. May be repeated. Satisfactory/No Credit grading only.

397 Honors: Seminar on Research Skills (3) Technical and cognitive skills necessary for participation in biological research. Lecture/presentations and small team demonstrations and discussion. Required of (but not limited to) Threshold Biology Scholars. Prereq: 8 hours of 200 or above. Permission of instructor required.

398 Honors: Practicum in Biological Research (3-5) Rotation through 3-5 modules of required and elective experience in participating laboratories. Required of (but not limited to) Threshold Biology Scholars. Prereq: 8 hours of 200 or above and 397. Permission of instructor required.

401 Senior Thesis (3-12) Required research experience of Threshold Biology Scholars. Students design research projects, complete research data acquisition, organize thesis documents, and prepare presentations. May be repeated. Maximum 12 hours. Prereq: 394-395.
BIOMEDICAL ENGINEERING (192)

271 Biomedical Engineering Principles (3) Application of engineering principles and methods to problem solving in the life sciences and medicine. Prereq: Engineering Fundamentals 152.

300 Engineering Physiology (3) The study of human physiology, with an emphasis on making engineering decisions, and the development of analytical and computational models. Prereq: Consent of instructor.

310 Biomechanics (3) The application of statics, dynamics, mechanics of materials, and fluid mechanics to biomedical engineering problems. The special characteristics of living tissue and biological fluids and their incorporation into computational problems will be introduced. Prereq: Mechanical Engineering 321, Aerospace Engineering 341.

320 FDA Regulation of Biomedical Devices (2) Federal medical device law and regulation requirements; pre-market approval of new medical devices. Consent of instructor.

401 Thesis (3) Research and design problems in biomedical engineering with prior approval of a professor. May be repeated. Maximum 6 hours. Prereq: Senior standing or consent of instructor.


410 Professional Topics (2) Topics relating to professional responsibility, communications, and organization. Formal oral presentation by each student on an engineering topic chosen by the student and approved by the instructor. Prereq: English 102, senior standing. (OC)

430 Biomedical Engineering Laboratory (4) This course provides experience with the unique problems associated with making measurements and interpreting data in living systems; experiments may include mechanical testing of biological materials, imaging and physiological measurements. (EKG, EMG, ECG, etc.) Prereq: 310 and 346 or consent of instructor.


469 Biomedical Engineering Design II (3) Design of complete biomedical device: documentation includes complete specification, design calculations, preparation of working drawings, and cost analysis. Written and oral reports. Prereq: 455.


475 Design of Artificial Internal Organs (3) Design, development and evaluation of artificial internal organs; analysis of transport processes in therapeutic devices for design optimization; current research and development needs; ethical considerations. Prereq: Aerospace Engineering 341, Mathematics 231.

494-495 Special Project in Biomedical Engineering (1-3, 1-3) Problems related to recent developments and practice. May be repeated once for credit. Prereq: Junior or senior standing, consent of instructor.

BIOSYSTEMS ENGINEERING (196)

104 Design Apprenticeship (1) Exposure to design in Biosystems Engineering, through apprenticeship with senior design teams in Biosystems Engineering 402. Apprentices will assist with design, construction, testing, analysis, and presentation of project. Will also include background in engineering design, engineering project management, and engineering design tools. 2-hour lab. Prereq: Engineering Fundamentals 151.

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

221 Mass and Energy in Biosystems (3) Introduction to thermodynamic concepts for biological systems (energy, mass and energy balances, processes and cycles); psychrometrics and psychrometric processes; biological systems and the biosphere (bioenergetics, hydrologic cycle, global energy cycle). 2 hours and 1 lab. Prereq: Chemistry 120, Engineering Fundamentals 152.

231 Biochemistry for Engineers (3) Fundamentals of biochemistry presented from an engineering point of view and applied to solve engineering-related problems. Topics to be covered include fundamental organic chemistry of amino acids, carbohydrates, lipids and other important biochemicals; the role and control of pH in biological solutions; fundamental biochemistry of proteins and enzymes; introduction to bioenergetics and metabolic pathways, and the replication, transcription, and translation of DNA. Prereq: Chemistry 120, Mathematics 141.

321 Biothermodynamics, Heat and Mass Transfer (3) Application of thermodynamics to biological systems; heat transfer, with emphasis upon conduction and convection applications; introduction to diffusion mass transfer. 2 hours and 1 lab. Prereq: 221, Nuclear Engineering 203. Coreq: Mathematics 241.

401 Biosystems Engineering Design I (2) First course of a capstone design sequence. Review of fundamental engineering principles and design proposal generation. Design proposals will include preliminary engineering analyses, extensive documentation, and multiple individual and group presentations. Prereq: Senior standing and at least two of 411, 416, 431, 451, or consent of instructor. (OC)

402 Biosystems Engineering Design II (6) Culmination of capstone design sequence. Intensive design experience on project chosen and approved in Biosystems Engineering 401. Analysis, construction, testing, evaluation and reporting required. Technical lectures on statistics, engineering software, and technical issues relevant to the chosen design project. Weekly oral and written reports. Design Submission of design to external engineering design competition or display required. 2 hour lecture, 2-hour recitation (weekly project reports) and 4-hour lab. Prereq: 401.

404 Engineering Project Management (3) Fundamentals and theory of engineering design and engineering project management, use of computerized project management tools, ethical responsibilities and contemporary issues in biosystems engineering, incorporation of economic considerations in engineering design, individual professional and portfolio development. Coreq: 401 and 444.

411 Mechanical Systems Engineering (3) Fundamentals of power delivery systems and simple mechanisms; selection and design of mechanical, hydraulic, and tractive power transmission systems. Emphasis on off-road vehicles and bioprocessing systems. 2 hours and 1 lab. Prereq: Mechanical Engineering 231, 321. Coreq: 321.

416 Hydrologic and Water Quality Engineering (3) An introduction to hydrology including: hydrologic variability, precipitation, evapotranspiration, infiltration, runoff, erosion, water quality and non-point pollution, energy dissipation, streamflow measurement, hydographs, routing, open channel flow, and urban hydrology. Prereq: Civil Engineering 390 or Aerospace Engineering 341. (Same as Civil Engineering 416.)

431 Bioprocess Engineering (3) Development of interdisciplinary bioprocess engineering; basics of biology in an engineering perspective; enzymatic reaction kinetics; metabolism and bioenergetics; cell growth kinetics and product formation; engineering principles applied to bioprocess engineering including mass balance, energy balance, and reaction kinetics; reactor design in bioreactors; selection and design of bioprocess engineering and process development. 2 hours and 1 lab. Prereq: 321.

444 Practicum (3) Applications of engineering theory and design in selecting, sizing, and fabricating engineering materials, and in developing processes and systems typically used in biosystems engineering. Must be taken in same semester as 401. 1 hour and 2 labs.

451 Electronic Systems (4) Basic electronics with biological applications. Analog and digital electronics; sensing and controlling physical and environmental parameters; sensor selection and interfacing; signal conditioning; process control. Includes laboratory experiments and design content: 1 hour. 3 hours and 1 lab. Prereq: Electrical Engineering 301.

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

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

BIOSYSTEMS ENGINEERING TECHNOLOGY (194)

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

212 Surveying (3) Measurement of distances, angles, and areas; differential and profile leveling; topographic surveying and mapping; area computation. 1 hour and one 3-hour lab. Prereq: Mathematics 119 or consent of instructor.
326 GIS/GPS Applications in Agriculture and Environmental Science (3) Introduction to the application of Geographic Information Systems (GIS) and Global Positioning Systems (GPS) in agriculture and in environmental science. Topics covered will include GIS software and concepts, GPS receivers, data acquisition, and spatial analysis of data to solve problems. Case studies in agricultural demographics, precision agriculture, pasture management, water quality, watershed management, and waste pollution will be used to provide hands-on experience with these emerging technologies. Prereq: Agriculture and Natural Resources 290 or equivalent.

414 CAD Applications to Biosystems Engineering Technology (3) Computer Aided Drafting (CAD) applications in agriculture and environmental science. Essentials of CAD software to create drawings of components, systems, flow charts, and process diagrams. Applications in mechanical, structural, and biosystems. 2D applications with limited exposure to 3D applications. Computer intensive course. Hands-on experience. Prereq: Computer proficiency. Students cannot receive credit for both 422 and 514. Two 2-hour labs.

422 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. 2 hours and 1 lab. Prereq: Physics 101 or 221.

432 Agricultural Machinery and Tractors (3) Functions, selection, matching, and management of agricultural machinery systems. Tractor power ratings, engine and transmission systems, hydraulic systems, hitching, and ballasting. Field and material capacity, field efficiency, cost analysis, and machinery replacement strategies. Functional analyses of tillage operations, planters and drills, no-tillage systems, hay harvest systems, forage and small grain harvesting, and cotton harvesting. Crop drying processes, off-road machinery safety considerations, and operator ergonomics. 2 hours and 1 lab. Prereq: Mathematics 123, 125 or consent of instructor.

434 Production Monitoring and Automation (3) Precision technologies for monitoring and control of agricultural systems. Applications include: yield monitoring; variable rate control and sensing systems for planters, sprayers, soil applied nutrients, water management, crop health, and pest pressure; electronic information transfer; and GPS-based vehicle guidance. 2 hours and 1 lab. Prereq: Mathematics 125 or 123 or equivalent.

442 Agricultural Waste Management and Pollution Control (3) Waste renovation fundamentals; characteristics of animal manure, techniques for collecting, transporting, storing, and utilizing livestock waste. 2 hours and 1 lab. Prereq: Mathematics 125 or 123 or equivalent.

452 Small Internal Combustion Engines (3) Theory, concepts and mechanics of small internal combustion engines; theoretical cycles, selection, operation, adjustment, troubleshooting and repair of single-cylinder engines. 2 hours and 1 lab. Prereq: Mathematics 123 or 125 or consent of instructor.

462 Agricultural Chemical Application Technology (3) Equipment for applying dry solid, liquid and gaseous agricultural chemicals; system components; operational characteristics; calibration; selection and management; safety considerations; materials handling and disposal methods. 2 hours and 1 lab. Prereq: Mathematics 123 or 125 or consent of instructor.

474 Environmental Instrumentation and Monitoring (3) Equipment and techniques commonly used to measure all aspects of hydrologic cycle: precipitation, runoff, streamflow, subsurface water movement. Sampling of all flows for contaminants. Design of monitoring systems. Analysis of data. 2 hours and 1 lab. Prereq: Environmental and Soil Sciences 324, Statistics 201, Mathematics 152, or consent of instructor. Students cannot receive credit for both 474 and 574.

BUSINESS ADMINISTRATION (205)

100 Approaches to the College of Business Administration (1) Integration into the College of Business Administration with emphasis on academic advising, major exploration, career planning, University resources and services, and reinforcement of academic survival skills such as time management and study skills. Satisfactory/No Credit grading only.

101 Basic Business Applications (1) An online course with GTA consultation in which students learn operating systems basics, Lotus Notes GroupWare, and Microsoft Word, Excel, and PowerPoint. Exit testing is in the form of online performance tests in the applications on scheduled examination periods. Not available for credit if Management 203 or equivalent has been completed. Satisfactory/No Credit grading only.


320 Business Career Planning and Placement (1) Exploration of career opportunities in business. Process of making the career decision, preparing for and conducting a job campaign. Using the Placement Office. Satisfactory/No Credit grading only. Prereq: Satisfactory progression to upper-division level in business or business minor.

331 CBM I: Supply Chain Management (2) Coordinating the end-to-end relationships between supply chain members, from inputs to delivery of product/services. Understanding impact of demand and supply information flows across the supply chain. Emphasis on integrating activities through improved processes and relationships to achieve and maintain competitive advantage. Prereq: Progression as a business major in the College of Business Administration and junior standing. Coreq: 332.

332 CBM I: Demand Management (2) Analysis of current and future markets opportunities. Translation of identified opportunities into strategies to select, acquire, and retain customers that are consistent with overall organizational objectives. Includes design, execution, and evaluation of strategies from the perspective of an organization within a channel of distribution context. Prereq: Progression as a business major in the College of Business Administration and junior standing. Coreq: 331.

341 CBM II: Lean Operations (2) Design of the product delivery system in manufacturing and service operations. The dynamics of the supply chain. Managing flows in manufacturing and service processes. Specific techniques for designing process design, such as pull replenishment, cellular layout, standard work, and mixed model sequencing. Prereq: Progression as a business major in the College of Business Administration and junior standing. Coreq: 342.

342 CBM II: Information Management (2) Emphasis on the concepts, structure, and components (input, processes, output, feedback and control) of information systems, and database design and management. Includes the role, function and integration of information systems and technology into business activities. Prereq: Progression as a business major in the College of Business Administration and junior standing. Coreq: 341.


361 The Firm in a Global Context (3) Domestic and international factors that impact the decision-making process of the firm: domestic and international macroeconomics, regulation, trade policy, technological change, institutional and cultural systems. Emphasis on relationship between theoretical models and actual problems encountered in the conduct of business. Prereq: 201.


400 Special Topics (1-9) Topics of current interest in international business. Topics announced prior to offering. Prereq: 361. May be repeated for additional credit provided topic is different. Maximum of 9 hours.

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, 332, Finance 301, and consent of instructor.

491 Foreign Study (1-15) Prereq: Consent of instructor. May be repeated. Maximum 15 hours.

492 Off-Campus Study (1-15) Prereq: Consent of instructor. May be repeated. Maximum 15 hours. Satisfactory/No Credit grading only.

493 Independent Study (1-15) Prereq: Consent of instructor. May be repeated. Maximum 15 hours.
BUSINESS LAW (216)

310 Legal Environment of Business (3) Survey of legal and ethical topics affecting business. Coverage includes legal and business ethics; dispute resolution mechanisms; and substantive and procedural law of regulation, torts, contracts, property, intellectual property, business associations, and employer/employee relations. Prereq: Junior standing. (Same as Legal Studies 301.)

CHEMICAL ENGINEERING (226)


230 Introduction to Chemical Engineering Thermodynamics (3) Introduction to the laws of thermodynamics, state functions, and their conceptual basis. Ideal systems, the gas law, Raoult’s law, and deviations from ideal behavior (fugacity and activity). Introduction to chemical and phase equilibria. Prereq: Engineering Fundamentals 152, 105, Chemistry 130. Coreq: 200, 215, Mathematics 142.


250 Application of Chemical Engineering Thermodynamics (3) Basic concepts related to chemical engineering applications of thermodynamics: emphasis on flow processes, real gases and liquids, estimation of physical properties, phase equilibria of industrial mixtures, compressors, power cycles, and chemical reaction equilibria. Prereq: 200, 230.

301 Application of Statistical and Numerical Techniques in Engineering (3) Statistical methods for probabilities, expectations, sampling, and estimation; Numerical methods for regression, integration, solution of systems of linear/nonlinear algebraic and differential equations. Prereq: 215, Mathematics 142, or permission of instructor. (Same as Materials Science and Engineering 301.)

310 Chemical Engineering Laboratory (3) Thermodynamics, fluid flow and heat transfer in chemical engineering. Prereq: 240. Coreq: 230, 301.

340 Mass Transfer and Separation Processes (3) Stagewise operation; application of analytical, graphical and computer methods to design of stagewise separatory operations. Differential operations-application of analytical and computer methods to the design of diffusive processes. Applications include gas absorption, stripping, binary distillation, and extraction. Prereq: 200. Coreq: 230.

360 Process Dynamics and Control (3) Introduction to process modeling and industrial control system design. Mathematical tools for characterizing dynamic behavior of processes; theory and practice of operating and controlling such systems.

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

394 Chemical Engineering Co-op (1) Co-op experiences in Chemical Engineering. Technical report writing and presentations. Prereq: Permission of instructor. May be repeated.


407 Honors Seminar (1) Presentations and discussions on topics of importance to chemical engineers. Prereq: Consent of instructor. May be repeated once. Satisfactory/No Credit grading only.

408 Honors Seminar (1) Presentations and discussions on topics of importance to chemical engineers. Prereq: Consent of instructor. May be repeated once. Satisfactory/No Credit grading only.

410 Chemical Engineering Laboratory II (3) Laboratory investigations of mass transfer and chemical reaction phenomena in chemical engineering. Prereq: 310, 450, or permission of instructor.

411 Undergraduate Research Experience (3) Research problems in current topics in chemical engineering. Students work in teams to design, perform, and document current research projects. Prereq: 310.


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

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

450 Chemical Reactor Fundamentals (3) Homogeneous and heterogeneous reaction kinetics; idealized homogeneous reactor models, both for closed and flow systems; analysis of batch reactor data; multiple reactions; non-isothermal reactions. Prereq: 240, 340, 301.

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

477 Honors: Applied Process Automation Laboratory (3) Interfacing flexible batch continuous processes to automation systems. Top down analysis with bottom up implementation, hierarchical structures and object-oriented concepts are used to design automation solutions including human-machine-interfaces. Workstations with modern industrial equipment provide an interactive graphics and visualization environment. Prereq: 360 and consent of instructor.

478 Honors: Applied Process Automation Design Projects (3) Industrial programmable logic controllers (PLCs) and industrial automation and human-machine interface (HMI) design software are used on workstations to develop automation solutions by small teams of students. Advanced control strategies, networking and internet issues. Prereq: 477, consent of instructor.


481 Green Engineering (3) Principles and practical aspects of the design, commercialization, and use of processes and products for determining their feasibility and economic potential while minimizing the generation of pollution at the source and risk to human health and environment. Prereq: Consent of instructor.

483 Introduction to Reliability Engineering (3) (See Nuclear Engineering 483.)

484 Introduction to Maintainability Engineering (3) (See Nuclear Engineering 484.)

486 Chemical Process Safety (3) Introduction to chemical process safety, augmented with case studies. Topics include (1) Safety Strategies and Accident Prevention, (2) Toxic Substances in the Workplace and Industrial Hygiene, (3) Accidental Release of Hazardous Materials and Dispersion Modeling, (4) Fires and Explosions; Design for Prevention, (5) Design of Emergency Pressure Relief Systems, and (6) Identifying Potential Hazards. Prereq: 200, 230, and 240 or consent of instructor.

488 Honors: Design Internship in Green Engineering (3) Students work in small teams on applying green engineering principles to authentic industrial design problems. Directed by faculty and professionals from host industry. Prereq: 480.

490 Process Design and Economic Analysis (3) Students work in small teams on applying sound engineering principals to authentic industrial design problems. Directed by faculty and professionals from host industry. Prereq. 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 6 hours.

498 Honors Thesis (3) Research in problems related to recent developments in chemical engineering. Prereq: Consent of instructor.
CHEMISTRY (235)

100 Principles of Chemistry (4) Bonding and molecular structure, gas laws, liquid and solid state, solutions, colloids, acids and bases, oxidation and reduction, kinetics and equilibria. 3 hours and 1 lab. (NS)

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 138. (NS)

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, thermochemistry, descriptive chemistry of nonmetallic and metallic elements, electrochemistry, introduction to organic and biochemistry. 3 hours and 1 lab. Prereq for 130: 120 or 128. (NS)

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

150 Chemistry and Society (3) Food and agricultural chemistry; chemistry of life; chemistry in medicine; air and water pollution; energy and fuels. 3 hours lecture. Not a prerequisite for any other chemistry course.

160 Chemistry and the Home (3) Chemistry and the consumer; household products; chemistry in the kitchen and around the home. 3 hours lecture. Not a prerequisite for any other chemistry course.

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

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 138.

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

301 Industry/Laboratory Internship (3) Supervised by industry/laboratory technical staff at an approved facility. Consists of a full-time “hands-on” individual assignment for entire semester as a member of a theoretical or experimental team. Credits may not be applied toward a major or minor in chemistry. Prereq: 130 or 138 and consent of department head. Satisfactory/No Credit grading only.

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 138.

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

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


360 Organic Chemistry Laboratory (2) Experiments on topics discussed in 350-60. 1 hour lecture and 4-hour lab. Coreq: 360.

400 Research in Chemistry (3) 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 followed by either 400 or 408 (but not both). May be repeated. Maximum 6 hours.

401 Advanced Industry/Laboratory Internship (3) Supervised by industry/laboratory technical staff at an approved facility and by a chemistry faculty member serving as liaison between the laboratory and the university. Consists of a full-time “hands-on” individual assignment for entire semester as a member of a theoretical or experimental team. Final comprehensive written report required. Prereq: 230 or higher numbered course in chemistry and consent of department head.

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, Kekule) 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 scientific controversy. Written reports will be required. Writing-emphasis course. Coreq: Senior standing in chemistry.

406 Senior 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. (OC)

408 Honors: Research in Chemistry (3) Advanced students work with faculty on research projects requiring knowledge and skills acquired in chemistry curriculum. An Honors Thesis is written and is defended orally before a faculty committee. Prereq: 400.

420 Selected Topics in Chemistry (1-3) Topics of current significance in Chemistry. Prereq: Consent of instructor. Only 3 credits may be applied to a major or minor in Chemistry. May be repeated. Maximum 6 hours.

430 Advanced Inorganic Chemistry (3) Atomic and molecular structure, bonding theories, descriptive chemistry of the elements, kinetics and mechanism of inorganic reactions, applications of modern techniques for characterization, coordination and organometallic chemistry. Prereq: 230.

439 Advanced Inorganic Chemistry Laboratory (1) Modern experimental techniques in inorganic chemistry, including synthesis, analysis, and handling of air-sensitive materials. Coreq: 430. Open to BS in Chemistry students or with consent of instructor.


471-481 Biophysical Chemistry (3,3) (See Biochemistry and Cellular and Molecular Biology 471-481.)

473-483 Physical Chemistry (3,3) Students may not receive credit for both 471 and 473 and for both 481 and 483. 473—Properties of gases; first, second and third laws of thermodynamics; chemical equilibria; simple phase equilibria; properties of solutions.483—Introduction to statistical thermodynamics; kinetics of chemical reactions; introduction to quantum mechanics and applications to electronic structure of atoms and molecules; molecular spectroscopy. Prereq: 130 or 138, Physics 136 or 138 or 222 or 231, and Mathematics 241 or 247.

479-489 Physical Chemistry Laboratory (2,2) Experiments on topics discussed in 471-481 or 473-483. 1 lab. Prereq/Coreq: Corresponding courses 471 or 473 for 479 and 481 or 483 for 489.

490 Introductory Polymer Chemistry (3) Fundamental principles stressing the role of chemistry in the interdisciplinary field of polymer science. Relation of molecular structure to bulk properties of polymers. Prereq: 360. Coreq: 471 or 473.

CHILD AND FAMILY STUDIES (245)

101 Introduction to Child and Family Studies (2) Orientation to the Child and Family Studies Department, including requirements for the major, introduction to the faculty and their work, exposure to professional organizations, and learning about potential career possibilities. Includes observations.

105 Introduction to ECE: Seminar I (1) The initial seminar designed to introduce students to the field of early childhood education (ECE). Includes children’s development and behavior; integration of developmental characteristics into curriculum development; introductory experience with classroom observations; readings, observations, colloquy, and exposure to a broad spectrum of professionals in ECE.

106 Introduction to ECE: Seminar II (2) The second seminar designed to introduce students to the field of early childhood education (ECE). Includes history of ECE programs, practices, and policies; application of developmental theory to classroom methods; professional issues including ethics, career development, and building support networks; current ECE issues and research; impact of family, schools, and community on children’s learning; readings, observations, colloquy, and exposure to a broad spectrum of professionals in ECE. Prereq: 105.
210 Human Development (3) Conception through adulthood in various social/ecological contexts; interrelationships among various aspects of development: physical, cognitive, emotional, social, normative, nonnormative environments, family (SS)


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

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

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

320 Family Interaction (3) Dynamics of family interactions and influences of diversity, including parent-child relations, development of parenting skills, and intrafamily verbal and nonverbal communication processes, patterns, and problems. Prereq: 101, 210, 220.

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.

350 Early Childhood Education I: Environments for Children (4) Classroom management, behavior guidance, organization of day care environments, communication, interpersonal skills, interactions with children, child stress reduction and management in classroom. Laboratory participation included. Prereq: 106 and 211, or consent of instructor.

351 Early Childhood Education II: Curricula and Program Development for Young Children (4) Planning effective early learning programs for young children relating knowledge of children's growth and development to appropriate experiences in art, music, number, logic, media, physical knowledge; planning, implementing, evaluating curriculum activities. Laboratory participation included. Prereq: 350.

353 Reading, Language, and Literacy (3) Theory and methods for creating learning environments for the development of language, emergent literacy, and reading and writing skills from infancy through eight years. Prereq: 350 and admission to Early Childhood Education licensure program or consent of instructor.

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

385 Diversity Among Children and Families (3) Social class, race, ethnicity, culture, and religion are studied singly and in combination with gender and disabilities as shapers of the life chances and opportunities of individuals, children and families. Prereq: 220 or consent of instructor.

395 Introduction to Research Methods and Statistics (3) Basic research methods and statistics for child/human development, family studies, early childhood education, and related fields; sampling, measurement, design, data analysis; quantitative and qualitative methods; natural and contrived settings; principles for understanding research that impact children and families. Prereq: 101, 210, 220.

405 Development of Professional Skills (3) Development of interpersonal and other professional skills along with ethical guidelines needed for working with children, families, and other professionals from diverse backgrounds. Prereq: must be taken after other Child and Family Studies core courses and before the Child and Family Studies internship course (470, 480, or 490).


440 Family Life and Parent Education (3) Emphasis on skills required to develop family life education programs implemented in community settings. Overview of current approaches to the process of parenting and parent education programs. For Child and Family Studies majors only.

460 Directed Study in Child and Family Studies (1-3) Individual learning experience arranged for students under supervision of faculty. Prereq: 9 hours in Child and Family Studies and consent of instructor. May be repeated with different topics. Maximum 6 hours.

470 Practicum: Pre-K Teaching (6-12) Responsibility for planning and guiding groups of infants, toddler, or preschoolers under supervision of classroom teacher and coordinator. Includes weekly seminar. Fall and Spring 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 Fall or Spring break). Summer student teaching begins the day following Spring commencement and ends on the day before Summer graduation. Priority for summer student teaching is given to students who have completed all program requirements, except student teaching, prior to the Summer session. Prereq: 350, 351, completion of all progression requirements for the practicum. Satisfactory/No Credit grading only.

471 Practicum: Child Development (3-12) Supervised experiences working with children and families in early childhood settings. Prereq: Admission to the Child Development major or the Early Childhood Education licensure program and consent of the instructor. May be repeated. Maximum 12 hours. Satisfactory/No Credit grading only.

480 Practicum: Community Placement (9-12) Supervised experiences with an area agency serving the needs of children and families. Summer practicum placement begins the Monday after spring commencement and concludes the last day of the summer session. Prereq: Completion of all progression requirements for the practicum. Satisfactory/No Credit grading only.

481 Research in Child and Family Studies (3-6) Prereq: 9 hours in Child and Family Studies, completion of 395, cumulative GPA of 3.0 or above, junior standing.

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, junior or senior standing, or consent of instructor. May be repeated. Maximum 9 hours.

490 Practicum: Research (3-12) Supervised research experience with emphasis on the identification and examination of key aspects of research methods: constructs, research questions and hypotheses, research design, measurement, and analysis. Prereq: Completion of all progression requirements for the practicum. May be repeated. Maximum 12 hours.

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, junior standing, or consent of instructor. May be repeated. Maximum 6 hours.

**CHINESE (249)**

131-132 Elementary Chinese I, II (5,5) (See Asian Languages 131-132.)

231-232 Intermediate Chinese I, II (5,5) (See Asian Languages 231-232.) (CC)

311-312 Chinese Literature in English Translation (3,3) (See Asian Languages 311-312.)

331-332 Advanced Chinese I, II (4,4) (See Asian Languages 331-332.)

431 Readings in Chinese Literature (3) (See Asian Languages 431.)

**CINEMA STUDIES (251)**

235 Introduction to Cinematography as Art (3) (See Art Media Arts 235.)

236 Introduction to Video Art (3) (See Art Media Arts 236.)

281 Introduction to Film Studies (3) (See English 281.)

312 Popular Culture and American Politics (3) (See American Studies 312; Political Science 312.)

315 Asian Film (3) (See Asian Languages 315.)

316 Luso-Brazilian Cinema and Literature (3) (See Portuguese 316.)
COURSES OF INSTRUCTION

323 German Film (3) See German 323.
325 Russian Film (3) See Russian 325.
334 Film and American Culture (3) See English 334.
400 Special Topics (3) May be repeated. Maximum 6 hours.
420 French Cinema (3) See French 420.
421 Topics in Italian Literature and Cinema (3) See Italian 421.
433 History of Film and Modern Art (3) See Art Media Arts 433.
434 Hispanic Culture Through Film (3) See Spanish 434.
435 Cinematography as Art (3) See Art Media Arts 435.
436 Video Art (3) See Art Media Arts 436.
465 Latin American Film and Culture (3) See Spanish 465.
469 Sexuality and Cinema (3) See Women's Studies 469.
489 Special Topics in Film (3) See English 489.
491 Foreign Study (1-15)
492 Off-Campus Study (1-15)
493 Independent Study (1-15)

CIVIL ENGINEERING (254)

205 Professional Development I (2) Introduction to civil engineering specialties, history, and achievements. Professional responsibility, communication, and organizations. Prereq: Sophomore standing. (OC) (IW)

210 Geometrics (4) Introduction to the measurement, representation, analysis, management, retrieval and display of spatial data concerning both the earth's physical features and the built environment. Covers land and construction surveying, controls, error analysis, use of CADD and an introduction to global positioning systems (GPS) and geographical information systems (GIS) used in civil engineering. 3 hours, 1 lab. Prereq: Sophomore standing.

261 Structural Analysis I (3) Reactions; shear and moment diagrams; forces in trusses; uniaxial stress and strain; area moments of inertia; torsion. Prereq: Engineering Fundamentals 202.

305 Professional Development II (1) Legal and ethical responsibilities, continuous improvement, career planning, and leadership. Prereq: 205.

309 Applied Professional Responsibility (1) Introduction to the American Society of Civil Engineers (ASCE), the primary civil engineering professional society, and interaction with the local branch and state section of the ASCE. This class provides a framework for the participation in professional practice activities, service to the community, and educational outreach. These activities may be coordinated through the Student Chapter of ASCE, or through the department, the college or other approved groups. May include participation in the annual ASCE Regional Student Chapter Conference. May not be used as credit toward graduation. Prereq: Sophomore standing in engineering. May be repeated. Maximum 3 hours.


330 Introduction to Soil Behavior (4) Physical and mechanical properties of soils, theory of compaction, seepage, and effective stress. Consolidation theory, time rate and settlement, shear strength of sands and clays, and analysis of homogeneous slopes. 3 hours and 1 lab. Prereq: 205, Coreq: 361.

351 Transportation Engineering I (3) Transportation problems and perspectives, rural and urban; use of systematic planning processes; development of alternatives and the evaluation of civil engineering projects. Civil engineering decision making and applications of economic analysis. Design of transportation terminals, airports, parking, etc. Prereq: 210.

352 Transportation Engineering II (3) Introduction to design, construction, maintenance, and operation of various transportation modes, their guideways and terminals, primarily highways and railroads. Prereq: 351.

361 Structural Analysis II (3) Stress and strain in beams and columns; Mohr's circle; influence lines; deflections and beams and trusses; analysis of indeterminate structures; moment distribution. Prereq: 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, 390.

390 Hydraulics (4) Basic laws and properties of incompressible fluids. Units and dimensional analysis; drag forces; continuity, energy, and momentum equations; pipe flow; flow measurement; open channel flow and culverts; pump characteristics. 3 hours and 1 lab. Prereq: 205 or Biosystems Engineering 221; Engineering Fundamentals 152 or 158.

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

400 Senior Design Project (3) Open-ended, comprehensive project emphasizing team approach to design process. Includes problem formulation, site planning, project management, drawings and specifications, cost estimating, and various project components typical of those faced by practicing civil engineers. Must be taken during the term of graduation. Summer graduates must take during their last preceding term.

401 Review of Engineering Fundamentals (1) Review of selected topics covered on the Fundamentals of Engineering exam. Emphasis is on those topics relating to civil and environmental engineering. Must be taken during the last 15 hours of the curriculum. Letter grade only.

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

411 Hydrologic and Water Quality Engineering (3) See Biosystems Engineering 416.

431 Geological Engineering (3) Influence of geologic origin and history on the engineering characteristics of rocks and soils; applications of geology in the planning, design and construction of civil engineering projects. 2 hours lecture and 1 lab. Prereq: 330 or consent of instructor. (Same as Geology 431.)

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

440 Civil Engineering Systems Design and Management (3) Methods of data analysis and modeling of civil engineering systems to enhance resource allocation for specific application to problems of transportation, environmental, water resources, structural analysis materials. Emphasis on microcomputer applications. Prereq: Senior standing, Statistics 251.

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

451 Highway Engineering (3) Design, construction, operation, and maintenance of highway facilities; includes application of various engineering principles and techniques to process of planning, locating and design of highway facilities; covers both geometric and pavement design. Prereq: 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: 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: 352.

462 Analysis of Framed Structures (3) Vertical and lateral force resisting systems; gravity loads due to dead, live, and snow loads; lateral loads due to earthquake and wind; use of computer in structural analysis; building modeling and 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 combined stresses; design of a typical framed building including connections. Prereq: 471.

474 Reinforced Concrete Design (3) Design of continuous beams, floor slabs, and columns with combined axial loads and bending, footings; and design for torsion. Prereq: 471.

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

485 Principles of Hydrogeology (3) See Geology 485.)
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.

362 Roman Law (3) This course covers the historical development of Roman law in the Classical period (50 BC–250 AD) with particular attention to the analysis of case-law in the areas of contract, property, or delict. (Same as Legal Studies 362.)

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

382 Roman Civilization (3) Major aspects of ancient Roman civilization: political institutions, art and architecture, history, culture and daily life, emphasizing the late Republic and early Empire. Writing-emphasis course.

383 Women in the Greek and Roman World (3) The condition of women in the apparently male-dominated world of Classical Greece and Classical Rome. Evidence from literature, vase paintings, and other arts is examined from the age of Homer to the second century AD with emphasis on Athens in the fifth century BC and Roman Italy in the first and second centuries AD Writing-emphasis course. (Same as Women’s Studies 383.)

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. Prereq: 401–402 or consent of instructor. May be repeated. Maximum 9 hours.

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

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

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

436 Cities and Sanctuaries of the Greek and Roman World (3) Major cities and sanctuaries in Greece, the Greek colonies, and the Roman Empire. Approach is archaeological, focusing on physical evidence-landscape, architecture and artifacts—as well as description of ancient authors. Cities include various types: planned and unplanned, seaports, caravan centers, government and commercial centers. The sanctuaries also vary in function including prophetic centers, athletic centers, theater centers, and healing centers. Writing-emphasis course. (Same as Anthropology 436.)

441 Special Topics in Classical Civilization (3) Topics in art, literature, religion, and society of Greece and Rome. May be repeated with consent of department. Maximum 9 hours.

442 Intensive Survey of the Archaeology of the Prehistoric Aegean (3) Survey of archaeology and art of the Aegean from the earliest humans to the rise of the Greek polis in the 8th century BC Highlights include Early Cycladic art, Minoan and Mycenaean complex societies, Thera, cultural interconnections with Egypt and the Near East, and the Trojan War. Emphasis on anthropological and modern art historical approaches. Writing-emphasis course. (Same as Anthropology 442.)

443 Intensive Survey of the Archaeology of Greece (3) Survey of the archaeology and art of Greece and the Greek-speaking areas from the Orientalizing through Hellenistic periods (c. 700–30 BC). Developments in architecture, sculpture, and vase painting seen in the context of changes in society. Archaeological evidence for daily life, economy, and political institutions. Writing-emphasis course. (Same as Anthropology 443.)

444 Intensive Survey of the Archaeology of Etruria and Rome (3) Survey of the archaeology of Italy and the Roman World from prehistoric times to the fall of the Roman Empire (1000 BC–AD 476). Highlights are the rise and decline of Etruscan culture, the development of Roman architecture, art, and urban planning, art and architecture used for political propaganda, and Roman cosmopolitan culture during the Empire. Writing-emphasis course. (Same as Anthropology 444.)

491 Foreign Study (1-15)

492 Off-Campus Study (1-15)

493 Independent Study (1-15)
COLLEGE SCHOLARS HONORS (509)
317-318 College Scholars Seminar (1,1) Sequence (in any order) limited to and required of all College Scholars each year. May be repeated. Maximum 8 hours. Satisfactory/No Credit grading only.
491 College Honors: Foreign Study (1-15) Limited to College Scholar students.
492 College Honors: Off-Campus Study (1-15) Limited to College Scholar students.
493 College Honors: Independent Study (1-15) Limited to 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.

COMMUNICATION AND INFORMATION (248)
150 Communication in an Information Age (3) Overview of human, mass, and mediated communication. Introduction to finding, organizing, and evaluating information. Open to students interested in majoring or minoring in the College of Communication and Information.

COMMUNICATION STUDIES (250)
201 Introduction to Communication Studies (3) Fundamental theories and practices with particular reference to interpersonal, group, organizational, and public communication. Prereq: Communication and Information 150.
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. (OC)
220 Interpersonal Communication (3) Process by which thoughts, feelings, and actions affect and are affected by the face-to-face communication situation.
240 Business and Professional Communication (3) Basic principles of communication within organizations. Topics and activities may include organizational/communication theory, group problem solving, case studies, interviewing, and formal presentations. (OC)
250 Advanced Public Speaking (3) Theory and practice of informative and persuasive speaking. Prereq: 210 or 240.
260 Communication and Society (3) Study of communication strategies and public opinion, with emphasis on communication media: posters, film, songs, demonstrations, drama, and public address.
270 Argumentation and Debate (3) Reasoned decision-making with emphasis on analysis, evidence, reasoning, constructing and refuting arguments.
271-272 Intercollegiate Forensics (1,1) For students actively participating in intercollegiate debate. Consent of instructor required. May be repeated. Maximum 4 hours.
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 construction, and receiver variables.
320 Interpersonal Communication Processes (3) Social dimensions of interpersonal communication and relationships.
330 Group Communication (3) Small group decision-making; evidence, argumentation, leadership, roles, and norms as they affect critical thinking in groups.
371-372 Intercollegiate Forensics (1,1) For students actively participating in intercollegiate debate. Consent of instructor required. May be repeated. Maximum 4 hours.
397 Honors Seminar (1) Required of students enrolled in the honors program; admission with consent of school.
400 Topics in Communication Studies (3) Topics, scope of subject matter, and prerequisites to be determined by department. May be repeated. Maximum 6 hours.
407 Honors Seminar (3) In-depth survey of communication research topics. Topics rotate among health, interpersonal, organizational and team, and public communication. Open only to students currently enrolled in the Honors program. May be repeated. Maximum 12 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.
425 Interpersonal Health Communication (3) Interpersonal communication in health care settings. Topics include provider-client interactions, social support groups, stigma and disease, and contemporary models explaining the use of health-related information.
430 Family Communication (3) Dynamics of interactions within family systems, marriage, and parent-child relationships. Study of verbal and nonverbal communication processes, patterns, and problems.
440 Organizational Communication (3) Organizational setting and those variables of the communication process that affect the quality of human interaction both within and outside the organization.
445 Internship (1-3) Supervised career-related experiences using Communication Studies theories and techniques in government and for profit or nonprofit organizations, culminating in a written and oral report. Reserved for junior/senior level majors with at least a 3.0 GPA, or by special permission of Internship Director. May be repeated. Maximum 6 hours. Satisfactory/No Credit grading only.
450 Propaganda (3) Study of political, commercial, and social propaganda in United States, World War I to present. Writing-emphasis course.
455 Political Persuasion (3) Study of the communication processes utilized by political candidates, office holders, and social movement organizers.
466 Rhetoric of the Women's Rights Movement to 1930 (3) Historical and critical study of public address in the campaign for women's rights in the United States from the 1830s to the 1920s. Writing-emphasis course. (Same as Women's Studies 466.)
469 Freedom of Speech (3) Historical and philosophical perspectives on freedom of expression; legal issues in free speech controversies in the U.S. Writing-emphasis course. (Same as American Studies 469; Legal Studies 469.)
476 Rhetoric of the Contemporary Feminist Movement (3) Historical and critical study of rhetoric in the campaign for women's rights in the United States from the 1940s to present. Writing-emphasis course. (Same as Women's Studies 476.)
491 Foreign Study (1-6) Participation in school-sponsored study-abroad program. Application forms available in school office. Major credit limited to 3 hours. Prereq: Junior/senior standing with at least a 2.75 GPA; consent of supervising faculty member and school prior to registration (see school for proposal deadlines). May be repeated. Maximum 6 hours.
492 Off-Campus Study (1-15) See description of major concentration. Prereq: Junior/senior standing with at least a 3.0 GPA; consent of supervising faculty member and school prior to registration (see school for proposal deadlines). May be repeated. Maximum 15 hours.
493 Independent Study (1-6) Selected readings/research in an area of communication studies to be determined by the student in consultation with supervising faculty member and, ordinarily, in an area of study not covered by school curriculum. Application forms available in school office. Major credit limited to 3 hours. Prereq: Junior/senior standing with at least a 3.0 (GPA) with consent of supervising faculty member and school prior to registration (see school for proposal deadlines). May be repeated. Maximum 6 hours.
497-498 Senior Honors Thesis (3,3) Required of students enrolled in the Honors program; admission with the consent of the school.
499 Proseminar in Communication Studies (3) Major theoretical perspectives in communication studies, their interrelationships and applications; consideration of the significance and ethical implications of communication studies in modern society. Prereq: Senior standing, completion of 201, 340, 350 and at least 12 additional hours of communication studies courses.
COMPARATIVE LITERATURE (260)

202-203 Cross-Cultural Perspectives in World Literature (3,3) Literary perspectives and values in different time periods and cultures approached from an international context and including an introduction to the theory, methods, and objectives of comparative literature. Variable content. Writing-emphasis course.

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

452 Modern Drama, 1880-1945 (3) (See English 452.)

454 Twentieth-Century International Novel (3) (See English 454.)

491 Foreign Study (1-15)

492 Off-Campus Study (1-15)

493 Independent Study (1-15)

COMPARATIVE AND EXPERIMENTAL MEDICINE (262)

411 Undergraduate Research Participation (1-3) Experience in active biomedical research projects under supervision of faculty. Students in pre-medicine and other biology majors may conduct research projects within designated areas. Prereq: Junior or senior standing; prior consent of faculty member. May be repeated. Maximum 9 hours. Satisfactory/No Credit grading only.

COMPUTER SCIENCE (266)

100 Introduction to Computers and Computing (3) Basic concepts of computer hardware and software. Microcomputer systems and workstations. Networking and the Internet. The interdisciplinary science of computing. 2-hour lab required. Does not satisfy any requirements for Computer Science major or minor. (QR)

102 Introduction to Computer Science (4) Problem solving and algorithm development. Organization and characteristics of modern digital computers with emphases on developing good programming habits, building abstractions with procedures and data, and programming in a modern computer language. Students who have received credit for 140 or 160 may not also receive credit for 102 without consent of instructor. (QR)

140 Data Structures (4) Advanced problem solving and algorithm development, structured programming, data structures and applications, I/O techniques, lists, queues, trees, algorithms, files. 3-hour lab required. Prereq: 102.

160 Computer Organization (4) Number systems, Boolean algebra, combinational and sequential circuits, registers, processor functional units and control, pipelining, memory and caching, stored program computing, memory management, computer system organization, assembly language programming. 3-hour lab required. Prereq: 102.

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

300 Scripts and Utilities (1) Practical tools available under Unix to enable students to become more efficient in performing labs and research projects. Topics to be covered include: sh, cat/grep/find/sort/ct/ed/ed, awk, perl, python, make, rcs, jgraph, gcc/cpp/purify/quantify. Prereq: 140 or consent of instructor. Satisfactory/No Credit grading only.

302 Fundamental Algorithms (3) Design, analysis, and implementation of fundamental algorithms, such as sorting and searching, and their data structures. 3-hour lab required. Prereq: 140 and 160.


340 Foundations of Software Engineering (3) Principles of analysis and design of information systems. Principles of program design and verification, formal objects, formal specifications. 3-hour lab required. Prereq: 140, 160, 311.

350 Introduction to Technical Computing (3) For students in the sciences, engineering, or mathematics. Basic ideas of algorithm design and data structures using a high-level technical language in an interactive environment. Topics may include data analysis, plotting and visualization, and numerical computation. 2-hour lab required. Course does not fulfill any requirements for the computer science undergraduate major. Prereq: Mathematics 142.

360 Systems Programming (3) Introduction to user-level systems programming; file control, process control, memory management, system utilities, network programming. 3-hour lab required. Prereq: 302.

365 Programming Languages and Systems (3) Language paradigms (procedural, functional, object-oriented, logic), language design and implementation issues and language issues related to parallelism. Prereq: 302 and progression into the computer science major.

370 Introduction to Scientific Computing (3) The design, analysis, and implementation of numerical algorithms for solving problems in science and engineering. Emphasis on program design, including data structures, computational complexity, scientific computing environments, and high-performance software packages. 3-hour lab required. Prereq: 140, 160; Mathematics 241 and 251.


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

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

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

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

471 Numerical Analysis (3) (See Mathematics 471.)

472 Numerical Algebra (3) (See Mathematics 472.)

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

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 case a faculty member from the appropriate department will help oversee the project. Prereq: Consent of instructor. Maximum of 6 hours may be applied to the major. May be repeated.

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

COUNSELOR EDUCATION (255)

205 Student Development (1-3) Practice in acquiring knowledge and skill in areas such as interpersonal relations, career decision-making, communication and self-awareness. Individual and small-group format. May be repeated. Maximum 6 hours. Satisfactory/No Credit grading only.

206 Facilitation of Technical Work Teams (3) Psychological and cultural dynamics of technical work team performance. Supervised experience in leading work teams. For engineering students sophomore level and above. Letter grade only.

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

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

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

406 Engineering Communication and Performance Field Work (3) Capstone experience for the engineering communication and performance minor. Includes instruction, field work, and supervision. Prereq: 306. Satisfactory/No Credit grading only.

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

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

480 Interviewing and Counseling Techniques (3) An introduction to basic helping skills necessary to the preparation of counselors, teachers, and others involved in human service delivery.

493 Independent Study (1-5) Independent investigation of problems in educational and counseling psychology. May be repeated. Maximum 15 hours.

CULTURAL STUDIES IN EDUCATION (271)

400 Professional Studies: Teachers, School, and Society (2) Focus on roles and responsibilities of teachers, on how schools are organized and the relationship between the schools and the broader society. Prereq/Coreq: Educational Psychology 210. Prereq: Admission to Teacher Education.

DANCE (274)

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

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

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

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

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

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

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

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

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

340 Tap: Level II (2) Instruction and practice in intermediate tap dance techniques. Prereq: 240 or consent of instructor.

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

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

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

420 Jazz: Level III (2) Instruction and practice in advanced jazz and musical theater dance styles and techniques. Available to minors or with consent of instructor. May be repeated. Maximum 16 hours.
402 Practicum in Ecology and Evolutionary Biology (2) Participation in individualized practical applications of ecology, behavior, and evolutionary biology in community, government, and industry. Prereq: Biology 140, 240, 250 and prior consent of instructor.

407 Senior Honors Thesis (3) Written preparation and oral presentation of faculty-supervised student research. Prereq: Admission to Honors program in Ecology and Evolutionary Biology and 400 or equivalent.

409 Perspectives in Ecology and Evolutionary Biology (3) Forefront considerations of ecology, behavior, and evolutionary biology. Emphasis on current developments for applications, including societal and economic impacts and moral and ethical implications. An oral presentation and a referenced library-research essay are required. Writing-emphasis course.

410 Plant Evolutionary Morphology (4) Morphology, development, natural history, and evolution of fungi, cyanobacteria, non-vascular plants (algae and bryophytes), and vascular plants (ferns, fern allies, gymnosperms, and flowering plants). Prereq: Biology 102 or 111 or 120 or equivalent.

411-412 Minicourse in Ecology and Evolutionary Biology (2) Selected advanced topics in ecology, behavior, and evolutionary biology, concentrated in time and subject matter. Consult departmental listing for topics offered. Prereq: As announced. Maximum 4 hours may be applied toward the departmental major. May be repeated.

414 Plant Anatomy (3) Cells, tissues and organs, their development in vegetative and reproductive structures of vascular plants. Emphasis on seed plants. Prereq: Biology 111-112 or Biology 130-140 or equivalent.

419 Science as Method (3) The dynamic process of scientific discovery, as opposed to a static body of knowledge. Topics included will be comparisons of science, non-science, and pseudoscience, successful and unsuccessful science, the ethics of scientific research, and the philosophical aspects of the scientific enterprise. Implications for teaching and writing about science will be covered. Prereq: An introductory science or philosophy course, or consent of instructor. (Same as Philosophy 419.)

421 Community Ecology (3) Interactions between individuals, species, communities and environments, including competition, coexistence, predation, herbivory; causes and consequences of biological diversity; biological invasions; application of advanced sampling and analysis techniques; local to global environmental change. Periodic field trips or laboratories. Prereq: Biology 250 or equivalent.

433 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.

446 Introduction to Oceanography (4) Basic oceanography, including physical, chemical, geological and biological processes and patterns. Emphasis on coastal and oceanic subsystems such as upwellings, polar oceans, hydrothermal vents, gyres, coral reefs, estuaries, and coastal regions. Field trip to coast required. Prereq: General Biology and Chemistry 120, 130; Biology 250 recommended.

450 Comparative Animal Behavior (3) Principles and methods of ethology with emphasis on ecological, developmental, physiological and evolutionary aspects. (Same as Psychology 450.)

459 Comparative Animal Behavior Laboratory (3) Introduction to observational and experimental research in ethology. Coreq: 450. (Same as Psychology 459.)

460 Evolution (4) Principles, facts, and theories regarding biological evolution. Concepts, processes and product in development of organic diversity. Historical development of ideas concerning biological evolution. 3 hours lecture and 2 hours lab/discussion. Prereq: Biology 240 or consent of instructor.

461 Special Topics in Organismal Biology (3) Evolution, ecology, biogeography, classification, and anatomy of selected animal and plant taxa. Prereq: Biology 250 or consent of instructor. May be repeated if topic differs. Maximum 12 hours.

465 Evolutionary and Functional Vertebrate Morphology (4) A detailed study of the structure and function of the vertebrates. Analysis of evolutionary patterns of vertebrates using the comparative method and data from anatomy, developmental biology and functional morphology within a phylogenetic context. Laboratory requires intensive dissection to learn vertebrate anatomy, evolutionary trends and specializations. 2 hours and 2 labs. Prereq: Biology 250 or consent of instructor, Physics 221 recommended.

470 Aquatic Ecology (3) Introduction to the physico-chemical nature of inland waters with description of biotic communities and their interrelationships. 2 hours and 1 lab. Prereq: Chemistry 120-130 and Biology 250.

474 Ichthyology (4) Evolution, classification, collection and identification, distribution and biology of fishes with emphasis on freshwater fauna of Eastern North America. 2 hours and 2 labs. Prereq: Biology 250 or consent of instructor.

475 Field Ornithology (2) Intensive one week field course intended to introduce students to the behavior, ecology, and field identification of birds. Prereq: Biology 250 and consent of instructor.

484 Conservation Biology (3) Application of principles and techniques of ecological research to conservation of biological diversity at genetic, population, community, and ecosystem levels. Prereq: Biology 240, 250.

490 Undergraduate Seminar (1) Student oral presentations of topics related to developmental and working concepts of ecology and evolution. All majors are encouraged to enroll. Coreq: Upper-division standing in the biology major. Prereq: Consent of instructor. May be repeated. Maximum 2 hours.

493 Independent Study (1-15) Independent study under the direction of a faculty member. Consent of instructor required. A maximum of 3 hours may be applied to major. May be repeated.

495 Evolutionary Ecology (3) Basic concepts in evolutionary and ecological genetics. Biogeography, climate, population genetics, evolution and natural selection, population growth and regulation, competition, niche, experimental ecology, predation, phylogenetics in ecology, biodiversity and conservation. Prereq: Biology 130 and 250. Students may not receive credit for both 495 and 595.

**ECONOMICS (283)**

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. (SS)

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

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


321 International Economics (3) Balance of payments, exchange rate determination, monetary and fiscal policies, monetary arrangements, comparative advantage, tariff and non-tariff trade distortions, protection arguments, regional integration. Prereq: 201. Students may not receive credit for both 321 and 329.

323 Economic Development (Third World) (3) Overview of the international economic issues facing developing countries and other emerging markets. Theories of growth and policies used to promote economic improvement. Writing-emphasis course. Prereq: 201 or permission of instructor.

329 International Economics for Business (3) For business majors in international business collateral or dual concentration only. Statement of international transactions, exchange rate determination, risk management strategies, currency crises, monetary arrangements, comparative advantage, tariff and non-tariff trade distortions, trade policies, protectionist arguments, regional integration. Prereq: Business Administration 361. Students may not receive credit for both Economics 321 and 329.

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

341 Survey of Labor Economics (3) Extension of 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.


381 Information Management for Economists (3) Introductory probability, statistics, and econometrics from an economic perspective, with emphasis on skills related to gathering, managing, processing, presenting, and interpreting economic data. Includes the use of statistical software in hands-on research projects. Considers common econometric problems such as multicollinearity, heteroscedasticity, and autocorrelation. Prereq: 201, Statistics 201.

400 Special Topics (3) Topics vary. Prerequisites determined by department each time course is offered. Numerical grade is given to law students. Prereq: 201. May be repeated when topic varies. Maximum 9 hours.

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

414 Analysis of Environmental Policy (3) Study of the effects of economic policy on modern society and the practice of economics from a value-oriented perspective. Prereq: Senior standing and completion of 311, 313 and 611. May be repeated when topic varies. Maximum 9 hours.

415 Language Development of Deaf/Hard of Hearing I (3) Language problems of hearing impaired contrasted with scope and sequence of normal language development. Formal linguistic systems used to describe language development problems.


419 Speech Development of Deaf/Hard of Hearing (4) Theories of speech development, approaches in training perception and production of speech, and aural habilitation. Practicum experiences.

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 Deaf/Hard of Hearing (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.


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

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

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

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

493 Independent Study (1-6) Prereq: Consent of instructor. Satisfactory/No Credit grading only. May be repeated. Maximum 6 hours.

499 Analysis of Economic Problems (3) Study of the effects of economics on modern society and the practice of economics from a value-oriented perspective. Students will integrate learning from all fields of economics and other disciplines where appropriate, and work as teams to prepare economic analyses of selected economic problems facing modern society. Writing-emphasis course. Prereq: Senior standing and completion of 311, 313 and 6 other hours of upper-division economics courses.

EDUCATION (289)

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

EDUCATION OF THE DEAF AND HARD OF HEARING (285)

410 Practicum with Deaf/Hard of Hearing (3) Supervised practicum with hearing impaired students in preschool, public school, and/or residential school setting.

415 Language Development of Deaf/Hard of Hearing I (3) Language problems of hearing impaired contrasted with scope and sequence of normal language development. Formal linguistic systems used to describe language development problems.

EDUCATIONAL INTERPRETING (287)

223 American Sign Language I (3) Expressive and receptive skill development in sign communication. Video text and interactive teaching method used. Class conducted totally in sign. This course is a prerequisite for 226.

226 American Sign Language II (3) Expressive and receptive skill development in sign communication. Video text and interactive teaching method used. Class conducted totally in sign. Must be taken in sequence. Prereq: 223.

355 Sign to Voice Interpretation (3) Interpreting from sign language to English in a variety of physical settings (one-to-one, classroom, assemblies) for students of all ages with varying communication styles; adjusting interpretation to accommodate different student needs. Cross-cultural communication issues interpreting in a manner appropriate to the context; techniques for reducing visual fatigue and overload.

431-432 American Sign Language III and IV (3,3) Sequence stresses fluency of expressive and receptive sign communication skills. Using language in context is emphasized. Grammatical structures of ASL and cultural implications of the deaf community. Must be taken in sequence. Prereq for 431: 226 or consent of instructor. Prereq for 432: 431 or consent of instructor.

435 Linguistics of American Sign Language (3) Introduction to grammatical and linguistic structures of ASL. Language variations, discourse, bilingualism and language contact also covered. Conducted in ASL. Prereq: 431 or consent of instructor.

440 Educational Interpreting Field Work (6) Practical field experience within approved and supervised mainstream settings. Develop specific interpreting skills. Provides a direct service experience in a supportive learning environment. For majors only. Prereq: Progression to the major. Satisfactory/No Credit grading only.

EDUCATIONAL PSYCHOLOGY (310)

210 Psychoeducational Issues in Human Development (3) Understanding and application of the psychology of human development to teaching/learning process in educational settings. Primarily for students entering teaching or human services.
215 Learning Skills and Study Systems (3) Approaches to enhancing academic performance through study skills, efficient reading and understanding of personal factors.

401 Professional Studies: Applied Educational Psychology (2) Application of concepts, principles, techniques and models from Educational Psychology to facilitate student learning and creation of effective classroom environments. Prereq: Admission to Teacher Education.

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

431 Personality and Mental Health (3) (See Counselor Education 431.)

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

460 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.

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

**ELECTRICAL AND COMPUTER ENGINEERING (319)**

206 Electrical Engineering Computations (4) Engineering problem solving and algorithm development by programming computers. Emphasis on software engineering, object-oriented design, building abstractions with procedures and data, and programming in a modern computer language. Includes Level 1 design projects which require laboratory work.


300 Circuits (5) Fundamental laws of circuit analysis. Ohm’s Law, Kirchhoff’s current and voltage laws, the law of conservation of energy, circuits containing independent and dependent voltage and current sources, resistors, reactance, capacitance and inductance analyzed using mesh and nodal analysis, superposition and source transformations, and Norton’s and Thevenin’s Theorems. Steady state analysis of DC and AC circuits. Complete solution for transient analysis for circuits with one and two storage elements. Complex frequency, sinusoidal forcing functions, and natural response. Resonance: general case, special cases in series and parallel circuits. Scaling: magnitude and frequency. Admittance, impedance and hybrid parameters. Includes Level 1 design projects which require laboratory work.

301 Circuits and Electro Mechanical Components (3) DC and AC circuits, transients, transformers, motors, generators. For non-majors only. Prereq: Mathematics 231, Physics 231.

302 Electronics and Computer Circuits (3) Analog circuits, operational amplifiers, digital systems and logic circuits, semiconductor devices. For non-majors only. Prereq: 301.

313 Probability and Random Variables (3) Axioms of probability, set theory, independence, conditional probability, Bayes’ Theorem, permutations and combinations, histograms, probability density, moments, functions of a random variable, joint probability density, central limit theorem, samples and populations, sample mean and variance, curve fitting, correlation of time signals. Prereq: Mathematics 231.


316 Signals and Systems II (3) Sampling theory, theory and application of Laplace transforms, feedback, root locus, gain and phase margin, theory and application of z Transforms, digital filters, discrete-time state variables. Prereq: 315.


335 Electronic Devices (4) Semiconductor physics, theory of p-n junctions; diodes, field-effect transistors, and bipolar transistors; modeling of diode and transistor devices; analysis and design of single stage and multistage amplifiers; computer circuit simulation using SPICE Chemical Engineering. Includes 1 credit laboratory work involving Level 1 design projects. Prereq: 300.

336 Electronic Circuits (3) Multistage transistor amplifier biasing; gain stages, and output stages; frequency and transient response of open loop linear amplifiers; fundamentals of integrated circuits, operational amplifier applications in basic feedback configurations; basic transistor switching circuits. Includes laboratory experiments and design projects. Prereq: 335. Coreq: 315.

341 Fields (3) Coulomb’s law, Gauss’ law, Maxwell’s equations for electrostatic and magnetostatic cases; Maxwell’s equations for dynamic case, dynamic potentials, uniform plane wave propagation. Transmission lines. Prereq: 300, Mathematics 241, Physics 232.

342 Analog Communication Amplitude and Frequency Modulation (3) Probability and random variables, signal-to-noise ratio, propagation models, link budget analysis, bandwidth, frequency modulation, frequency modulation, spread-spectrum. Includes Level 1 design projects which require laboratory experiments. Prereq: 315.

355 Computing System Fundamentals (3) Introduction to machine-level computer organization and programming. Basic microprocessor architectures; memory architectures; structured assembly language programming; intra- and inter-computer communication; I/O systems; device drivers; multi- and distributed processor systems; issues in computer security. Includes Level 1 design projects which require laboratory work. Prereq: 206, 255.

395 Junior Seminar (1) Presentations and discussions related to professional development, including registration, ethics and current topics in electrical engineering. Prereq: 300. Satisfactory/No Credit grading only.

400 Senior Design (5) A major design project that focuses the student’s attention on professional practice, accumulated background of curricular components, and recent developments in the field. This major design emphasis is directed to topics within the field of electrical engineering. Includes Level 3 design projects which require laboratory work. Prereq: 316, 335, 342, 355. (OC/WC)


421 Electric Energy Systems (3) Structure and operation of the electrical energy grid; load flow; economic loading; planning; control; reliability. Balanced and unbalanced faults; system protection; system stability. Includes Level 1 design projects. Prereq: 316, 325.


423 Electric Machines (3) Principles of electromechanical energy conversion. Design procedures for AC and DC machine windings; construction and performance constraints. Effects of machine parameters on steady state and dynamic performances; the d-q model; reference frames. Includes Level 1 design projects. Prereq: 316, 325.
431 Operational Amplifier Circuits (3) Linear and non-linear active circuits using commercial operational amplifiers. Includes operational, instrumentation, isolation, bridge, rms and logarithmic converters, multipliers and function generators, rectifiers, references, active filters, modulation and demodulation, sinusoidal generators. Noise fundamentals and calculations in op-amp circuits. Design for specified pole-zero functions. Emphasis on applications including transducer interfacing. Includes Level 1 design projects which require laboratory work. Prereq: 316, 336, 342.

432 Electronic Amplifiers (3) Feedback amplifier principles; wideband linear amplifier design; low-noise preamplifier design; audio power amplifier design. Introduction to radio-frequency amplifier design; oscillator principles. Includes laboratory experiments and design projects. Includes Level 2 design projects which require laboratory work. Prereq: 431.

441 Digital Communications (3) Quantization and pulse code modulation. Binary and Mary signaling, spectra of line codes, link budget analysis, binary communication in the presence of noise, matched filtering and equalization, bandpass digital transmission, introduction to multiple access techniques. Includes Level 1 design projects.

442 Communication System Design (3) Application of communication theory to system design. Hardware and software design and simulation. Modern communication topics. Includes Level 1 design projects. Prereq: 441.

443 Antennas and Propagation (3) Introduction to antenna theory including fundamental antenna concepts and parameters (directivity, gain, patterns, etc.) and signal propagation. Theory and design of linear and loop antennas, arrays, and other simple antennas. Includes Level 1 design projects. Prereq: 316, 341, 342.

446 Electromagnetic Compatibility (3) Principles and practices to avoid interference among and within electrical devices. Parameters and coupling for dipole, biconical, and log-periodic antennas. High frequency effects in circuit elements. Radiated and conducted emissions and susceptibility. Crosstalk, shielding, electrostatic discharge, and EMC regulations. Includes Level 1 design projects which require laboratory work. Prereq: 316, 341, 342.

451 Computer Systems Architecture (3) Architecture and design of microcomputer systems with microprocessors or microcontrollers. Instruction set architectures, software interfaces, processor structures, memory hierarchy, interfacing. Includes Level 1 design projects which require laboratory work. Prereq: 355.

453 Introduction to Computer Networks (3) Principles of computer networking and software design of network protocol with an emphasis on the internet and TCP/IP protocol suite. Includes Level 1 design projects. Prereq: 206.

455 Embedded Systems Design (3) Design and development of embedded systems for data acquisition and special-purpose computing systems, such as peripheral interfacing, serial/parallel communications and bus systems. Assembly language programming, software architecture, and machine architecture of microcontrollers. Includes Level 1 design projects which require laboratory work. Prereq: 355.

471 Introduction to Pattern Recognition (3) Introduction to statistical decision theory, adaptive classifiers, and supervised and unsupervised learning. Students will explore the application of these techniques in areas of current interest such as face recognition, speech processing, remote sensing, data mining and bioinformatics. Includes Level 1 design projects. Prereq: 316. Non-majors require consent of instructor.


481 Power Electronics (3) Principles and characteristics of power semiconductor devices, single-phase and polyphase phase-controlled converters, converter control, ac voltage controller. Includes Level 1 design projects and laboratory work. Prereq: 316, 325, 336.

482 Power Electronic Circuits (3) Voltage-fed inverters, PWM principles, control of inverters, dc-de converters, dc machine drives, resonance converters, step motor drives, brushless dc machine principles. Includes Level 1 design projects. Prereq: 481.

491 Special Topics (3) Topics relating to basic design and current practice. May not be repeated to satisfy senior requirements for graduation. Maximum three hours. Prereq: Completion of all junior electrical engineering courses or consent of instructor. Includes Level 1 or Level 2 design projects which may require laboratory work.

495 Senior Seminar (1) Current topics in electrical engineering. Prereq: Completion of all junior electrical engineering courses or consent of instructor. May not be repeated.

ELECTRONIC MEDIA

See Journalism and Electronic Media.

ELEMENTARY EDUCATION (322)

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, multisensory activities and group approaches. For Bachelor of Science in Education students only. Prereq: Admission to Teacher Education Program.

326 Teaching Language Arts/Reading in Elementary and Middle Schools (3) Language and language development as applied to teaching of oracy (listening-speaking) and certain aspects of literacy (reading process/readiness and writing). Includes methods and materials. For Bachelor of Science in Education students only. Prereq: Admission to Teacher Education Program.

351 Laboratory and Field Studies in Elementary Education (1-2) Simulated and actual experiences in which students apply concepts and skills from professional methods courses in a variety of school settings and levels. Prereq: Admission to Teacher Education Program. Coreq: 422. May be repeated. Maximum 3 hours. Satisfactory/No Credit grading only.

356 Elementary and Middle School Teaching Laboratory Experience (1) Simulation and micro-teaching experiences to develop planning skills and give feedback to students relative to their ability to apply learning to school settings. Prereq: Admission to Teacher Education Program. Coreq: 422.

421 Elementary and Middle School Science and Social Studies Instruction (3) Methods and materials for teaching science and social studies. Development of functional relationships and individual entities of the two fields. Not open to students with recent course or background in the teaching of elementary school science and/or social studies. Prereq: Admission to Teacher Education Program.

422 Elementary and Middle School Teaching Methods I (6) Methods and materials for teaching elementary and middle school reading, language arts, science, social studies and mathematics. Emphasis on planning, implementation and evaluation of integrative learning experiences. Prereq: Admission to Teacher Education Program; must be taken prior to Professional Year Internship.

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

429 Language Arts/Reading Instruction in Elementary and Middle Schools (3) Language and language development as applied to teaching of oracy (listening-speaking) and aspects of literacy (reading process/readiness and writing). Not open to students who have had recent course in language arts methods. Prereq: Admission to Teacher Education Program.

445 Early Childhood Education: Program Development and Teaching in Kindergarten (3) Curriculum planning, classroom organization and management practices for teaching young children; relationship of kindergarten to total elementary school. Prereq: Admission to Teacher Education Program.

ENGINEERING FUNDAMENTALS (323)

100 Engineering Skills Development (1-3) Exercises in the skills and tools essential to the practice of engineering. Credit cannot be used toward any engineering degree. May be repeated. Satisfactory/No Credit grading only.

105 Computer Methods in Engineering Problem Solving (1) Introduction to computer applications used in engineering problem solving and communications. Introduction to programming concepts including conditional statements and looping; the development and implementation of logic flow diagrams. Coreq: 151 or 157.
151 Physics for Engineers I (4) Calculus based study of basic physics concepts including vectors, kinematics, Newton’s laws, forces, work-energy, and impulse-momentum. Introduction to team work. Introduction to the engineering disciplines, examination of engineering principles and design issues; oral and written presentation skills. Coreq: 105, Mathematics 141. A, B, C, No Credit grading.

152 Physics for Engineers II (4) Calculus based study of basic physics concepts including rotational dynamics, statics, oscillations, waves, fluids, heat and temperature, and first and second law of thermodynamics. Introduction to team work. Introduction to the engineering disciplines, examination of engineering principles and design issues; oral and written presentation skills. Coreq: 151. Coreq: Mathematics 142.

153 Introduction to Engineering (2) Introduction to engineering for entering students with previous credit in mechanics physics. Introduction to the engineering profession and disciplines. Introduction to engineering problem solving and design through individual and team projects. Oral and written reports. Prereq: Advanced Placement or transfer credit for calculus based Mechanics Physics.

157 Honors: Physics for Engineers I (4) Honors version of 151 for well-prepared students. Open to University Honors Students and to others with consent of the instructor. Coreq: 105, Mathematics 141. A, B, C, No Credit grading.


202 Engineering Mechanics (2) Review of vector algebra. Statics of two-dimensional trusses and frames, including methods of joints and sections. Geometric properties of cross sections, including first and second moments and location of centroid. Inertial properties of rigid bodies, including moment of inertia and location of mass center. Prereq: 151. Coreq: 152 or consent of instructor.

230 Computer Solution of Engineering Problems (2) Primary focus is on development of computer programs in a modern programming language to solve engineering problems. Prereq: 152.

301 Engineering Career Planning and Placement (1) Fundamentals of job-seeking employment, including resume construction, interview preparation, contacting prospects, networking, business etiquette, and the entire job-seeking process. Intended for last-term juniors. Satisfactory/No Credit grading only.


ENGLISH (339)
Completion of the English composition requirement is prerequisite to all other English courses.

101 English Composition I (3) Strategies for written argumentation, critical reading, and discussion; emphasis on audience analysis, the invention and arrangement of ideas, and revision for style and mechanics; typical assignments include formal essays, in-class essay exams, journals, quizzes and collaborative projects; two individual conferences required. Students wishing additional help with writing should also register for English 103. A, B, C, No Credit grading. (WC)

102 English Composition II (3) Critical strategies for reading and writing about literature; emphasis on the documented essay, library skills, and continued development of style and voice; typical assignments include analytical essays, annotated bibliographies, journals, quizzes, and collaborative projects; two individual conferences required. Students wishing additional help with writing should also register for English 104. Prereq: 101. A, B, C, No Credit grading. (WC)

103 Writing Workshop I (1) Self-paced Writing Center tutorial for students wanting additional instruction while enrolled in English 101 or having ACT English and composite scores at or below 18 (or SAT verbal/composite scores at or below 450/850). Individual instruction in mechanics, paragraph development and essay structure. To receive credit, a student must participate at least two hours per week and must also pass the 101 class in which he or she is currently enrolled. Satisfactory/No Credit grading only.

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

118 Honors: English Composition (3) For students whose ACT English and composite scores are at or above 28 (or SAT verbal/composite scores at or above 650/1250). Grading scale and workload are same as in regular sequence though course proceeds at an accelerated pace. Practice in argumentation, critical reading, literary interpretation, and research methods. May include the study of a long work of literature in addition to readings in nonfiction, short fiction, poetry, and drama. Students receiving a grade below B in 118 will complete a year’s work in English Composition by taking 102. Students receiving a grade of A or B will complete their freshman English requirements by choosing 102, a more rigorous literature course in the English Department, or 355. (University Honors students receiving a grade of A or B may complete their freshman English requirements by choosing one of the University Honors Interdisciplinary Seminars: University Honors 257, 267, or 277. These seminars are limited to University Honors students only.) A, B, C, No Credit grading.

121 Academic English for Non-Native Speakers (4) Development of English academic literacy, including reading, writing, vocabulary, and grammar as well as some attention to listening, oral presentation, and pronunciation. Required of all non-native English-speaking students who do not pass the English Placement Examination a need for work in English to raise a foreign language profile to 500/1250. (AH) Coreq: Mathematics 142.

123 Academic English (4) Development of English academic literacy, including reading, writing, vocabulary, and grammar as well as some attention to listening, oral presentation, and pronunciation. Required of all non-native English-speaking students who do not pass the English Placement Examination a need for work in English to raise a foreign language profile to 500/1250. (AH) Coreq: Mathematics 142.

131 Composition for Non-Native Speakers of English I (3) Paragraph and composition organization and development with emphasis on informative and persuasive writing. Includes grammar and mechanics. Individual conferences. Admission to this course is by the English Placement Exam only. A, B, C, No Credit grading.

132 Composition for Non-Native Speakers of English II (3) Writing based on reading and discussion. Analysis of works of literature. Emphasis on research techniques and writing research papers. Individual conferences. Admission to this course is by the English Placement Exam only. A, B, C, No Credit grading.

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

202 British Literature II: Wordsworth to the Present (3) Major literary works from three periods: Romantic, Victorian, and the Twentieth Century. Writing-emphasis course. (AH)

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

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

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

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

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. (AH)

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

233 Major Black Writers (3) Black American literature as a literary tradition. Writing-emphasis course. (Same as African and African-American Studies 233.) (AH)

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

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

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

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

254 Themes in Literature (3) Study of important themes in English, American, and World literatures. Some sample themes are religion, crime, law, ecology, science, exploration, revolution, colonization initiation, education. Multi-genre focus. Writing-emphasis course. See Timetable for topic. (AH) (WC)

255 Public Writing (3) Rhetorical strategies for effective communication about public issues. Students will learn to write for multiple audiences and may be asked to participate in collaborative writing projects with business, academic, or political organizations. (WC)

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

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

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

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

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

306 Introduction to Shakespeare (3) May not be used by English majors to fulfill the pre-1800 literature course requirement.

321 Introduction to Old English (3) Language and literature of England from c. 700 to c. 1100. Reading of prose works and shorter poetry in Old English. Cultural context of Anglo-Saxon England explored through critical essays, histories, and primary texts in translation. Focus on manuscript evidence and medieval and modern textual practices. Writing-emphasis course. (Same as Linguistics 321.)

331 Race and Ethnicity in American Literature (3) Examines the role of ethnic and racial identity in the literature of the United States. Writing-emphasis course. (Same as African and African-American Studies 331.)

332 Women in American Literature (3) Women as writers and as subjects in American literature from its beginnings to the present. Writing-emphasis course. (Same as Women’s Studies 332.)

333 Black American Literature and Aesthetics (3) Black American literature and aesthetics since 1899, with emphasis on cultural evaluations and the principles of being “American.” Writing-emphasis course. (Same as African and African-American Studies 333.)

334 Film and American Culture (3) American films as both works of art and social documents. Relationship between the medium of film and American culture in the 20th century. Writing-emphasis course. (Same as American Studies 334; Cinema Studies 334.)

351 The Short Story (3) American, British, and international. Content varies.

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

360 Technical and Professional Writing (3) For students who need to sharpen their technical communication skills. Writing of definitions, process descriptions, proposals, abstract, executive summaries, and major reports. Prereq: Junior standing in student’s major or consent of instructor. (WC)

363 Writing Poetry (3) Introduction to writing poetry. (WC)

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

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

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

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

376 Colloquium in Literature (3) Methods and objectives of literary study; conferences to plan student’s program in major. Prereq: Sophomore literature package or consent of instructor.

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

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

398 Junior-Senior Honors Seminar (3) Seminar for students admitted to English honors program. Variable content determined by instructor, but usually focused on a particular literary period, genre, or issue. Enrollment limited to 15. See Director of Undergraduate Studies in English for details. (WC)

401 Medieval Literature (3) Reading and analysis of selected medieval literary masterpieces in modern English. Writing-emphasis course. (Same as Medieval Studies 405.)

402 Chaucer (3) Reading and analysis of the Canterbury Tales and Troylus and Criseyde in Middle English. (Same as Medieval Studies 406.)

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

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

406 Renaissance Drama (3) English theatre between 1590 and 1640. Representative plays by Shakespeare’s contemporaries (e.g., Marlowe, Webster, Jonson).

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

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

411 Literature of the Restoration and Early 18th-Century: Dryden to Pope (3) Survey of English literature and culture from 1660 to 1745.

412 Literature of the Later 18th-Century: Johnson to Burns (3) Survey of English literature and culture from 1745 to 1800.

413 Restoration and 18th-Century Genres and Modes (3) Study of one major genre or literary mode such as drama, novel, poetry, nonfiction, prose, satire, romance, or epic written between 1660 and 1800. May be repeated.

414 Romantic Poetry and Prose I (3) Emphasis on Wordsworth, Coleridge, and Blake, with readings from Lamb, De Quincey, and other prose writers.

415 Romantic Poetry and Prose II (3) Emphasis on Keats, Shelley and Byron, with readings from Hazlitt, Peacock, and other prose writers.

416 Early Victorian Literature (3) May include poetry by Tennyson and the Brownings; prose by Carlyle, Newman, and Mill.

419 Later Victorian Literature (3) May include poetry by the Pre-Raphaelites, Arnold, Hopkins, and Hardy; prose by Arnold, Ruskin, and Carroll; plays by Gilbert and Wilde.

420 The 19th-Century British Novel (3) Major novelists from Scott to Hardy.

421 Modern British Novel (3) Authors such as Joyce and Woolf through contemporary British fiction writers.

422 Women Writers in Britain (3) Emphasis on the literary consciousness and works of women writers in Britain. Course content will vary. Authors covered may include Marie de France, Margery Kempe, Aemilia Lanyer, Elizabeth Cary, Aphra Behn, Frances Burney, Mary Wollstonecraft, Mary Shelley, George Eliot, Virginia Woolf, and Doris Lessing. Writing-emphasis course. May be repeated. Maximum 6 hours. (Same as Women’s Studies 422.)

423 Colonial and Post-Colonial Literature (3) Emphasis on historical and theoretical methodologies for reading colonial and postcolonial literature. May be repeated once with instructor’s consent.

431 Early American Literature (3) From the earliest texts to 1830, including exploration and discovery, Native American, colonial, revolutionary, and early national works.
432 American Romanticism and Transcendentalism (3) Prose and poetry of the American Renaissance, from ca. 1830 to the end of the Civil War. Includes writers such as Cooper, Poe, Hawthorne, Melville, Emerson, Thoreau, Stowe, Douglass, Whitman, Dickinson.

433 American Realism and Naturalism (3) Literature from the time of the Civil War to World War I, including such writers as Twain, Howells, James, Jewett, Freeman, Crane, Norris.

434 Modern American Literature (3) World War I to the present.

435 American Novel before 1900 (3) From earliest sentimental novels through Brown and Cooper, and major figures to 1900, including Hawthorne, Melville, Stowe, Clemens, and James.

436 Modern American Novel (3) Authors such as Faulkner, Steinbeck, Welty.

441 Southern Literature (3) Southern writing from colonial period into the twentieth century, including frontier humorists, local color writers, and southern literary renaissance.

442 American Humor (3) Development of American humor from the early nineteenth century into the twentieth century, with particular emphasis on Mark Twain. (Same as American Studies 442.)

443 Topics in Black Literature (3) Content varies according to particular genres, authors, or theories from 1845 to the present, including Langston Hughes and the Harlem Renaissance, Richard Wright and Gwendolyn Brooks, writing by black women, international black literature in English, and black American autobiography. (Same as African and African-American Studies 443.)

451 Modern British and American Poetry (3) From Yeats and Frost to Auden, Stevens, and more recent poets.

452 Modern Drama, 1880-1945 (3) Survey of British, American, and international drama from the advent of modern drama to the end of World War II. (Same as Comparative Literature 452.)

453 Contemporary Drama (3) Survey of British, American, and international drama since World War II.

454 20th-Century International Novel (3) Fiction in English translation from such writers as Kafka and Camus through contemporary authors. (Same as Comparative Literature 454.)

455 Persuasive Writing (3) Focuses on writing and analyzing persuasive texts in public, private, and academic contexts. Prereq: 355 or consent of instructor. (WGC)

456 Contemporary/Postmodern Literature (3) Studies in literature written after World War II. Content will vary. May be repeated once with permission of instructor. Maximum 6 hours.

460 Technical Editing (3) Editing technical material for publication. Principles of style, format, graphics, layout, and production management. Prereq: 360 or consent of instructor.

462 Writing for Publication (3) Principles and practices of writing for publication. Dissertations, theses, articles, and reports in science and technology. Prereq: 360 or consent of instructor.

463 Advanced Poetry Writing (3) Development of skills acquired in basic Writing Poetry course. Prereq: 363 or consent of instructor.

464 Advanced Fiction Writing (3) Development of skills acquired in basic fiction writing course. Prereq: 364 or consent of instructor.

466 Writing, Layout, and Production of Technical Documents (3) Principles of design for desktop publishing. Production of various documents to be incorporated into a professional portfolio. Prereq: 360 or consent of instructor.

470 Special Topics in Rhetoric (3) Topics vary. Prereq: 355 or consent of instructor. May be repeated with consent of department. Maximum 6 hours.

471 Sociolinguistics (3) Language in relation to society. Empirical and theoretical focus. Emphasis on large-scale units: tribes, nations, social groups. Prereq: 371 or 372 or Linguistics 200 or consent of instructor. (Same as Linguistics 471.)

472 American English (3) Phonological, morphological, and syntactic characteristics of major social and regional varieties of American English, with attention to their origins, functions, and implications for cultural pluralism. Prereq: 371 or 372 or Linguistics 200 or consent of instructor. (Same as Linguistics 472.)

474 Teaching English as a Second or Foreign Language I (3) Introduces major issues surrounding teaching ESL/EFL, including political implications of teaching ESL/EFL; introduction to second language acquisition; learner variables in language learning; traditional and innovative approaches to ESL/EFL; basic features of American English grammar necessary for teaching ESL. Prereq: Second year of a foreign language or consent of instructor. (Same as Linguistics 474.)

476 Second Language Acquisition (3) How humans learn second languages. Examines theoretical models and research on such issues as differences between first and second language acquisition; the effect of age; cognitive factors in second language acquisition; learner variables; sociocultural factors; and implications for second/foreign language instruction. (Same as Linguistics 476.)

477 Pedagogical Grammar for ESL Teachers (3) Aspects of English syntax and morphology presenting difficulties for non-native learners of English. Basic and complex sentence structures; the noun and article system; and verb tense, aspect, modality, and complementation. (Same as Linguistics 477.)

479 Literary Criticism (3) Historical survey of major works of literary criticism.

480 Fairy Tale, Legend, and Myth: Folk Narrative (3) Study of forms of folk narrative: normally includes Grimm’s, Andersen’s, Irish, English, Appalachian, African, and Native American tales.

481 Studies in Folklore (3) Topic varies. May be repeated with different topic. Maximum 6 hours.

482 Major Authors (3) Content varies. Concentrated study of at least one of the most influential writers in British or American literary history: e.g., Donne, Pope, Austen, Tennyson, Whitman, Faulkner, Lawrence, Baldwin, or Morrison. May be repeated. Maximum 6 hours.

483 Special Topics in Literature (3) Topics vary. May be repeated. Maximum 6 hours.

484 Special Topics in Writing (3) Original writing integrated with reading, usually taught by a professional author. Topics vary. May be repeated. Maximum 6 hours.

485 Special Topics in Language (3) May be repeated. Maximum 6 hours with consent. (Same as Linguistics 485.)

486 Special Topics in Criticism (3) Content varies. Special topics in theoretical and practical approaches to British and American literature. May be repeated with consent of department. Maximum 6 hours.

489 Special Topics in Film (3) Content varies. Particular directors, film genres, national cinema movements, or other topics. May be repeated with consent of department. Maximum 6 hours. (Same as Cinema Studies 489.)

490 Language and Law (3) Language in the Anglo-American legal process: legal research techniques. No prior legal knowledge necessary. Prereq: Second year of a foreign language or consent of instructor. (Same as Legal Studies 490; Linguistics 490.)

491 Foreign Study: Drama in Stratford and London (3-4) Seeing, studying, and writing about drama as performed in London and Stratford-upon-Avon during the summer.

492 Off-Campus Study: Drama in New York (3) Seeing, studying, and writing about drama as performed in London and Stratford-upon-Avon during the summer.

494 Independent Study (1-6) Tutorial in subjects not adequately covered in regular courses. May be repeated. Maximum 6 hours.

495 Introduction to Rhetoric and Composition (3) Introduction to the historical, theoretical, and empirical modes of inquiry in rhetoric and composition and their implications for the teaching of composition. Prereq: 355 or consent of instructor.

496 The Rhetoric of Legal Discourse (3) Applying basic principles of persuasive writing to legal materials. Writing position papers, briefs, and memoranda, students learn issue identification and argument. Critical reading and discussion of both professional and student writing. Introductory legal research techniques. No prior legal knowledge necessary. Prereq: 355 or consent of instructor. (Same as Legal Studies 496.)

498 Senior Honors Thesis (3) Second semester of English honors program. Working individually, the student produces a substantial critical or creative project under the direction of two members of the professorial staff. Prereq: 398.
499 Senior Seminar (3) Intensive study in an author, period, genre, or of problems in language, literary history, or theory. Content varies, but all sections address problems of value from an interdisciplinary perspective. Substantial research paper required. Restricted to majors who have completed 15 upper-division hours in English. Writing-emphasis course. Capstone experience. (WC)

ENGLISH EDUCATION (340)
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 grading only.

456 Teaching Speech and Drama, Grades 7-12 (3) Purposes, techniques, materials and evaluation for teaching speech and drama in secondary schools. Required for certification in Speech. Prereq: Admission to Teacher Education Program.

459 Teaching English in the Secondary School (3) Techniques of teaching composition, language, and literature. Prereq: Admission to Teacher Education Program.

460 Teaching Reading and Literature in the Secondary School (3) Teaching basic reading skills and literature.

ENTOMOLOGY AND PLANT PATHOLOGY (341)
201 Impact of Insects and Plant Diseases on Human Societies (3) Insects and plant diseases have had a significant influence on human history, culture, and lifestyles. The science of entomology and plant pathology help humankind understand the impact of insects and plant pathogens on these dimensions of human existence. The development of strategies to capitalize on the beneficial aspects of these organisms will also be explored. (NS)

313 Plant Pathology (3) Introduction to the microorganisms and environmental conditions causing disease in plants. Biology of pathogens, host-pathogen interactions, disease development and principles of control. 2 hours and 1 lab. Prereq: 6 hours of biological science. (Same as Botany 313.)

321 Economic Entomology (3) Structure, life history, habits and principles of control of important insect pests of farm, garden, orchard and household. 2 hours and 1 lab. Prereq: 6 hours of Biological Science.

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

405 Mycology (3) Survey of the fungal kingdom and traditional allies in the context of phyla and classes. Systematics, biology, reproduction, structure-function, physiology, and ecology are illustrated with material and cultural techniques in laboratories. 2 hours lecture and one 2-hour lab. Students cannot receive credit for both 405 and 505. Prereq: Biology 111-112 or 130-140.

410 Diseases and Insects of Ornamental Plants (3) Symptoms, identification and management of diseases and insect pests that affect plants in greenhouse, nursery, and landscape environments. Prereq: 313 or 321 or consent of the instructor.

411 Forest Insects and Diseases (3) Insects and pathogens associated with trees and shrubs will be identified and their impacts on host plants evaluated. Prereq: Biology 130, 140, or equivalent. Recommended: 313 or 321.

448 Taxonomy of Adult Insects (3) Classification, phylogeny, and distribution of insects and related arthropods. Lectures on theory and practice of systematics and major features of insect structure and evolution. Laboratory practice on methods of collection, preservation, and study of insects, with emphasis on order and family identification of adults. Insect collection and one or more field trips required. Undergraduates only. Prereq: 321, 325, or consent of instructor. Students receiving credit for 448 cannot receive credit for 548.

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: 110-120 or Biology 130-140 or equivalent and Chemistry 120-130 or equivalent. Recommended: 310, 321, 412, Microbiology 310 or 319; Plant Sciences 330. (Same as Plant Sciences 451.)

493 Independent Study in Entomology or Plant Pathology (1-4) Laboratory, field, or library research in entomology, plant pathology, or integrated pest management under the guidance of a faculty member. Prereq: Consent of instructor. May be repeated. Maximum 6 hours.

ENVIRONMENTAL AND SOIL SCIENCES (345)
120 Soils and Civilizations (3) Investigation of the close linkage between soil conservation and degradation and the consequences to ancient civilizations and environmental degradation and its societal impacts during modern times. Comparison of past soil management practices to present-day issues of soil salinization, erosion, and siltation. Introduction to the role of soil resources in current global environmental issues and conflicts. (CC)

210 Introduction to Soil Science (4) Differences in soils; soil genesis; physical, chemical, and biological properties of soil; relation of soil to landscape and pollution; soil management relative to tillage, erosion, nutrient supply, temperature, aeration, fertility and plant nutrition. 3 hours lecture and one 2-hour lab.

242 Soil Morphology (1) Intensive course involving describing, classifying and interpreting soils in preparation for regional and national soil judging contests. 1 hour and 1 lab. Prereq: Consent of instructor. May be repeated. Maximum 4 hours.

301 Professional Development (1) Techniques of effective professional communications; professional ethics; interviewing and the job search. Prereq: Junior standing. (OC)

324 Soil and Water Conservation (3) Investigation of hydrologic principles regarding soil and water conservation. Topics include: hydrologic cycle, soil quality and bioremediation. Prereq: 210, Microbiology 210.

334 Soil Nutrient Management and Fertilizers (3) Influence of soil properties on nutrient availability to plants. Management of inorganic and organic fertilizer materials and the determination of their fate in the soil-plant system. Nutrient management as it relates to agricultural sustainability and soil quality. 2 hours and 1 lab. Prereq: 210.

355 Environmental Soil Biology (3) Biology and biochemistry of the soil environment as it applies to environmental and agricultural processes. Topics include microbial ecology, biogeochemical cycling of soil elements, soil quality and bioremediation. Prereq: 210, Microbiology 210.

434 Environmental Soil Chemistry (3) Composition and chemical properties of soils and processes that govern fate and behavior of chemicals in the soil environment. Topics include: clay mineralogy; soil organic matter; mineral weathering and stability; aqueous speciation; surface chemistry; ion exchange, adsorption, and molecular retention; oxidation-reduction; and soil acidity, alkalinity, and salinity. Prereq: 210 and Chemistry 110 or 350.

442 Soil Genesis and Classification (3) Soil genesis and formation; observing and describing morphology of agricultural and forest soils; chemical and physical properties, classification. 3 weekend field trips. 2 hours and 1 lab. Prereq: 210.

444 Transport Processes in Soil (3) Basic understanding of soil physical properties and processes; influence of soil physical properties on water and chemical movement in soil; practical experience in the measurement and analysis of soil physical properties, water flow, and chemical movement in soil. Prereq: 210, Physics 221 or equivalent.

462 Environmental Climatology (3). Study of atmosphere as environment. Physical, chemical and biological factors affecting climates of various earth environments; meteorological process affecting biosystems. Climatic change and the human impact on the atmosphere, consequences of climatic change and mitigation policies, microclimates and urban climates, atmospheric pollution, extreme events and ozone depletion. Design and operation of weather information systems; automated weather stations. Prereq: Agriculture and Natural Resources 290 or equivalent.

481 Capstone in Environmental and Soil Sciences (3) Integrative course in which students work individually and collaboratively to develop solutions for soil and water related environmental problems. Writing and oral communication emphasis course. Prereq: 434 and senior standing.

492 Internship (1-6) Supervised experience with a departmentally-approved employer. Student is responsible for making arrangements. Requirements include maintaining a daily log, supervisor evaluations, and a final report. Prereq: Junior standing. May be repeated. Maximum 6 hours. Satisfactory/No Credit grading only.

493 Problems in Environmental and Soil Sciences (1-3) Special research problems in environmental sciences. Prereq: Approval of department and junior standing. May be repeated. Maximum 6 hours.
EXERCISE SCIENCE (347)

100 Orientation to Exercise Science (1) Overview of discipline and professional areas for incoming Exercise Science majors. Must be taken prior to admission to the Exercise Science major.

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

325 Athletic Training Techniques (3) Prevention of athletic injuries through sound conditioning programs and practices; recognition and immediate treatment of injuries. Prereq: 332, progression to the exercise science major or consent of instructor.

332 Applied Anatomy (3) Structure and roles of bones, joints and muscles in human movement and exercise; related biomechanical principles. Prereq: Junior standing.

350 Physical Activity Epidemiology (3) Epidemiological examination of the relationship of physical activity with the morbidity and mortality of chronic disease and related risk factors.

380 Special Topics (1-3) Study in selected disciplinary or professional areas of Exercise Science. Prereq: Progression to the major. May be repeated. Maximum 6 hours.

411 Physical Activity for Special Populations (3) Nature of various disabilities and implications for physical activity programming. Course requirements include out-of-class practicum working with individuals who have disabilities. Prereq: 332 or consent of instructor, exercise science majors, minimum cumulative 2.5 GPA.

414 Fitness Testing and Exercise Prescription (3) Relationship of exercise to cardiorespiratory function, body composition, strength and flexibility. Measurement and evaluation of fitness in normal populations. Prereq: Biochemistry and Cellular and Molecular Biology 230. Exercise science majors, minimum cumulative 2.5 GPA.

422 Biomechanics of Human Movement (3) Study of biomechanics and its application to the analysis of human movement. Emphasis on quantitative and qualitative analysis of human movement. Prereq: 332, Physics 221. Exercise science majors minimum cumulative 2.5 GPA.

426 Exercise Science Practicum II (1-6) Supervised experience in exercise/fitness areas. Prereq: Progression to the major and consent of instructor. Satisfactory/No Credit grading only. May be repeated. Maximum 10 hours.

480 Physiology of Exercise (3) Lecture and class dealing with functions of the body in muscular work. Topics include physiological aspects of fatigue, training, and adaptation to environment. 2 lectures and 1 lab. Prereq: Biochemistry and Cellular and Molecular Biology 230 or 440, exercise science majors, minimum cumulative 2.5 GPA. (Same as Biochemistry and Cellular and Molecular Biology 480.)

490 Exercise Physiology/Fitness Internship (12-15) Full-time practicum in exercise/fitness at approved agency. Prereq: 414, 422, 426, 480, progression to major, and consent of instructor. Satisfactory/No Credit grading only.

493 Directed Independent Studies (1-3) Independent study in a specialized area with exercise science. Prereq: Consent of advisor, progression to the major. May be repeated. Maximum 9 hours.

497 Honors Research Project (3-6) Senior research project done under supervision of a faculty member. Includes design of research project, writing proposal for institutional review board approval, data collection and analysis, and presentation of results. Project should be approved with two semesters of study remaining. Prereq: Senior standing.

FINANCE (349)


402 Special Topics in Finance (3) Junior and senior level finance seminar. Topics to be announced prior to offering. Prereq: Finance 301.

425 Investment and Portfolio Management (3) Rigorous introduction to the fundamental principles and concepts of the valuation of stocks and bonds (financial assets) in competitive and efficient financial markets. Risk and return analysis of portfolios of financial assets, capital market theory, security market theory, and financial market microstructure. Prereq: 301.

435 Financial Markets and Institutions (3) Examine the process of capital formation and allocation, including an evaluation of money and capital markets. Study the theories and mathematics of interest rate determination and characterize the financial services firms, which participate in these markets. Review the corporate policies and practices of financial service firms, including management of interest-rate, default, technology, and regulatory risks. Prereq: 301.


475 Insurance and Financial Planning Management (3) Course will cover the basic principles of risk management and insurance; and the basic principles of financial, estate, and retirement planning. Prereq: 301.

485 Real Estate Finance and Investment Analysis (3) Explores the utilization of cash flow models to evaluate the financing of and investment in real property. In addition to examining financial feasibility analysis in detail, emphasis is also placed on understanding the factors influencing the dynamics of urban land markets and the government policy issues that must be addressed in urban areas. Prereq. 301. (Same as Urban Studies 485.)

492 Off-Campus Study (1-3) Professional internship with practicing professionals under the direction of a faculty member. Available for free elective only. Prereq: Approval of instructor. May be repeated. Maximum 3 hours. Satisfactory/No Credit grading only.

493 Independent Study (1-3) Prereq: Consent of instructor and department head. May be repeated. Maximum 3 hours. Letter grade only.

495 Investment Fund Management (1-3) Members of this class (or investment team) manage over a half-million dollar portfolio of common stocks on behalf of the Tennessee Valley Authority (TVA). This team also engages in a 25 university investment performance competition sponsored by TVA. Prereq: Minimum GPA of 3.0 in all upper-division business courses attempted and consent of instructor. May be repeated. Maximum 3 hours.

FIRST YEAR STUDIES (355)

101 First Year Studies (1) Integration into the academic community, including the nature and purpose of a college education, expectations for academic success, organization of university disciplines, and special emphasis on academic and career planning. Meets once a week. A, B, C, No Credit grading.

401 Peer Mentor Techniques (1) Training of upperclass students as mentors and advisors for freshmen. Includes cognitive and developmental theories of the college-age student, teaching and learning styles, group communication and listening techniques, mentoring and advising skills. Prereq: Consent of instructor.

402 Peer Mentor Practicum (1) Peer mentoring of First Year Studies students. Prereq: 401 and consent of instructor. May be repeated. Maximum 3 hours. Satisfactory/No Credit grading only.

FOOD SCIENCE AND TECHNOLOGY (390)

140 The Food Industry (3) Introduction to the food industry and the production of an adequate, safe food supply for national and international markets.

240 Field Observations in Food Processing (2) Introduction to observation of and familiarization with processing, packaging, quality control and distribution of different types of foods. 1 hour and 1 lab. Prereq: 140; non-majors must obtain permission of instructor.

269 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 cuts, and application of purchase specifications.

301 Professional Development (1) Professional development requirements, resources and opportunities. Individual written and oral report and group discussion on careers and food companies. Prerequisite: Senior standing or consent of instructor.

340 Food Preservation and Packaging (3) Principles, methods and equipment used for preservation of foods. 2 hours lecture and 1 lab. Prereq: 140 and 240 or consent of instructor.

401 Professional Food Science Communication (1) Individual reports and group discussion on current topics. Prereq: Senior standing or consent of instructor. May be repeated. Maximum 3 hours.
410 Food Chemistry (4) Reactions of water, proteins, lipids, carbohydrates, minerals, enzymes, vitamins, and additives in foods. 3 hours lecture and 1 lab. Prereq: Chemistry 110 or equivalent. Coreq: Biochemistry 310.

420 Food Microbiology (2) Physical, chemical and environmental factors moderating growth and survival of foodborne microorganisms; pathogenic and spoilage microorganisms affecting quality of foods and their control. Prereq: Microbiology 210. Coreq: 429.


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

442 Special Topics In Food Science and Technology (1-3) Topics of current concern to the food industry. Prereq: Consent of instructor. May be repeated. Maximum 9 hours.

445 Application of Food Chemistry and Processing Principles (4) Interactions and functions of dairy, egg, cereal and other plant based ingredients during the production and storage of processed food products. 3 hours lecture and 1 lab. Prereq: 340 and 410 or consent of instructor.

460 Meat Science (3) Carcass characteristics of meat animals, muscle structure and composition, cut identification, curing, freezing, and cookery. Prereq: 140 or consent of instructor.

469 Meat Science Lab (1) Slaughter and processing methods for beef, pork, lamb and poultry. 1 lab. Coreq: 460.

490 Food Laws and Regulations (3) A comprehensive examination of the laws and regulations designed to preserve the safety, wholesomeness, and nutritional quality of the United States food supply with an in-depth analysis and discussion of precedent case studies and their impacts on laws and regulations. Coreq courses in Food Science and Technology will serve as an essential basis for understanding of material covered in this course. Prereq: 140. Non-majors must obtain consent of instructor.

493 Practical Experience in Food Science and Technology (1-12) Specialized research in areas of interest under faculty direction. Field experience in supervised internship in the food industry. Prereq: Consent of instructor. May be repeated. Maximum 12 hours.

495 Quality Assurance and Sanitation Practices (3) Design and evaluation of a food processing operation to produce a safe and acceptable quality food product. Prereq: 310, 320, 340 or consent of instructor.

FOREIGN LANGUAGE/ESL EDUCATION (394)

455 Teaching of Foreign Language, Grades 7-12 (3) Instructional methods, lesson planning, peer-teaching; materials for teaching Foreign Language and culture; evaluation techniques. Required for certification in modern foreign languages and Latin. Prereq: Completion or near completion of foreign language hours for certification and admission to Teacher Education Program.

FORESTRY (396)

100 Forests and Forestry in American Society (3) Introductory course examining the role of forests in shaping American culture and society and exploring the evolution of the forestry profession in the North America.

214 Tree Biology (3) An introduction to the anatomy and development of woody plants, their reproduction, growth requirements, and functioning. Prereq: Biology 101-102 or 111-112.

215 Forest Ecology (3) Ecological interactions among tree species, other plant and animal species, and their environment. Forest ecosystem classification; energy, nutrient, and hydrologic cycles; site quality, Perturbations and growth, survival and forest composition; forest succession; fire ecology. Regeneration ecology through establishment and stand dynamics. Physiological ecology, ecological strategies, and adaptations of trees. 2 hours and 1 lab. Prereq: Forestry, Wildlife and Fisheries 212.


306 Forest Protection (3) Biological, economic and legal consideration of fire, pathogens, insects, vertebrates, wind, and pollutants in the forest ecosystem. One or more all day or overnight field trips may be required. 2 hours and 1 lab. Prereq: Forestry Wildlife and Fisheries 212 or consent of instructor.

314 Economics of Forest and Wildland Resources (2) Basic principles of forest resource economics; microeconomic applications in forestry; non-market valuation and analysis; financial analyses of private and public forest management decisions. Prereq: Economics 201 or consent of instructor.

321 Wildland Recreation (3) Philosophical foundation of recreation; planning, development, and management of forest recreation resources; interpretation of forest resources. Overnight weekend field trips may be required. Prereq: English 102, Communication Studies 210 or 240 or consent of instructor. (WC)


323 People and Forest Practices (1) Examination of how people, institutions and society at large affect and are affected by forest management practices. Case studies and field applications will concentrate on the wide variety of linkages that exist in society among people and forests. Application of basic skills of collaborative problem solving will be emphasized. Overnight field trips required. Coreq: 305, 306, 322, 326, 329, 330. Letter grade only.


331 Wood Properties and Uses (2) Wood as a biological material; detailed examination of the woody cell wall; influence of environmental and site conditions on wood formation; physical and mechanical properties of wood and the relationship of the woody cell wall to these properties; wood use in important commercial products; day field trip may be required. Prereq: Forestry, Wildlife and Fisheries 313. Coreq: 332 for forestry majors.

332 Wood Identification (1) Cell structure and arrangement as a tool for species identification; microscopic and hand lens identification of important commercial softwoods, hardwoods and foreign woods; laboratory procedures for making temporary slides for microscopic examination; student use of reference collection of wood samples; day field trip may be required. Prereq: Forestry, Wildlife and Fisheries 212 or consent of instructor. Coreq: 331 for forestry majors.

414 Tree Physiology (3) Tree structure, growth and development, and function, and how these are related to the environment and to cultural practices. Influence of environmental variables on plant growth and distribution; effects of forest management practices on growth and function. Prereq: Biology 111 or consent of instructor. Coreq: 332 for forestry majors.

415 Forest Conservation Workshop (1-3) How forest biology, ecology and management relate to conservation issues, how current conservation issues can be integrated into classroom work and student projects, environmental education strategies. Prereq: Consent of instructor. May not be taken by forestry or wildlife and fisheries majors. May be repeated. Maximum 3 hours.

420 Forest Resource Management (3) Introduction to forest-level management concepts from an economic perspective. Harvest determination; goal setting under multiple-use concepts; taxes; classical approaches to regulation, linear programming and harvest scheduling; goal programming. Prereq: 314 and 324, or consent of instructor.

421 Forest and Wildland Resource Economics (3) Production functions, supply-demand and market analysis; non-market programs and projects; economic analysis and decision models; investment and financial analysis; managerial economics; taxes; forest products marketing. Prereq: 324 or consent of instructor.

422 Forest and Wildland Resource Policy (3) Policy formulation; criteria for policy determination; forest and wildland law and regulation; theory of conflict resolution; formal and informal resolution. Prereq: Senior standing or consent of instructor.

423 Wildland Recreation Planning and Management (3) Planning processes, master and site planning, site design projects; management strategies, methods of visitor and recreation site management; case studies. Weekend field trips may be required. 2 hours and 1 lab. Prereq: 321 and Junior standing in wildland recreation concentration, or consent of instructor.
FORESTRY, WILDLIFE AND FISHERIES (398)

211 Introduction to Forestry, Wildlife and Fisheries (3) History of natural resources policies and practices; social perspectives and attitudes concerning natural resources and their use; techniques of integrated natural resources management, ecological principles, current policies, social trends, and forest and wildland resource use.

212 Dendrology and Silvics of North American Trees (3) Identification, classification, and nomenclature of important North American trees and woody shrubs; forest associations; silvicultural characteristics of trees and stands as the basis for the practice of silviculture. Daylong field trips may be required. 2 hours and 1 lab. Prereq: Chemistry 100. Coreq: ESS 210, Forestry 212, and (for forestry majors) 313. (WC)

312 Principles of Silviculture (3) Principles for treating forest stands to achieve selected objectives. 2 hours and 1 lab. Prereq: Chemistry 100. Coreq: ESS 210, Forestry 212, and (for forestry majors) 313. (WC)


317 Principles of Wildlife and Fisheries Management (3) Ecological relationships of wild animals with other animals and their habitats. Biological, social and economic aspects of their management. Prereq: 211 or 250. Statistics 201. Agriculture and Natural Resources 290, Mathematics 125. Coreq: Chemistry 100. Biology 250.

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

412 Managing Natural Resource Organizations (3) Human, bureaucratic and managerial factors influencing the effectiveness of natural resource organizations. Alternative stakeholder and public involvement objectives, strategies and mechanisms including client-customer, partnership and adversarial. Conflict resolution, proactive collaborative problem solving and alliance building. 2 hours and 1 lab. Prereq: 317 or consent of instructor.

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

420 International Natural Resource Issues (2) Identification and analyses of issues regarding forestry, wildlife, fisheries, and associated natural resources beyond U.S. borders. Biophysical, economic, and cultural elements impacting natural resources at the international level. Cases: Northern Europe, Latin America, Indonesia, and Africa.

FRENCH (405)

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

150 Intermediate French Transition (3) Prereq: Two years of high school French and a placement score below the level required for admittance to French 211. Since 150 is a review of elementary French, students who receive credit in this course may not also receive credit for any other 100-level French course and therefore also forfeit the six hours of elementary language credit awarded through placement examination. For elective credit only.

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

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

217-218 Honors: Intermediate French (3,3) For students of superior ability in French. Incoming freshmen admitted on basis of diagnostic test, high school average, and performance on ACT. Class held to a maximum of 15 for individual attention. Students follow enriched program with emphasis on speaking ability and reading, including literary selections. Students with a grade of A in 217 may enter 218 with permission of instructor. Credit for 100 given to students receiving a grade of A or B in 218. (CC)

300 Transitional Grammar Review and Reading (3) For students who have completed the intermediate-level sequence and who need additional preparation in reading comprehension, vocabulary acquisition, and key areas of grammar. Prereq: French 212 or equivalent or appropriate score on French placement test. May not be counted toward the major or minor.

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

333 Intermediate Composition and Grammar (3) Emphasizes writing skills. Review of major grammatical points in French. Prereq: 212, 218, 300 or permission of instructor.

334 Intermediate Conversation (3) Emphasizes speaking skills. Further review of French grammar. Required of all majors. Prereq: 333 or permission of instructor.

345 French for Business (3) Contemporary French language as it applies to business transactions. Understanding and composing business letters; oral communication and elements of French culture related to good business practices. Either 334 or 345 may be applied toward the major but not both. Prereq: 333 or consent of instructor.

351-352 History of French Literature (3,3) Chronological view of French literature in relation to the specific historical developments that have influenced it. Prereq: 333 or 334 or 345 or permission of department.

400 Consecutive and Simultaneous French-English and English-French Translation (3) Consecutive translation to and from English. Introduction to simultaneous translation to English. Prereq: 334, 345 or equivalent.

410 Medieval French Literature (3) Major representative works of Medieval French literature. Texts in modern French. Writing-emphasis course. Prereq: a 300-level literature course. (Same as Medieval Studies 410)

411 French Literature of the 16th Century (3) Highlights of 16th-century French literature. Excerpts from Rabelais and Montaigne; readings of poems from the writers from Lyon and members of the Pleiade. Prereq: 300-level literature course. Writing-emphasis course.


413 French Literature of the 18th Century (3) Major works of the Enlightenment. Writing-emphasis course. Prereq: 300-level literature course.

250 COURSES OF INSTRUCTION


420 French Cinema (3) The French cinema from its earliest days through the New Wave directors. Prereq: 300-level literature course. Can be applied to major. Writing-emphasis course. (Same as Cinema Studies 420.)

421 Phonetics (3) Foundation in the science of phonetics. Practical exercises and individual performance. Graduate credit not offered to students majoring in a Romance language. Prereq: French 333 or 334 or 345 or permission of department.

422 Advanced Grammar (3) Improving one’s written French by studying basic and more refined structures of the French language. Writing creative free-style compositions. Writing-emphasis course. Prereq: French 333 or 334 or 345.

423-424 Advanced Conversation (1,1) Informal conversation with native speaker on contemporary topics. Stresses in class contact rather than outside preparation. Meets two hours a week for one semester credit. Prereq: French 333 or 334 or 345.

425 Introduction to Descriptive Linguistics (3) Initiation into the theory and practice of techniques of linguistic analysis in the subfields of phonetics, phonology, morphology, syntax, semantics, pragmatics and historical linguistics; discussion of their relevance to the learning and teaching of foreign languages and to the study of literary texts. Linguistics 200 is strongly recommended. Writing-emphasis course. (Same as German 425; Linguistics 425; Russian 425; Spanish 425.)

426 Methods of Historical Linguistics (3) (See German 426.)

429 Romance Linguistics (3) Development of Classical Latin through Vulgar Latin into major Romance Languages. Writing-emphasis course. (Same as Linguistics 429; Spanish 429.)

430 Theatrical French (4) Comprehensive introduction to dramatic texts, performance, and theatrical production in French. Students collaborate in the creative staging of a French play and they actively participate in its public performance. Writing-emphasis course. Prereq: 351 or 352. May apply toward major as a literature course.

431 Highlights of French Civilization (3) Survey of French civilization from the Gauls to World War II. Historical events, daily life, all forms of arts. Writing-emphasis course. Prereq: a 300-level literature course.

432 Contemporary French Culture (3) Current French cultural issues placed in historical perspective with a comparative emphasis. In English; readings in French for majors. May apply toward French major. Writing-emphasis course.

433 French and Francophone Women Writers (3) Works by women writing in French considered in cultural context. In English; readings in French for majors. May apply toward French major. Writing-emphasis course. (Same as Women’s Studies 433.)

434 Literature of Quebec (3) Survey of literature of Quebec as well as French literature connected with North America. Readings include explorer and missionary works, such as the Voyages of Champlain and the Journals of the Jesuits, as well as the literature of contemporary Quebec. Writing-emphasis course. Prereq: 300-level literature course.

440 Capstone Experience in French (3) 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. Prereq: 400-level literature course.

445 Advanced French for Business (3) Study of advanced contemporary French language and culture as they relate to business transactions. A comparative approach is used to explore differences and similarities between Francophone business culture(s) and those of North America and Japan. Students build upon their knowledge of business terminology while being sensitized to culture differences and the dangers of simplistic stereotyping. Prereq: 345 or consent of instructor. Writing-emphasis course.

450 Special Topics (3) May be repeated if content varies. Maximum 6 hours.

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

491 Foreign Study (1-15)

492 Off-Campus Study (1-15)

493 Independent Study (1-15)

GEOGRAPHY (415)

101-102 World Geography (3,3) Selected topics and world regions, especially those with problems or situations of contemporary interest, to illustrate geographical points of view, concepts, and techniques. May be taken in either order. (SS)

108 Honors: World Geography (4) For freshmen and sophomores of superior ability who are interested in the geographical approach to important world problems and issues. Open to students who have received an A in Geography 101. Students may not receive credit for both 102 and 108.

131-132 Geography of the Natural Environment (4,4) Characteristics and processes of the earth’s surface and lower atmosphere; their interaction to produce a world pattern of distinctive environments significant to humanity. Must be taken in sequence. 3 hours lecture and 2 hours lab per week. Prereq: 131 is prerequisite to 132. (NS)

210 Introductory Technical Geography (1) Covers basic concepts required in 310, 410, 411, and 413. Recommended to be taken prior to or concurrently with these courses. The shape of the Earth, map scales, coordinate systems, and projections. Self-paced, online course with written (offline) final exam.

310 Introduction to Cartography (3) Properties, sources, uses, design and production of maps as tools for geographical analysis. Introduction to desktop mapping techniques and data display using basic thematic map styles. 2 hours lecture and 2 hours lab per week.

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

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


345 Population and Environment (3) Global and local patterns of population distribution and change as they relate to culture, economic development, technology, and the environment and the future. Writing-emphasis course. Prereq: 101-102 or consent of instructor.


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

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

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

366 Geography of Tennessee (3) Survey of the geography of the State of Tennessee including its cultural, economic, and physical resources, as well as an examination of the state’s diversity, development, and its geographic connections within the Southeast region and beyond. Writing-emphasis course.

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

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

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

410 Global Positioning Systems and Geographic Data (3) Theory and field and laboratory use of Global Positioning Systems for capturing digital geographic data; management of geographic date, including coordinate systems, datum issues, scanning digitizing, map standards, and uncertainty in Geographic Information Systems. 2 hours lecture and 2 hours lab per week.
411 Introduction to Geographic Information Science (3) Concepts and methods of spatial analysis and their application using geographic information systems software and techniques. Emphasizes both theoretical and applied aspects of GIS. 2 hours lecture and 2 hours lab. Prereq: 310 or consent of instructor.

412 Advanced Cartography Techniques (3) Cartographic design and data display techniques for reference and thematic maps. Basic principles and methods of map reproduction. 2 hours lecture and 2 hours lab per week. Prereq: 310 or consent of instructor.

413 Remote Sensing: Types and Applications (4) Principles and uses of remote sensing imagery, digital data, and spectral data, with particular emphasis on geographic interpretation and mapping techniques. 3 hours lecture and 2 hours lab per week. Prereq: 310 or consent of instructor.

414 Spatial Databases and Data Management (3) Types, sources, acquisition, and documentation of spatial data. Spatial database management methods and strategies for data sharing. 2 hours lecture and 2 hours lab. Prereq: Geography 411 or consent of instructor.

415 Quantitative Methods in Geography (3) Geographic application of statistical techniques, point pattern analysis, and analysis of areal units. Prereq: Mathematics 115 or Statistics 201 or consent of instructor.

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

421 Geography of Folk Societies (3) Geographical study of folk culture, emphasizing traditional material culture and rural settlement, with examples drawn from eastern North America and selected foreign areas.

423 Geography of American Popular Culture (3) Geographical study of regional variation in popular cultures, especially focused on youth cultures in the United States. Writing-emphasis course. (Same as American Studies 423.)

426 Dendrochronology (4) Principles, techniques, and interpretation in tree-ring science. Applications in geography, climate, ecology, forestry, archaeology, and earth sciences. 3 hours lecture and 2 hours lab per week. Prereq: 131-132 or consent of instructor.

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

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

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

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

439 Plant Geography of North America (3) Characteristics and distribution of major plant communities of Canada, the U.S., Mexico, and Central America. Relationships to climate, soil, fire, and human disturbance. Long-term history and future prospects. Prereq: 131-132 or coursework in botany or consent of instructor.

441 Urban Geography of the United States (3) Concepts and theories concerning development and significance of systems of cities and internal morphology of cities in the United States. Writing-emphasis course. (Same as Urban Studies 441.)

442 Urban Social Geography (3) Geographical study of urban culture; social production of neighborhoods; social and behavioral aspects of territoriality, residential mobility, segregation, and the rise of post-industrial and global cities. (Same as Urban Studies 442.)

443 Rural Geography of the United States (3) Geographical appraisal of rural areas of the United States, including small towns and urban fringes. Problems and potentials of rural America. Writing-emphasis course.

449 Geography of Transportation (3) Examination of transportation systems, emphasizing their effects on trade patterns, land use, location problems, and development.

450 Process Geomorphology (3) (See Geology 450.)

454 Terrain Analysis (3) Analysis of landscape history from digital elevation datasets and traditional topographic maps. Basement materials and structures; and erosional and depositional evidence, including fluvial, glacial, aeolian, and shoreline features, of past climatic and biological regimes. Prereq: 131-132 or Geology 101-102 or Geology 107-108.

466 Teaching and Learning Geography (3) Preparing prospective teachers in the content, skills, strategies, and understandings needed for the effective teaching and assessment of geography in the K-12 schools. Course organization and content based largely on that of the National Geography Standards.

490 Internship (3) Career-related experience with business, nonprofit, and government organizations. For geography majors. Prereq: Prior written permission of geography department head or authorized internship director. May be repeated. Maximum 6 hours. Satisfactory/No Credit grading only.

491 Foreign Study (1-15) Prereq: Written consent of department required prior to registration.

492 Off-Campus Study (1-15) Prereq: Written consent of department required prior to registration.

493 Independent Study (1-15) Prereq: Written consent of department required prior to registration.

494 Undergraduate Research Experience (1-3) Supervised participation in active research projects. Prereq: Consent of department head. May be repeated once. Maximum 6 hours. Satisfactory/No Credit grading only.

495 Special Topics in Geography (1-4) Topics vary. Prereq: Consent of instructor. May be repeated with consent of instructor. Maximum 8 hours.

497 Honors: Senior Thesis (3) Students develop undergraduate thesis topic under the guidance of a faculty advisor. Prereq: Open to second semester juniors and first semester seniors who have a 3.2 or better overall GPA and permission of the thesis advisor.


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

GEOLOGY (424)

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

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

103 The Earth’s Environments (4) Contemporary problems and solutions related to nature and human disturbance of the environment. Topics include: natural hazards, global climate change, pollution, resource depletion. 3 lecture hours and one 2-hour lab or field period. (NS)

104 Honors: The Dynamic Earth (4) Laboratory and field emphasis to understanding physical processes, including the formation of rocks, plate tectonics, earthquakes, and landscapes. 3 hours lecture, one 2-hour lab, and 2 field trips. Consult current College of Arts and Sciences guidelines. Students may not receive credit for both Geology 101 and 107. (NS)

108 Honors: Earth, Life, and Time (4) Laboratory and field emphasis to understanding fossils, evolution, and ancient environments throughout 4.5 billion years of Earth history. 3 hours lecture, one 2-hour lab, and 2 field trips. Prereq: Grade of B or better in Geology 107; grade of A in Geology 101, or permission of the instructor. Students may not receive credit for both Geology 102 and 108. (NS)

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

202 Earth as an Ecosystem: Modern Problems and Solutions (3) Study of the earth as an integrated system between physical and biological processes. Focus is on human disturbances such as habitat destruction and pollution. No prerequisite. May not be applied toward geology major. (NS)
203 Geology of National Parks (3) Geologic principles, processes, and earth materials responsible for the spectacular landscapes of national parks. Focus on interactions among internal earth processes, surficial earth processes, and human interactions. 3 lecture hours plus one optional field trip. May not be applied toward the geology major. Writing-emphasis course. (NS)

205 Age of the Dinosaurs (3) Survey of the major groups of dinosaurs: skeletal structure, ecology, environments, evolutionary history, and extinction. May not be applied toward the geology major.

310 Mineralogy (4) Introduction to the concepts of crystal chemistry, x-ray diffraction, optical mineralogy, and geochemical analysis of the important rock-forming minerals. Laboratory includes hand-specimen, x-ray diffraction, and microscopic identification of minerals. 3 hours lecture and one 2-hour lab. Prereq: two 100-level geology courses and Chemistry 120, or consent of the instructor.

320 Paleobiology (4) Critical analysis of the preserved record of ancient life with emphases on recognition of evolutionary patterns, processes, and extinctions; interpretation of ancient environments; and the integrated use of fossils and other geological features in solving problems of geologic correlation and age dating. Statistical and qualitative approaches applied to field and laboratory data. 3 hours lecture and one 2-hour lab. Prereq: two 100-level geology courses or consent of instructor.

330 Igneous and Metamorphic Petrology (4) Study of the properties of crystalline rocks, the processes that produce them, and the tectonic environments in which they form. Topics include interpretation of rock textures, phase diagrams, geochemical and isotopic compositions, magma generation and differentiation, effects of temperature, pressure, and fluids on mineral equilibria and kinetics. 3 hours lecture and one 2-hour lab. Prereq: 310.

340 Earth Sedimentary Processes (4) Earth surface processes, including weathering and soil formation, the hydrologic cycle, physical sediment transport, biological and chemical sedimentation, and sediment diagenesis, applied to interpretation of the stratigraphic record. 3 hours lecture and one 2-hour lab. Prereq: two 100-level geology courses and 310, or consent of instructor.

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

370 Earth Structure and Geophysics (4) Stress and strain; mechanics and recognition of geologic structures (faults, joints, folds, foliations, lineations, microstructures); introductory plate tectonics; introductory earthquake and reflection seismology. Laboratory: geologic map interpretation, cross-section construction, fabric diagrams, fault-plane solutions, strain analysis, seismic interpretation. Field work: field observation and measurement, recording data, regional geology. 3 hours lecture and one 2-hour lab. Prereq: Two 100-level geology courses, Mathematics 141-142, and Physics 135, or consent of instructor. Coreq: 310.

380 Planetary Geoscience (4) Geologic, geophysical, and geochemical systems and processes at planetary scales. Topics include accretion, differentiation, outgassing, geology, magnetism, geochronology, remote sensing, processes modifying surface morphology and materials, geochronological cycles, planetary exploration. 3 hours lecture and one 2-hour lab. Prereq: 330 and 370 or consent of instructor.

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

401 Quantitative Methods in Geology (3) Applications of calculus and differential equations to problems in the earth sciences. Examples of the diffusion equation in hydrogeology, the wave equation in geophysics; mechanical modeling and boundary conditions in structural geology and tectonics. 3 hours lecture. Prereq: Two 100-level geology courses and Mathematics 141, or consent of instructor.


411 Optical Mineralogy (2) Laboratory course on the principles of optical mineralogy. Use of petrographic microscope to identify rock-forming minerals with applications to petrology and environmental mineralogy. Prereq: 310.

412 Elements of X-ray Diffraction (2) Laboratory course on principles and applications of X-ray diffraction. Phase identification, quantitative determination of mineral abundances in mixtures, and crystal structure determination. Prereq: 310.

431 Geological Engineering (3) (See Civil Engineering 431.)

440 Field Geology (5) Summer field course for advanced undergraduate geology majors and first-year graduate students in geology. Taught off-campus and requires the full time of the student. The course provides a synthesis of the major aspects of the geological sciences in a societal context. Field techniques demonstrated and practiced, and applied to the solution of geologic problems. Prereq: Completion of other major core courses (310, 320, 330, 340, 370) and consent of instructor.

450 Process Geomorphology (3) Integrative approach to the development of the surface of the Earth based upon case histories, maps, remote sensing imagery, 2 lecture hours and one 2-hour lab. Prereq: Two 100-level geology courses or consent of instructor. (Same as Geography 450.)

455 Basic Environmental Geology (3) Applications of the geological sciences toward a comprehension of the effects of geological processes on humans and the effects of human activities on the earth’s environments. Prereq: One 100-level geology course or consent of instructor.

460 Principles of Geochemistry (4) Applications of chemical principles to geologic systems with emphasis on problem-solving techniques. Topics include phase diagrams, partitioning of trace elements, thermodynamic principles for evaluating stabilities of mineral assemblages, aqueous solutions, and applications of radiogenic and stable isotopes to geologic systems. 3 hours lecture and one 2-hour tutorial. Prereq: Chemistry 120-130, Mathematics 141-142, recommended 330 or consent of instructor.

470 Applied Geophysics (3) Basic principles geophysical exploration, with emphasis on applications to environmental problems. Includes seismic and electromagnetic methods. 3 hours lecture. Prereq: 6 hours of geology courses numbered above 300 and Physics 135-136 or equivalent, or consent of instructor.

475 Physical and Chemical Systems of the Earth (3) Development of the physical earth from the solar nebula to the present. Formation, composition and evolution of the hydrosphere, crust, mantle, and core. Interdependence of earthquakes, volcanism, plate tectonics, geomagnetism, chemical and isotopic processes of the interior, and the earth’s temperature. Historical perspective on major controversies of the past, and problems unresolved today. 2 lectures and 1 discussion period. Writing-emphasis course. Prereq: 16 hours geology courses numbered 300 and above.

480 Principles of Economic Geology (4) Ore-forming processes, classification of mineral deposits, survey of different types of mineral deposits with examples, and metallog genesis. 3 lecture hours and one 2-hour lab. Prereq: 310, 330 or equivalents. Recommended: 460.

485 Principles of Hydrogeology (3) Physical principles of flow, flow equations, geologic controls, aquifer analysis, water well design/testing, introduction to transport processes. Prereq: one 100-level geology course, Mathematics 141-142, and Physics 135 or 136 or equivalent, or consent of instructor. (Same as Civil Engineering 485.)

486 Hydrogeology Laboratory (1) Application and demonstration of hydrogeological principles in the field and laboratory. Prereq or Coreq: Geology 485, or Environmental Engineering 535, or consent of instructor.

490 Special Problems in Geology (1-3) Directed study or special topics. Prereq: Consent of instructor. May be repeated. Maximum 6 hours.

491 Foreign Study (1-15)

492 Off-Campus Study (1-15)

493 Independent Study (1-15)

GERMAN (433)

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

111 Language Laboratory (0)

112 Language Laboratory (0)

150 Elementary German Transition (3) This course is designed to prepare students for enrollment in German 201. Prereq: Two years of high school German and a placement score below the level required for admittance to German 201. Since 150 is a review of elementary German, students who receive credit in this course may not also receive credit for any other 100-level German course and therefore also forfeit the six hours of elementary language credit awarded through placement examination.
199 German Language and World Business (2) The course will examine the importance of foreign trade at the local, state, and national level. An interdisciplinary team of faculty from the Colleges of Business Administration and Arts and Sciences will provide an overview of the value of language study and international cultural awareness in world business. Restricted to students in the language and world business concentration. See the Director for further information.
201-202 Intermediate German (3,3) Must be taken in sequence. Prereq: 102 or 150 or appropriate placement exam score. (CC)
215 German Special Topics (3) If content varies, may be repeated for credit. Maximum 6 hours.
301-302 Introduction to German Literature (3,3) Prereq: 202 or equivalent. Need not be taken in sequence.
305 Readings in German (3) Topics in both literary and nonliterary fields. Students or student groups are encouraged to suggest topics for future courses. Prereq: 202 or equivalent. May be repeated. Maximum 6 hours.
311-312 Conversation and Composition (3,3) Prereq: 202 or equivalent.
323 German Film (3) A study of the German cinema from the earliest days to the present. Writing-emphasis course. (Same as Cinema Studies 323.)
331-332 Elements of German for Upper-Division and Graduate Students (3,3) Elements of language, elementary and advanced readings and a final 10,000 word translation project. Open to graduate students preparing for language examination, and upper-division students desiring reading knowledge of the language. Undergraduate credit only. No credit for students who have completed 101-102. 332 may be repeated only once for credit. A, B, C, No Credit grading.
350 German-Jewish Topics in Literature and Culture (3) Selected themes, issues, figures, movements, and problems in the German-Jewish relationship as reflected in literature and culture from the 1750s to the present. Variable content. Available for both majors and non-majors. Writing-emphasis course. May be repeated with the approval of the department. Maximum 6 hours. (Same as Judaic Studies 350.)
363 Modern German Culture (3) German culture from the mid-nineteenth century to the present: customs, art, music, literature, society, state. Readings in English for non-majors and in German for majors. Major credit, but no foreign language credit. A writing-emphasis course. Fulfills upper-level distribution requirement for foreign studies for those who have not satisfied the history requirement with Western Civilization. Writing-emphasis course.
411-412 Advanced Conversation and Composition (3,3) Prereq: 311-312 or equivalent or consent of department.
415 German Special Topics (3) If content varies, may be repeated. Maximum 6 hours.
416 Metropolis Revisited (3) The 20th Century German or Austrian metropolis in the mirror of history, literature, theory, art, architecture, and music. Taught in English. Prereq: German 101-102 or simultaneous enrollment in that sequence and consent of instructor.
419 German Fairy Tales and Literary Fantasies (3) How and why forms of literary fantasies ranging from apocalyptic dreams to enchanted visions have changed over the centuries. Strong interdisciplinary component, tracing interconnections between philosophy, psychology, religion and literary history, as well as exploring the relationship between literary, musical and artistic representations of specific themes. Prereq: 6 hours of 300-level courses or equivalent, excluding 331-332.
420 Selected Topics in German Literature from 1750 to the Present (3) Prereq: 6 hours of 300-level courses excluding 331-332 and courses in English translation, or equivalent.
425 Introduction to Descriptive Linguistics (3) (See French 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 French 426; Linguistics 426; Russian 426; Spanish 426.)
431 Images of Nature and the Body in German Culture (3) Representations of nature from idyllic refuge and object of praise to scientific object and precarious resource. Other themes include sexuality, the body, childhood, and aging. Discussions based on literary and documentary texts and films. Prereq: 6 hours of 300-level courses or equivalent, excluding 331-332.
432 German Creative Thinking: Interdisciplinary Dialogues (3) Interdisciplinary connections between German literature and art, music, philosophy, theatrical praxis, psychology, dance, anthropology, history, and the sciences. Comparative analyses of literary and non-fictional texts, films, and other media. Prereq: 6 hours of 300-level courses or equivalent, excluding 331-332.
433 Nation, Race, and Ethnicity (3) Examination of cultural constructions of nation, race, and ethnicity and how they have challenged each other and developed in German-speaking countries since the eighteenth century. Close study and analysis of fiction, non-fiction, and films that address controversial topics such as assimilation, integration, racial/ethnic identity formation and multiculturalism. Prereq: 6 hours of 300-level courses or equivalent, excluding 331-332.
434 Extraordinary Wo(Men)–Outcasts, Rebels, Martyrs, and Saints (3) Examination of German texts and visual media that have challenged mainstream thinking throughout the centuries. Strong interdisciplinary component, focusing on literary and artistic forms that depict struggles involving religion, politics and gender. Prereq: 6 hours of 300-level courses or equivalent, excluding 331-332.
435 Structure of the German Language (3) Contrastive English-German segmental and suprasegmental phonemes, contrastive English-German linguistic structures, selected topics in advanced German grammar and syntactic analysis. Prereq: 6 hours of upper-division German language courses excluding courses in translation and graduate reading courses. (Same as Linguistics 435.)
436 History of the German Language (3) Development of the German 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 and 331 or 332. (Same as Linguistics 436.)
477-478 German Honors (1,1) Preparation of honors paper portfolio and oral presentation. Prereq: Permission of department.
485 Business German (3) German used in fields of business, government, administration and economics. Prereq: 6 hours of upper-division German excluding courses in translation and 331 or 332.
490 Internship (1-15) Career-related experiences in the United States or abroad with permission of the Language and World Business Director. For language and world business majors only. Satisfactory/No Credit grading only.
491 Foreign Study (1-15)
492 Off-Campus Study (1-15)
493 Independent Study (1-15)
494 German Community Service Practicum (1) Supervised by the director of the Lower-Division German program, students assist German classes at local schools or they perform supervised service with local institutions that promote awareness of German culture among the general public. Prereq: 18 hours of upper-division German courses and consent of program chair. Maximum 1 hour credit per semester. May be repeated. Maximum 3 hours.
497 Senior Honors (1-6) Admission by consent of department. May be repeated. Maximum 6 hours.

GLOBAL STUDIES (440)
250 Introduction to Global Studies (3) (See Sociology 250.) (CC)
393 Global Justice and Human Rights (3) (See Philosophy 393.)

GREEK
See Classics.

HEALTH (449)
110 Personal Health and Wellness (3) Information and behavior necessary to approach health and wellness scientifically and to develop confidence in judgments affecting personal health and wellness. Students who have received credit for Health 330 may not thereafter receive credit for this course.
200 Seminar in Human Sexuality (2) Problems and responsibilities of being male and female as they relate to health and wellness. Satisfactory/No Credit grading only.
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 grading only.

230 Cardiopulmonary Resuscitation (2) Theory and skills to implement basic cardiac life support following cardiac arrest due to such conditions as heart attack, drowning, electrocution, suffocation, drug intoxication, and vehicular and other accidents. Educational and preventive aspects of controlling cardiovascular disease. Leads to basic life support certification.

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

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

306 Health Instruction in Elementary Grades (3) School health program for the child in elementary grades. Students become familiar with organizing and presenting health content, health materials, health curricula, community resources, and communicating healthful lifestyle.

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

330 Wellness For Health Professions (3) Emphasis on maintaining personal responsibility for one’s health. Includes topics related to the healthy lifestyle, and provides specific guidelines of how to change inappropriate behaviors. Students who have received credit for 330 may not thereafter receive credit for Health 110.

375 Health Communications (3) Communication strategies for health educators in various settings. Emphasis on interpersonal relationships, public relations, leadership, small group processes, health teams, and effective use of media. Prereq: 300, Public Health 300.

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.)

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

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.

420 Sex Education as it Relates to Human Sexuality (3) Science of human sexuality. Emphasis on the trends, issues, content of sex education.

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.)

426 Health Education Program Planning (3) Principles of curriculum development, administration, implementation, methodology, and evaluation. Prereq: 300, 375.

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

435 Substance Use and Abuse (3) Drug and alcohol abuse problems and suspected causes; pharmacology of drugs and effects on society; strategies for intervention and education.

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

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

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.

483 Field Practice (12) Off-campus health internship or field practice in an educational or other agency with qualified professional. Prereq: Progression and approval for internship. Usually taken in final semester. Satisfactory/No Credit grading only.

HEBREW (458)

141-142 Elementary Modern Hebrew I, II (4,4) (See Asian Studies 141-142.)

241-242 Intermediate Modern Hebrew I, II (4,4) (See Asian Studies 241-242.) (CC)

HIGHER EDUCATION ADMINISTRATION (461)

200 Student Leadership Development (3) Designed to enhance the knowledge and skill of emerging student leaders and includes theoretical and experiential content related to leadership role, skill, and effectiveness. Satisfactory/No Credit grading only.

455 Seminar in Student Leadership (1) Topics to be assigned. Designed to develop knowledge and skills in leadership roles for resident assistants, student government leaders, student activities, and other student organizations. May be repeated. Maximum 3 hours.

HISTORY (462)

221-222 History of the United States (3,3) 221—Settlement to 1877. 222—1877 to present. Writing-emphasis course.

227-228 Honors: History of the United States (3,3) Consent of department required. Students will attend the appropriate 221-222 lectures and the designated honors discussion section.

241-242 Development of Western Civilization (3,3) Historical survey of the civilization of the western world. 241—Ancient world to 1715. 242—1715 to present. Writing-emphasis course. (CC)

247-248 Honors: Development of Western Civilization (3,3) Consent of department required. Students will attend the appropriate 241-242 lectures and the designated honors discussion section. Writing-emphasis course. (CC)

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

261-262 A History of World Civilization (3,3) Historical survey of world civilization. 261—Origins to 1500. 262-1500 to present. Writing-emphasis course. (CC)

303 History of the Roman Republic (3) Roman history, 8th-century BC-27 BC; origins of Rome, development of the Republican constitution, growth of Roman imperialism, ROMANS AND GREEKS, collapse of the Republic, rise of Octavian. Writing-emphasis course. (Same as Classics 303.)

304 History of the Roman Empire (3) Roman history, 27 BC-AD 211; age of Augustus, expansion of Roman citizenship; Flavian and Antonine dynasties; barbarians and Romans; the Second Sophistic; the Severans. Writing-emphasis course. (Same as Classics 304.)

305 History of the Late Roman Empire (3) AD 197-491. The Severan empire and the third-century crisis; Diocletian and Constantine; the Christian empire; rise of bureaucratic government; the development of barbarian kingdoms; the fall of the western empire; from Roman to Byzantine in the East. Writing-emphasis course. (Same as Classics 305.)

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

310 The Ancient World: Greece (3) (Same as Classics 310.)

312-313 Medieval History (3,3) 312—Early Middle Ages: 300-1100. Formation of medieval society and institutions. 313—Later Middle Ages 1100-1400. Height of medieval civilization, and its waning in the fourteenth century. (Same as Medieval Studies 312-313.)

314 Renaissance Europe (3) The period traditionally seen as a transition from the Middle Ages to the modern world. Interrelationship of cultural, social, economic, political and intellectual developments, with an emphasis upon historical interpretation.

315 Reformation Europe, 1500-1650 (3) The period during which Europe witnessed religious disunity, economic dislocation and insecurity, political centralization, intellectual skepticism, the origins of modern science, war and the witch craze. (Same as Religious Studies 315.)
316 Early Modern Europe, 1650-1800 (3) Dynamic conflict of a search for order in an age of revolutions, seen in the continued push for political centralization, the impact of the scientific revolution, the intellectual flowering known as the Enlightenment, and the English and French revolutions.

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

320 Contemporary Europe, 1900-Present (3) The transformation from industrial to post-industrial society and the transformation of the European nation-state. Topics such as war and depression and the consequent political and social instability; totalitarian control; decolonization; the impact of Freud, Einstein, and existentialism; welfare states; and the problems of European unification. Writing-emphasis course.


322 Christian Thought in Late Antiquity (3) (See Religious Studies 322.)

323 Deviance and Persecution in the Christian West, 1100-1700 (3) Emergence and shifts in movements of dissent; popular perceptions and ecclesiastical and civil policies and institutions designed to uncover and combat heretics, homosexuals, Jews, and witches. Writing-emphasis course.

330-331 History of England (3,3) 330—To 1688. 331—1689 to the present. The monarchy and parliamentary government, the Reformation, 17th-century revolutions, commercial, agricultural and industrial revolutions; conflict, empire, the welfare state, world wars, economic crisis. Writing-emphasis course.

334-335 History of Germany (3,3) 334—Germany I: To 1815. The First Reich's fortune and failure. The development of the German lands, from the medieval empire to its disintegration, through dynastic and religious realignments, to the Austrian-Prussian dualism in the time of Frederick the Great and Maria Theresa, culminating with the end of the older order in the Age of Napoleon. 335—Germany II. Since 1800. The quest for nationhood. The evolution of modern Germany through revolution, industrialization and wars, from Bismarck's Confederation, to Bismarck's Second Reich, to the Weimar republic to Hitler's Third Reich, to Adenauer's Federal Republic and the present nation.

339 Modern Ireland, 1760-Present (3) Ireland's social, political, economic, and cultural history. Themes include Ireland's status as England's first colony from the Norman period to Cromwell and beyond, peasant revolt, Catholic-Protestant antagonism, nationalist revolutionary movements, the famine, home rule, partition, and independence in the 20th-century, with continuing sectarian tensions.

340-341 History of Russia (3,3) 340—To the middle of the 19th-century. 341—From the middle of the 19th century.

342 History of Nazi Germany (3) The coming to power of the Nazi party in Germany, origins of ideology, rise and fall of the Third Reich. Topics include foreign policy, social policy, World War II, Hitler's brutal rule and racial programs, culminating in mass murder and genocide against the Jews of Europe. Writing-emphasis course.

350 Colonial America to 1763 (3) Social and cultural developments in the American colonies from the point of contact between Europeans and native peoples through the mid-18th-century. Writing-emphasis course.

351 The American Revolution, 1763-1789 (3) The growing estrangement of the American colonies from the British Empire, the War for Independence, and the creation of a new American republic. Writing-emphasis course.

352 The United States During the Jacksonian Era, 1815-1860 (3) An examination of the major economic and political developments in antebellum America within the framework of the struggle between nationalism and sectionalism.

353 The Civil War and Reconstruction Eras, 1860-1877 (3) An examination of the major political, economic, and social developments in the United States during the Civil War and Reconstruction eras.

354 United States, 1777-1933 (3) America's political, economic, and social development from the Gilded Age through the Great Depression.

355 United States, 1933 to the Present (3) American experience from Roosevelt's New Deal through World War II and the Cold War to present. Emphasizes domestic history but includes military and foreign policy.

356 The 1960s in America (3) The politics, social movements, and cultural rebellions of the 1960s. Topics include race riots, antiwar protests, new art forms, Great Society legislation, the rise of neoconservatism, empowerment movements by people of color, Cold War brinksmanship in Cuba, and the escalation of ground and air wars in Vietnam. Writing-emphasis course.

360-361 History of Latin America (3,3) 360-Colonialism and Independence, 1500-1825. 361-National Development, 1825 to present. Writing-emphasis course. (Same as Latin American Studies 360-361.)

366 History and Archaeology of Mesopotamia (3) Mesopotamia (Assyria and Babylonia) from the fifth millennium to the Iron Age. Specific topics will include the development of village and state-level societies, and the emergence of social and political institutions, literacy, imperialism, and inter-societal interaction. Writing-emphasis course.

369-370 History of the Middle East (3,3) 369—Rise and spread of Islamic civilization to the 16th-century. 370—The Middle East from the 16th-century to the present. Impact of the West and background of current problems in the area. Writing-emphasis course. (Same as Judaic Studies 369-370.)


373 Historical Issues (3) Variable content. Broad thematic issues in historical perspective. Lecture-discussion. Especially suitable for non-majors; also open to majors. May be repeated. Maximum 9 hours.

374 A History of Imperialism since 1850 (3) Relationships between the West and Africa, Asia, and Latin America since 1870 across a broad spectrum of critical issues. Includes economic interdependence and underdevelopment, ideologies in conflict with non-Western world views, and the search for individual identity in circumstances of cultural disruption. Writing-emphasis course.

375 Revolutions in Historical Perspective (3) Comparative history of major revolutions which transformed political, social, and economic structures and values, such as those in France, Russia, China, Mexico, and Iran. Contrasts and common patterns in their causes, phases and outcomes. Relations between leaders and masses. Major theories of revolution. Writing-emphasis course.

381 History of South Africa (3) South African history from the pre-colonial period through the apartheid and post-apartheid eras. Topics include African state formation and resistance to European colonization, the impact of industrialization, the evolution of modern resistance movements, and the first democratic elections in 1994. Writing-emphasis course. (Same as African and African-American Studies 381.)

383 History of Jewish Civilization I (3) Biblical-Talmudic Periods (1200 BCE-600 CE). Origins of the Israelites, development of independent Israelite and Jewish states in the ancient Near East, rise of Jewish Diaspora communities, cultural convergences with Hellenism and early Christianity, and the development of Rabbinic Judaism. Writing-emphasis course. (Same as Judaic Studies 383.)

384 History of Jewish Civilization II (3) Medieval - Present. The resiliency of Jewish civilization in the face of external pressures; of Sephardic and Ashkenazi Jewry in medieval Europe; of North Africa and the Middle East; Jewish mysticism; Judaism’s encounter with modernity: Hasidism, the Haskala; the Reform movement and Zionism; the Holocaust; the foundation of the State of Israel; and assimilation and the future of Judaism. Writing-emphasis course. (Same as Judaic Studies 384.)

385 Studies in World History (3) Variable content. Selected topics in world history involving analysis of two or more world cultures. May be repeated. Maximum 9 hours.

389-390 History of China (3,3) 389—China to 1600. Surveys the history of Chinese society from the Neolithic Revolution to 1600: governmental structure, social organization, economic and technological developments, religious practices, artistic, intellectual and literary traditions, and cross-cultural exchanges. 390—China since 1600. Highlights China’s transformation from a dynastic system to a modern nation state and examines the forces, internal and external, driving China toward a major revolution in the 20th century. Writing-emphasis course.

391 Chinese Intellectual History (3) Surveys the history of intellectual traditions in China through the present. Examines the formation and transformation of cultural values, the social and political roles of intellectuals, and interactions between elite and popular cultural patterns. Writing-emphasis course.
392 History of Japan (3) Japanese history from mythological origins to the postwar age, with emphasis on politics and society. Topics include the influence of disease on society, Japanese feudalism, popular culture in the 17th, the Meiji restoration, and Japanese militarism. Students who have received credit for 365 may not receive credit for 392. Writing-emphasis course.

395 The Crusades and Medieval Christian-Muslim Relations (3) The major Christian crusades in the Middle East and Spain, 1050 to 1500; their political and military history; and the larger context of the medieval religious, cultural, intellectual, and diplomatic confrontation between Christians and Muslims. Writing-emphasis course. (Same as Judaic Studies 395.)

407 Honors: Senior Paper (3) Bibliographic search, research and conceptual clarification for the senior paper. Required of students working for honors in history. Grade of A or B required for honors credit.

408 Honors: Senior Paper (3) Organization and writing of the senior honors thesis. Required of students working for honors in history. Grade of A or B required for honors credit.

421 Comparative Studies in African and African-American Societies (3) (See African and African-American Studies 421.)

429 Medieval Intellectual History (3) The evolution of thought in Europe from late antiquity to the advent of Humanism, especially connections between major thinkers and their social, economic, and political contexts. Writing-emphasis course.

430-431 European Intellectual and Cultural History (3,3) 430—Renaissance to Revolution, 1300-1789. 431—Romanticism to Relativism, 1750-Present.

432 Women in European History (3) Comparative analysis of the roles of women in Medieval, Renaissance, and Victorian Europe. Relationship between family structure, sexual attitudes and the economic and political roles of women with an emphasis on autobiographical writings by women. Writing-emphasis course. (Same as Women's Studies 432.)

439 Southeastern Indian History (3) Southeastern Indian history from the protohistoric period to the present. Interaction of Euroamerican, African-American, and Native-American peoples; warfare, slavery, resettlement and other policies from the American Revolution to twentieth-century problems such as tribal sovereignty and dependency. Writing-emphasis course.

441 The American West (3) From 1803 to present, with emphasis on diverse ethnic cultures, colonial status, extractive industries, aridity, and the ongoing debate over the preservation of natural resources on federal lands. Writing-emphasis course.

442 Indian-White Relations in United States History (3) Dilemma of two cultures existing side by side; background and formulation of official Indian policy; undermining of policy by frontier circumstances; Indian wars and campaigns; present-day relationship. Writing-emphasis course.

443-444 History of the South (3,3) 443—Old South from colonial period through the Civil War. 444—New South from Reconstruction through the second Reconstruction.

445 The African-American Experience from the Colonial Period to the Civil War (3) Africans in American society from the colonial period to the Civil War. Impact of the African slave trade on the cultural, economic, and social development of the colonies; slave culture, adaptation, and resistance; freed black people; and the formation of an African-American identity. Writing-emphasis course. (Same as African and African-American Studies 445.)

446 The African-American Experience from the Civil War to the Present (3) Topics in 19th and 20th century African-American history. Writing-emphasis course. (Same as African and African-American Studies 446.)

449 History of Tennessee (3) Tennessee's history from the 18th century to the present. May be repeated. Maximum 9 hours.

450 History of United States Foreign Relations to World War II (3) Examines the ideology and practice of U.S. international relations from independence to entry into the Second World War. May be repeated. Maximum 9 hours.

451 United States Military History, 1754 to the Present (3) The nation's broad strategic aims and means used to attain them, shifting strategy, tactics and weaponry involved in wars, and relationship between American society and its armed forces. Writing-emphasis course. (Same as Military Science and Leadership 430.)

452 The American Experience in World War II (3) Diplomacy and warfare in Europe and Asia and the impact of the war on American society. Writing-emphasis course.

453 Women in American History (3) Approaches of 432 applied to American society. Writing-emphasis course. (Same as Women's Studies 453.)

454 Cities and Urbanization in American History (3) Origins, growth, and influence of American cities in development of the nation, from colonial era to present. Writing-emphasis course. (Same as Urban Studies 454.)

459 Jefferson's America, 1789-1815 (3) Nation-building in the United States from the Constitution to the War of 1812. Economic modernization, the new national government, the first political party system, foreign relations, the changing status of women, the growth of cities, and changing ideas about deference, class, and community. Writing-emphasis course.

460 History of Brazil (3) History of Latin America's largest nation. History of boom and bust economic cycles, slavery and the abolition of slavery, populism, military rule, and democratization. Writing-emphasis course. (Same as Latin American Studies 460.)

461 Cuban Revolution in Historical Perspective (3) Cuban history with major emphasis on Cuban Revolution and Cuban-U.S. relations. Writing-emphasis course. (Same as Latin American Studies 461.)

462 History of Mexico (3) Pre-Columbian, colonial, national, and modern Mexican history, emphasizing the twentieth century's first true social revolution, the Mexican Revolution, and contemporary social and economic problems. Writing-emphasis course. (Same as Latin American Studies 462.)

463 Modern Latin American History in Film (3) Major events and trends in Latin America since 1945 as represented in fictive films made by Latin Americans. Topics include economic development, the Cuban Revolution, and Authoritarianism. Writing-emphasis course. (Same as Latin American Studies 463.)

470 Studies in British History (3) Variable content. Selected themes and issues in British history. May be repeated. Maximum 9 hours.

471 Studies in Western European History (3) Variable content. Particular aspects of Western European history such as witchcraft, revolutions, or nationalism. May be repeated. Maximum 9 hours.

472 Studies in Central European History (3) Variable content. May be repeated. Maximum 9 hours.

473 Studies in Eastern European History (3) Variable content. Selected aspects of Eastern European history, especially on Russian and Polish history. May be repeated. Maximum 9 hours.

474 Studies in Medieval and Early Modern European History (3) Variable content. Particular aspects of medieval and early modern Europe. May be repeated. Maximum 9 hours.

475 Studies in Latin American History (3) Variable content. Significant issues in Latin American history. May be repeated. Maximum 9 hours. Writing-emphasis course. (Same as Latin American Studies 475.)

476 Studies in Asian History (3) Variable content. Particular aspects of Middle Eastern and East Asian history such as modernization in the Middle East; revolution in China, Japanese Feudalism, and others. May be repeated. Maximum 9 hours.

479 Studies in United States History (3) Variable content. Particular aspects of United States history. May be repeated. Maximum 9 hours.

480 Studies in African History (3) Variable content. Different areas of the continent and diverse aspects of the African experience such as African resistance movements, African political parties, the relationship of social and economic development under colonialism to social and economic conditions in modern African nations, and Apartheid and resistance in South Africa. May be repeated. Maximum 9 hours.

481 Studies in History (3) Variable content. Subject matter not covered in other courses. May be repeated. Maximum 9 hours.

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

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

484 Studies in Jewish History (3) Variable content. Significant topics in the study of Jewish civilization and culture, including the development of the synagogue, Judaism and ethnicity, and the history of Jerusalem. Writing-emphasis course. May be repeated. Maximum 9 hours. (Same as Judaic Studies 484.)
485 Studies in Cross Cultural History (3) Variable content. Comparative analysis of specific historical issues or specific facets of the relationships between two or more cultures. May be repeated. Maximum 9 hours.

486 Studies in the Ancient Near East (3) Variable content. History and archaeology of Egypt, Anatolia (Turkey), Cyprus, and Persia (Iran), the rise of social complexity, and social boundaries in antiquity. Writing-emphasis course. May be repeated. Maximum 9 hours.

489 Oral Histories of War and Peace (3) Oral history methodologies and interviews with veterans and others who have shaped modern American military history. Special focus on World War II, the Korean War. History 451, U.S. Military History, recommended but not required.

490 Internship in the Center for the Study of War and Society (3) A structured field work experience in public history at a research center documenting modern U.S. military history, including special projects such as grant writing, interviewing, and archival processing. Writing-emphasis course. Consent of the Director of the Center for the Study of War and Society. May be repeated. Maximum 6 hours.

491 Foreign Study (1-15)
493 Independent Study (1-15)

HOTEL, RESTAURANT, AND TOURISM (514)

101 Food Quality Principles (3) Scientific principles involved with selection, preparation, evaluation and safety of quality food. 2 hours and 1 lab.
102 Microcomputer Applications (3) (See Retail and Consumer Sciences 102.)
119 Introduction to the Service Industry (3) Organization and basic operating systems for the career paths available in the hospitality, retail and recreation and tourism industries. Managerial competencies necessary for success in these fields. (Same as Retail and Consumer Sciences 119.)
210 Foodservice Operations Management (3) Principles of menu development, equipment selection, layout, purchasing, production, and service of food in volume.
211 Hotel Operations (3) Operational theory of lodging and an exploration of the lodging industry in terms of nature of work, organizational structure of lodging segments, the meaning of guest services, differentiation of brands, current industry issues, and evaluation of the market place.
224 Tourism Management (3) Examination of the various components of the tourism industry, motivators to travel, and the various market segments. Includes the analyses of the economic, social, cultural, and environmental impacts to tourism. Prereq: 119 or consent of instructor.
311 Developing a Diverse Service Workforce (3) Personnel management procedures and polices to develop a diverse service workforce. Topics include leading organizational change; labor cost; employee review process retention issues. Prereq: 210 or 211. (Same as Retail and Consumer Sciences 311.)
326 Food and Lodging Cost Control (1-3) Budget, cost analysis, computer, financial statement use in decision making in lodging and foodservice systems. Prereq: 210, Mathematics 119/123, and Accounting 201, or consent of instructor.
341 Food Safety and Sanitation for the Food Service Industry; Hazard Analysis Critical Control Point (HACCP) (1) Students will be eligible to become ServSafe certified. Prereq/Coreq: 210.
360 Issues and Trends in Consumer Service (3) (See Retail and Consumer Sciences 360.)
390 Professional Development (3) Development of skills important to career success; focus on business communications, time and stress management, motivational and negotiating skills. Prereq: English 101-102. Prereq/Coreq: 311, 326, or Retail and Consumer Sciences 310 and progression into the program. (Same as Retail and Consumer Sciences 390.) (WC)
410 Strategic Planning for the Hospitality Industry (3) Hospitality Management from a strategic planning perspective; development and implementation of restaurant strategy from financial, operational, and customer orientation. Prereq: 390.
420 Professional Experience in Service Management Hospitality (6) Supervised educational experiences in selected hospitality operations. Prereq: Progression into the program and 390. Satisfactory/No Credit grading only.

423 Marketing for Hospitality and Tourism (3) Marketing principles and practices specifically applied to the hospitality and tourism industry. Includes the analyses of various hospitality and tourism marketing strategies and the implications of those strategies. Develops the use of marketing tools as an integral part of the hospitality and tourism operation. Prereq: 210, 211, 224; Marketing 300; or consent of instructor.
425 Legal Issues in Service Management (3) Legal rights and responsibilities of service industry managers, their staff and clientele. Prereq: 390, progression into the program or consent of instructor.
435 Conventions and Meetings: Pursuit and Attainment (3) Discussion of types of conventions/meetings, roles of meeting planners, identifying decision makers, site selection, negotiating, budgeting, marketing and gaining commitment from group. Prereq: 210, 211, 390 or consent of instructor.
440 Special Topics: Hotel, Restaurant, and Tourism (1-3) Developments, issues and problems in hotel and restaurant; and tourism. Topics variable. May be repeated. Maximum 6 hours.
445 Advanced Food Production and Service Management (3) Application of management concepts in menu design, personnel, cost control and production and service of food. 2 hours and lab. Prereq: 390 or consent of instructor.
450 Advanced Lodging Management (3) This course is designed to allow students to interpret operational problems currently occurring in the hotel industry in a case study, interactive environment. The student will analyze management opportunities and threats within a hotel and determine reasonable alternatives. Prereq: 211, 390, Marketing 300.
494 Directed Study: Hotel, Restaurant, and Tourism (1-3) Individual student: faculty experience. Prereq: Junior and senior standing, consent of the instructor. Satisfactory/No Credit grading only.

HUMAN ECOLOGY (520)

310 Design in Everyday Life (3) Aesthetic environment. Planning and organizing interior spaces to meet personal and family needs. Relationship of materials and furnishings to architectural space.

HUMAN RESOURCE DEVELOPMENT (529)

340 Training Systems: Strategies and Techniques (3) Fundamental knowledge, strategies and techniques of training systems required of students planning careers in HRD. During design and development, students develop skills in sequencing instruction, developing effective instructional strategies and techniques that produce the desired learning outcomes, multimedia presentations, and assessment and evaluation tools required to test desired outcomes for the learner, the trainer, and the program. Prereq: Business Administration 331 or 341.
452 Technology in Learning Environments (3) Addresses the use of diverse technology for creating and facilitating instruction and learning. Technology use is explored in terms of stimulating, channeling, and sustaining learning. Prereq: 340. Coreq: 440.
455 Program Evaluation (3) Provides instruction and practices in learner and program evaluation that occurs in occupational and educational settings. Conducting learner and program evaluation becomes one of the most critical competencies for trainers and educators in organizations today. By completing this course, the students will understand the concepts of performance assessment, different approaches of program evaluation, procedures and techniques of program evaluation, and the four-level evaluation model widely used for program evaluation in industries. The students will also possess competencies to conduct program evaluation. Prereq: 440.
479 Internship and Career Development (3) Provides an opportunity to integrate and apply the knowledge and skill-based competencies obtained in the classroom. Experience through the internship assists the student in making a career decision. The internship is the capstone course bridging the gap between the classroom and the corporate world. Prereq: 452.

485 Special Topics in Human Resource Development (1-3) Topics to be assigned. May be repeated.

493 Independent Study (3) Topic arranged by student in collaboration with a supervising faculty member. Prereq: Junior or senior standing. May be repeated. Maximum 6 hours.

HUMAN SERVICES (532)

440 Human Services Field Work (6) Practical field experiences within an approved and supervised human service setting. Explores day to day activities within a human service organization. Develops specific helping skills; involvement in roles and function of human services profession; provides direct service in a supportive learning setting. Prereq: Progression to the major, 380, 400, 420. For majors only. Satisfactory/No Credit grading only.

441 Human Services Field Work II (6) Practical field experience within an approved and supervised human service setting in a different venue than previous 440 field placement. Explores day-to-day activities within a human services lecture. 2 Develops specific helping skills; involvement in roles and functions of human service profession; provides direct services in a supportive learning setting. For majors only. Prereq: 420, 440. Satisfactory/No Credit grading only.

450 Special Topics in Human Services (3) Issues, methods, values, and trends with implications for helping practitioners, such as art therapy, legal and 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)

INDUSTRIAL ENGINEERING (556)

202 Work Methods and Measurement (3) Productivity and work design. Techniques of work methods design including flow, activity, and worker machine charts as well as work methods improvement techniques and procedures. Human work design criteria for the improvement of work methods. Stopwatch time studies, predetermined time systems, and work sampling are used to establish, document, and maintain time standards, standard data, and allowances. Learning curves and wage payment systems. 2 hours lecture. 2 hours lab. Prereq: Completion of required freshman engineering curriculum. Coreq: Statistics 251.

250 Sophomore Seminar (1) Exposure to the engineering design process through an apprenticeship with senior design teams in Industrial Engineering 422. Apprentices will maintain a journal describing their activities in observing and assisting the senior design teams. Principles of professional oral communications. Topics and activities may include group problem solving, case studies, and formal presentations on the engineering design process employed by the senior design engineers with which they assisted. Grading will be based on journal submissions, contributions to the design team, and the quality of the presentations. 2-hour lab. Prereq: Engineering Fundamentals 152 and sophomore standing in industrial engineering, or consent of instructor. Satisfactory/No Credit grading only.

300 Engineering Data Analysis and Process Improvement (3) Engineering statistical methods as applied to modern engineering and business environments, process improvement, inferences about process output and behavior, and measurement systems. An introduction to the use of designed experiments to improve process. Lab component emphasizes the use of teams to provide hands-on experiences, enhance learning, and develop skills in group dynamics. 2 hours lecture and 1 lab. Prereq: Statistics 251 or Mechanical Engineering 345 or consent of instructor.

301 Operations Research in Industrial Engineering I (3) Integrated system modeling concepts; linear mathematical programming models including the original simplex procedure, transportation and assignment problems, revised simplex procedure, dual simplex procedure, parametric linear programming (sensitivity analysis), and integer linear programming. Prereq: Mathematics 200.

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 factors such as noise, lighting, and atmospheric conditions. Focus on designing the task to fit the person. Prereq: Junior standing, consent of instructor.

306 Simulation (3) Simulation of complex production processes using current simulation software. Introduction to modeling concepts, flowcharting, random number generation, design of experiments, simulation logic, and computer animation. Utilization of statistical tools to analyze inputs and outputs to simulation models. Lab component provides hands-on experiences in developing simulation models for relevant industrial engineering case studies. 2 hours lecture and 1 lab. Prereq: 202, 310.

310 Operation Research in Industrial Engineering II (3) Network models including PERT-CPM, introduction to nonlinear programming, dynamic programming, stochastic processes, and queuing theory. Basic decision analysis techniques and their applications in engineering practice. Prereq: 300, Mathematics 241.


350 Junior Seminar (1) The role of the industrial engineer in the fields of specialization; necessary training for each specialization, and projected career opportunities. Principles of written communications in science and engineering. Topics and activities include case studies, literature searches, and preparation of written engineering reports including abstracts, executive summaries, and recommendations. 2-hour lab. Prereq: Junior standing in industrial engineering or consent of instructor. Satisfactory/No Credit grading only. (WC)


404 Industrial Engineering Applications (1) To enhance and integrate the industrial engineering educational experience in preparing senior industrial engineering students for their transition to professional practice. Prereq: To be taken in student’s semester of graduation. Satisfactory/No Credit grading only.


421 Information Systems Analysis and Design (3) Systems engineering approach to analysis and design of systems of information. Topics include: systems and equipment life cycle, system analysis methodologies, data analysis techniques, system design, joint application design, and rapid application design. Lab introduces analysis and design software tools. Prereq: Senior standing or consent of instructor.

422 Senior Problems Analysis (3) Current real-world problems will be drawn from local production and service organizations and presented by personnel from these organizations. Senior industrial engineering student teams will solve these real-world problems under the guidance of their instructor using industrial engineering methodology. These problems emphasize problem definitions, analysis, and presentation with considerations for engineering standards and realistic economic, environmental, ethical, safety, social, political, and other pertinent constraints. Prereq: To be taken in student’s semester of graduation.

427 Introduction to Lean Systems (3) Introduces a framework to implement improvements within an enterprise. This framework will focus on designing both the physical system and the associated information system. The students will be introduced to the basic concepts of facilities design based upon process design and requirements. The design of the physical and information systems will be based on integrating the concepts, terminology, and tools of lean enterprise and Six Sigma. Activities will include case studies, industry based projects, and the preparation of written engineering reports. Prereq: Senior standing in major or consent of instructor. Coreq: 306, 402.

440 Process Improvement through Planned Experimentation (3) Review of fundamentals of continuous improvement, advanced statistical process control techniques, and strategies for short production runs. Use of experimental design techniques to improve processes, including single and multiple-factor designs, blocking and confounding, and fractional designs. Full factorial designs are compared to fractional designs to balance experimental efficiency with loss of information. Lab component utilizes statistical and simulation software to provide hands-on experience. 2 hours lecture, 1 lab. Prereq: 300.

450 Senior Seminar (1) Selected topics of interest to industrial engineers, including ethics, life-long learning, contemporary issues in engineering. Formal oral presentations and the preparation of articles by the students on the selected topics. 2-hour lab. Prereq: Senior standing in industrial engineering or consent of instructor. Satisfactory/No Credit grading only.

454 Visual Basic Applications in Engineering (3) Fundamentals of designing, implementing, and distributing certain Visual Basic applications. Transform problems into programming paradigms, and encode solutions using the Microsoft Visual Basic 6 rapid application development tool. Develop an understanding of the Visual Basic event-driven programming concepts, terminology, and available tools. Demonstrations and class discussion will supplement the provided class notes. Practical problems and projects will be assigned. Prereq: 421 or consent of instructor.

455 Human-Computer Interaction (3) Introduction to the analysis, design, production, and implementation of systems requiring interaction between humans and computers (HCI). Includes human sensory systems, human memory capacity, computer hardware/software requirements, input/output device design, and error message handling. Prereq: Junior standing in major and computer programming skills; or consent of instructor.

483 Introduction to Reliability Engineering (3) (See Nuclear Engineering 483.)

484 Introduction to Maintenance Engineering (3) (See Nuclear Engineering 484.)

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

INFORMATION MANAGEMENT (558)


342 Introduction to Database Systems (3) Fundamentals of database technology, database design, database use, database system controls, and database implementation. Focus is on developing the technical and business skills necessary to successfully gather information and improve business processes in technology-driven environments. Students work hands-on with modern database management systems. Prereq: 341.

442 e-Enterprise (3) Introduction to Internet enabled business processes that connect buyers, suppliers, and trading partners in dynamic, real-time information sharing partnerships. The course discusses and illustrates how the complete value chain, from procurement of raw materials on the supply side to consumer retailing and customer management on the demand side, is integrated and made potentially more efficient. Prereq: 341.

443 Business Applications and Tools (3) Advanced tools associated with spreadsheets and databases, including the creation of objects, macros (using Visual Basic algorithms), pivot tables, and array formulas for use in the design and development of object-oriented applications. This course is required for the IM collateral or concentration. Prereq: 341.

INFORMATION SCIENCES (560)

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

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

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.

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

450 Writing About Science and Medicine (3) (See Journalism and Electronic Media 450.) (WC)

INSTRUCTIONAL TECHNOLOGY AND EDUCATIONAL STUDIES (570)

486 Introduction to Instructional Computing (3) Classroom uses of computers, applications for teachers, overview of computer operation and software for teachers of all grades. Prereq: Admission to Teacher Education.

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

INTERDISCIPLINARY PROGRAMS (581)

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

400 Selected Interdisciplinary Topics (1-12) Acceptable for major or minor credit in any interdisciplinary program with the consent of the Director of Interdisciplinary Programs and the respective chairperson. May be repeated. Maximum 12 hours. Satisfactory/No Credit or letter grade.

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

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

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

INTERIOR DESIGN (582)

141 Introduction to Interior Design (2) Orientation to the profession; relationship to allied fields; contemporary development; philosophical approaches. Open only to majors in interior design and architecture or consent of instructor.

171 Visual Studies (3) Classification and properties of two and three-dimensional visual organization; design principles; visual and spatial elements within simple and complex visual systems; role of movement in experiencing scale and volumetric space. 3-hour studio. Open only to majors in interior design and architecture. Prereq: 141 or consent of instructor.

172 Introduction to Microenvironments (3) Human perceptions in micro-scale environments (residential, commercial, public spaces). Introduction to basic analytic and behavioral programming techniques. 3-hour studio. Open to interior design students only. Prereq: 171, Architecture 171, or consent of instructor.
200 Human-Environment Systems (3) Role of culture in defining environment; physical, social and conceptual aspects of human-environment systems; impact of environment on human behavior; feelings and values; mutual-casual properties of behavior-environment systems. (Same as Urban Studies 200.)

221 Theory of Color (2) Introduction to basic color theory and its application to interior environments. Explores aesthetics and psycho-physiological effects.

261 Materials and Resources for Interiors (2) The development and application of materials and resources used in interior architectural space. Prereq: 171 or Architecture 172 or consent of instructor.


272 Fundamentals of Interior Design II (6) Problem solving, spatial organization of micro environments, increasingly larger scale; communication of total design solution graphic, audio and photographic techniques; emphasis on the use of color. 6-hour studio. Prereq: 271.

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

312 History of Contemporary Interior Architecture (2) Interior architecture, furniture, design philosophies, nineteenth century roots for twentieth century developments, Europe and America. Design as influenced by movements in the fine arts, technological advances, cultural context. Prereq: 311 or consent of instructor.

331 Working Drawings (3) Building on previous computing skills, this course focuses on interior construction documentation through computer aided design application. Course will emphasize technical graphic conventions, codes and regulations affecting the health, safety, and welfare of public. 3-hour studio. Prereq: 272, Architecture 231 or equivalent.


371 Intermediate Interior Design I (6) Studio problems of intermediate complexity with emphasis on programming and schematic design phases; in-depth analysis of current programming methods; integrates and extends previous knowledge of spatial organization and planning of micro and macro environments. 6-hour studio. Prereq: 272 and third-year standing in interior design.

372 Intermediate Interior Design II (6) 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. 6-hour studio. Prereq: 371, Architecture 231.

400 Proxemics (2) Analysis of space and behavior within a cultural context. Application to design and the design process. Examination of theoretical foundations and concepts from environment and behavior. Simulation techniques and methods for identifying behavioral design requirements. 2-hour studio. Prereq: 200, 231. Coreq: 471 or consent of instructor.

411 History of American Interior Architecture (3) Historical developments in interior architecture and decorative arts within cultural context, colonial era through nineteenth century. Prereq: 311 or consent of instructor.

420 Practicum for Interior Design (3) Supervised experience in a professional design firm, business practices, project management and design philosophy. Prereq: 360, 372 and consent of instructor.

433 Digital Graphics for Interior Design (3) Theory and techniques of visual problem solving as applied to application of interior design. 3-hour studio. Prereq: 272, Architecture 231, cumulative 3.0 GPA.

460 Lighting for Interior Design (3) Lecture presentation of design principles in lighting, acoustics and mechanical systems. Course will emphasize fundamentals of lighting design practices and techniques. Prereq: 271, Physics 161, or consent of instructor. (QR)

464 Environmental Factors in Design (3) Human factors and associated research techniques and design methodologies related to the built environment.

471 Advanced Interior Design I (6) Non-residential studio problems of advanced complexity; integrates and extends previous experiences utilizing systematic design methodologies. 6-hour studio. Prereq: 372, 420. Coreq: 400, or consent of the instructor.

472 Advanced Interior Design II (6) Comprehensive studio problems of advanced complexity; integrates and extends previous experiences utilizing systematic design methodologies. 6-hour studio. Prereq: 471 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. 2-hour lecture and 2-hour studio. Prereq: 471 or Architecture 372 or consent of instructor.

491 International Study (1-15) Individual or group studio and/or study abroad; academic research, field investigation, or studio experiences. Determination of credit based on particular international experience. Prereq: Consent of all interior design faculty.

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

ITALIAN (584)

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

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

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. (CC)

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

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

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

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

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

403 Literature of the Rinascimento (3) From Pucci to Tasso, the Quattrocento and the Cinquecento. Prereq: 212 or consent of instructor.

404 The Modern Italian Short Story (3) Prereq: 212 or consent of instructor.

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

409 Directed Readings (3)

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

414 Italian Cultural Studies (3) This course will examine Italian culture as a set of practices characteristic of Italian society, from its mode of material production to its eating habits, dress codes, celebrations, and rituals. The objective of the course is to achieve a greater understanding of contemporary Italian culture. Writing-emphasis course.

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

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

491 Foreign Study (1-15)
JAPANESE (589)
151-152 Elementary Japanese I, II (5,5) (See Asian Languages 151-152.)
251-252 Intermediate Japanese I, II (5,5) (See Asian Languages 251-252.) (CC)
313-314 Japanese Literature in English Translation (3,3) (See Asian Languages 313-314.)
351-352 Advanced Japanese I, II (4,4) (See Asian Languages 351-352.)
413 Topics in Japanese Literature (3) (See Asian Languages 413.)
451 Readings in Pre-Modern Japanese Literature (3) (See Asian Languages 451.)
452 Readings in Modern Japanese Literature (3) (See Asian Languages 452.)

JOURNALISM AND ELECTRONIC MEDIA (592)
200 Introduction to News Writing (3) Writing for print and electronic media (radio, television/cable, and the Internet) under deadline. Gathering information by using records, documents, observation, interviewing, and the Internet. Emphasis on library research, commercial databases, and current events. Basic style and editing based on AP Stylebook and Libel Manual, and media (radio, television/cable, and the Internet) under deadline. Gathering
201 Writing for Mass Media (3) Principles and practice of news writing for print and electronic media. Comprehensive overview of the major forms of writing for the mass media. Not available for majors in the College of Communication and Information. Prereq: English 102. (WC)
203 Print/Web Editing (3) Methods and practice in judging news, editing copy, writing headlines and designing newspapers and magazines. Emphasis on precise word use and news display. Prereq: 200.
275 Introduction to Electronic Media (3) Lecture and lab course providing students with an overview of radio, television, cable, satellite, and the Internet. Includes history, programming, regulations, and media effects. Prereq: Communication and Information 150.
280 Communication Graphics (3) Principles and practice in the visual aspect of communication. Emphasis on graphic design, typography, illustration and photography, printing and production techniques and publication design. Lecture and laboratory. Prereq: 200 or 201, or consent of instructor.
290 Photojournalism (3) Principles and practice of photography as a creative tool of communication. Basic camera technique, digital photography, historical and contemporary photojournalism. Lecture and laboratory. Prereq: Communication and Information 150.
302 Readership and Audience Analysis (3) Measurement and analysis of readership/audience. Broad overview of methods used for newspaper, magazine, radio, television, cable, and the Internet. Applications to both internal and external communication in media. Prereq: 275 or consent of instructor.
315 Print/Web News Writing and Reporting (3) Gathering and writing news for publication in magazines and newspapers. Prereq: 203.
320 Mass Media Commercial Writing and Promotion (3) Study of media (print, radio, television, cable, Internet) commercial writing and promotion, with an emphasis on writing persuasive messages. Analysis of markets and research data. Planning promotional campaigns. Prereq: 200 and 275.
335 Electronic Media Production (3) Introduction to the basic production tools and techniques used to develop effective media communication. Lecture and laboratory provide experience in studio production process and procedures. Includes concept development, script writing, message design, applied aesthetics, crew management, and producing. Prereq: 275.
360 Electronic Media Performance (3) Development of vocal, visual, and performance skills for announcers, interviewers, newscasters, and reporters. Laboratory hours required. Prereq: 275.
400 Mass Communication Law and Ethics (3) Emphasis on legal issues affecting print and electronic media, including libel, privacy, copyright, free press-fair trial, governmental regulations of advertising, electronic media and public relations. Also includes ethical standards and practices. Prereq: Consent of instructor. (Same as Legal Studies 400.)
411 Electronic News Gathering (3) Writing, reporting, shooting, editing, and producing for the electronic news media. Lecture and lab course providing students with experience as reporters/producers for a television and cable news program. Includes an overview of electronic news-gathering equipment as well as non-linear video editing. Prereq: 311.
412 Opinion Writing (3) Analysis of editorial positions and practices. Writing editorials/columns for newspapers, magazines, corporate publications, and electronic media (radio, television, cable, Internet), with emphasis upon study and use of rhetorical devices and logic. Prereq: Consent of instructor.
414 Magazine and Feature Writing (3) Techniques of writing features and in-depth articles for mass circulation and specialized magazines or newspapers. Organizing and presenting material, with attention to problems in areas such as business, science, agriculture, and the humanities. Prereq: 203 or consent of instructor. (WC)
415 Magazine Industry Workshop (3) Introduction to the magazine industry including management, design, writing and editing, and interactivity. Analysis of print and electronic format magazines. Planning new products for the marketplace. Prereq: 414 or consent of instructor.
420 Media Sales (3) Problems and practices of newspaper, radio, television, cable, and Internet advertising sales. Practical experience in radio and television sales. Use of ratings and new technology in sales presentations. Prereq: 302 and 320.
430 Public Affairs Reporting (3) Reporting (including database reporting) and writing about courts, government and public agencies. Event and issue-oriented journalism of politics and public affairs. Prereq: 315.
433 Editing and Layout for Print/Web (3) Editing and layout for newspapers, magazines and online publishing. Prereq: 203 or consent of instructor.
435 Electronic Field Production (3) Basic principles of digital video production on location. Emphasis on concepts relating to message design, development, and production in the field. Includes writing, digital shooting, and non-linear editing for non-news formats. Prereq: 335 or consent of instructor.
440 Corporate Video (3) Examination of the special requirements of business, industrial, educational and medical uses of video. Includes management, budgeting, planning, producing, and evaluating projects. Students learn digital video production and non-linear editing. Prereq: 435 or consent of instructor.
444 Journalism as Literature (3) Study of writers from the 17th century to the modern era whose works have endured as both journalism and literature. An emerging genre called literary journalism will be examined as a means of cultural reporting with a personal narrative style. Prereq: Consent of instructor. (WC)
450 Writing about Science and Medicine (3) Writing workshop to analyze examples of successful science writing and write series of articles for general public across the spectrum of science, engineering, and medicine. Lecture and laboratory. Prereq: Consent of instructor. (Same as Information Sciences 450.) (WC)
451 Environmental Writing (3) Writing for media (including the Internet) on environmental issues such as sprawl, forests, air pollution, energy, and invasive species. Students hear presentations from and interview experts in environmental science and reporting. Exemplary environmental writing is analyzed. Prereq: Consent of instructor. (WC)
455 Issues in Science Communication (3) Topics vary. Prereq: Consent of instructor. May be repeated.
456 Science Writing as Literature (3) Survey of important science writing for the general public across the spectrum of science, engineering, and medicine. Works by authors such as Arthur C. Clarke, Stephen J. Gould, and Richard Selzer will be analyzed for literary qualities in a quest to understand why some science writing succeeds. Prereq: Consent of instructor. (WC)
457 Media and Society (3) Media processes and effects on society. Major theories/research are introduced and applied to current issues. Prereq: 200 and 275 or consent of instructor.
465 Media and Diversity (3) Media coverage and portrayal of various social groups based on gender, class and race/ethnicity. Effects of media on public perceptions and attitudes toward these groups. Discussion of historical and legal implications of media effects. (Same as Women's Studies 465.)
### JUDAIC STUDIES (595)

<table>
<thead>
<tr>
<th>Course</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>311 Ancient Hebraic Religious Traditions (3)</td>
<td>(See Religious Studies 311.)</td>
</tr>
<tr>
<td>312 Religious Aspects of Biblical and Classical Literature (3)</td>
<td>(See Religious Studies 312.)</td>
</tr>
<tr>
<td>320 Women and Religion (3)</td>
<td>(See Religious Studies 320.)</td>
</tr>
<tr>
<td>322 Medieval Philosophy (3)</td>
<td>(See Medieval Studies 322; Philosophy 322.) (WC)</td>
</tr>
<tr>
<td>350 German-Jewish Topics in Literature and Culture (3)</td>
<td>(See German 350.)</td>
</tr>
<tr>
<td>369 History of the Middle East (3)</td>
<td>(See History 369.)</td>
</tr>
<tr>
<td>370 History of the Middle East (3)</td>
<td>(See History 370.)</td>
</tr>
<tr>
<td>381 Introduction to Judaism (3)</td>
<td>(See Religious Studies 381.)</td>
</tr>
<tr>
<td>383 History of Jewish Civilization I (3)</td>
<td>(See History 383.)</td>
</tr>
<tr>
<td>384 History of Jewish Civilization II (3)</td>
<td>(See History 384.)</td>
</tr>
<tr>
<td>385 Contemporary Jewish Thinkers (3)</td>
<td>(See Religious Studies 385.)</td>
</tr>
<tr>
<td>386 Voices of the Holocaust (3)</td>
<td>(See Religious Studies 386.)</td>
</tr>
<tr>
<td>395 The Crusades and the Medieval Christian-Muslim Relations (3)</td>
<td>(See History 395.)</td>
</tr>
<tr>
<td>405 Modern Jewish Thought (3)</td>
<td>(See Religious Studies 405.)</td>
</tr>
<tr>
<td>425 Early Christian and Byzantine Art to 1350 (3)</td>
<td>(See Art History 425.)</td>
</tr>
<tr>
<td>431 Medieval Art of the West 800-1400 (3)</td>
<td>(See Art History 431.)</td>
</tr>
<tr>
<td>484 Studies in Jewish History (3)</td>
<td>(See History 484.)</td>
</tr>
</tbody>
</table>

### LATIN

See Classics.

### LATIN AMERICAN STUDIES (600)

<table>
<thead>
<tr>
<th>Course</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>251-252 Introduction to Latin American Studies (3,3)</td>
<td>(See History 253-256.)</td>
</tr>
<tr>
<td>313 Peoples and Cultures of Mesoamerica (3)</td>
<td>(See Anthropology 313.)</td>
</tr>
<tr>
<td>314 Peoples and Cultures of South America (3)</td>
<td>(See Anthropology 316.)</td>
</tr>
<tr>
<td>315 Aspects of Luso-Brazilian Literature (3)</td>
<td>(See Portuguese 315.)</td>
</tr>
<tr>
<td>316 Luso-Brazilian Cinema and Literature (3)</td>
<td>(See Portuguese 316.)</td>
</tr>
<tr>
<td>319 Caribbean Cultures and Societies (3)</td>
<td>(See Anthropology 319.)</td>
</tr>
<tr>
<td>331 Introduction to Hispanic Culture (3)</td>
<td>(See Spanish 331.)</td>
</tr>
<tr>
<td>333 Survey of Spanish-American Literature: 1700 to Present (3)</td>
<td>(See Spanish 333.)</td>
</tr>
<tr>
<td>334 Survey of Hispanic Literatures: Beginnings-1700 (3)</td>
<td>(See Spanish 334.)</td>
</tr>
<tr>
<td>360 History of Latin America (3)</td>
<td>(See History 360.)</td>
</tr>
<tr>
<td>361 History of Latin America (3)</td>
<td>(See History 361.)</td>
</tr>
<tr>
<td>373 Geography of South America (3)</td>
<td>(See Geography 373.)</td>
</tr>
<tr>
<td>401 Cultural Plurality and Institutional Changes in Latin America (3)</td>
<td>(See Spanish 401.)</td>
</tr>
<tr>
<td>402 Latin American Studies Seminar (3)</td>
<td>(See Spanish 402.)</td>
</tr>
<tr>
<td>431 Topics in Literature and Language of the Portuguese Speaking World (3)</td>
<td>(See Portuguese 431.)</td>
</tr>
<tr>
<td>432 Topics in the Literature and Language of the Portuguese Speaking World (3)</td>
<td>(See Portuguese 432.)</td>
</tr>
<tr>
<td>456 Latin American Government and Politics I (3)</td>
<td>(See Political Science 456.)</td>
</tr>
<tr>
<td>460 History of Brazil (3)</td>
<td>(See History 460.)</td>
</tr>
<tr>
<td>461 Cuban Revolution in Historical Perspective (3)</td>
<td>(See History 461.)</td>
</tr>
<tr>
<td>462 History of Mexico (3)</td>
<td>(See History 462.)</td>
</tr>
<tr>
<td>463 Modern Latin American History in Film (3)</td>
<td>(See History 463.)</td>
</tr>
<tr>
<td>465 Latin American Film and Culture (3)</td>
<td>(See Spanish 465.)</td>
</tr>
<tr>
<td>475 Studies in Latin American History (3)</td>
<td>(See History 475.)</td>
</tr>
<tr>
<td>479 Disenchanted Texts in Hispanic Literature (3)</td>
<td>(See Spanish 479.)</td>
</tr>
<tr>
<td>491 Foreign Study (1-15)</td>
<td></td>
</tr>
<tr>
<td>492 Off-Campus Study (1-15)</td>
<td></td>
</tr>
<tr>
<td>493 Independent Study (1-15)</td>
<td></td>
</tr>
</tbody>
</table>

### LEGAL STUDIES (617)

<table>
<thead>
<tr>
<th>Course</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>244 Professional Responsibility (3)</td>
<td>(See Philosophy 244.)</td>
</tr>
<tr>
<td>301 The Legal Environment of Business (3)</td>
<td>(See Business Law 301.)</td>
</tr>
<tr>
<td>330 Law in American Society (3)</td>
<td>(See Political Science 330.)</td>
</tr>
<tr>
<td>331 Sociological Research (3)</td>
<td>(See Sociology 331.)</td>
</tr>
<tr>
<td>340 Women, Politics, and the Law (3)</td>
<td>(See Women's Studies 340.)</td>
</tr>
<tr>
<td>341 Judicial Process (3)</td>
<td>(See Political Science 341.)</td>
</tr>
<tr>
<td>362 Roman Law (3)</td>
<td>(See Classics 362.)</td>
</tr>
<tr>
<td>392 Philosophy of Law (3)</td>
<td>(See Philosophy 392.)</td>
</tr>
<tr>
<td>393 Global Justice and Human Rights (3)</td>
<td>(See Philosophy 393.)</td>
</tr>
<tr>
<td>400 Mass Communication Law and Ethics (3)</td>
<td>(See Journalism and Electronic Media 400.)</td>
</tr>
<tr>
<td>401 Political Analysis (3)</td>
<td>(See Political Science 401.)</td>
</tr>
<tr>
<td>430 United States Constitutional Law: Sources of Power and Restraint (3)</td>
<td>(See Political Science 430.)</td>
</tr>
<tr>
<td>431 United States Constitutional Law: Civil Rights and Liberties (3)</td>
<td>(See Political Science 431.)</td>
</tr>
<tr>
<td>435 Criminal Law and Procedure (3)</td>
<td>(See Political Science 435.)</td>
</tr>
<tr>
<td>442 Administrative Law (3)</td>
<td>(See Political Science 442.)</td>
</tr>
<tr>
<td>445 Administration of Justice (3)</td>
<td>(See Political Science 445.)</td>
</tr>
</tbody>
</table>
451 Criminal Justice (3) (See Sociology 451.)
455 Society and Law (3) (See Sociology 455.)
469 Freedom of Speech (3) (See Communication Studies 469.)
470 International Law (3) (See Political Science 470.)
490 Language and Law (3) (See English 490.)
493 Independent Study (1-15) Prereq: Consent of Legal Studies chair. May be repeated. Maximum 3 hours.
494 Internship (3) Prereq: Consent of Legal Studies chair.
496 The Rhetoric of Legal Discourse (3) (See English 496.)
499 Mock Trial (1) Prereq: Consent of Legal Studies chair. May be repeated. Maximum 8 hours.

LINGUISTICS (623)
200 Language, Linguistics, and Society (3) Introduction to linguistics with focus on language development and use of language by individuals and groups. Prereq: Completion of Freshman English or equivalent.
321 Introduction to Old English (3) (See English 321.)
371 Foundations of the English Language (3) (See English 371.)
372 The Structure of Modern English (3) (See English 372.)
400 Topics in Linguistics (3) Content varies. May be repeated. Maximum 6 hours.
411 Linguistic Anthropology (3) (See Anthropology 411.)
423 The Development of Diachronic and Synchronic Linguistics (3) Development of western linguistic thought from the Hebrews and Greeks through modern times. Readings from Boas, Sapir, Bloomfield, and others. Prereq: 9 hours of courses required for the linguistics major (300-level or above) or consent of instructor.
425 Introduction to Descriptive Linguistics (3) (See French 425.)
426 Methods of Historical Linguistics (3) (See German 426.)
429 Romance Linguistics (3) (See French 429.)
431 Topics in Hispanic Linguistics (3) (See Spanish 430.)
435 Structure of the German Language (3) (See German 435.)
436 History of the German Language (3) (See German 436.)
471 Sociolinguistics (3) (See English 471.)
472 American English (3) (See English 472.)
474 Teaching English as a Second or Foreign Language I (3) (See English 474.)
476 Second Language Acquisition (3) (See English 476.)
477 Pedagogical Grammar for ESL Teachers (3) (See English 477.)
485 Special Topics in Language (3) (See English 485.)
490 Language and Law (3) (See English 490.)
491 Foreign Study (1-15)
492 Off-Campus Study (1-15)
493 Independent Study (1-15)

LOGISTICS (626)
310 Intermediate Logistics (3) The concepts, principles, and methods used to plan, organize, and manage logistics activities in a global environment. Activities covered include: customer service, order fulfillment, inventory, materials and distribution planning, transportation, warehousing, and network design. Prereq: Business Administration 331.
411 Logistics Analytical Methods I (3) Introduction to the principle analytical tools and models that are used in logistics; application of the analytical tools to logistics problems; using these techniques to support negotiations in a global business world. Prereq: 310.
412 Logistics Analytical Methods II (3) Advanced analytical tools and techniques used to solve strategic, tactical, and operational global supply chain problems; managing the use of quantitative analytical tools in logistics. Prereq: 310. Coreq: 411.
413 Logistics Operations Management (3) Analysis of logistics operations and management techniques applied to warehousing/distribution center operations, purchasing and operation of transportation services, and logistics personnel management. Prereq: 310. Coreq: 411.
421 Procurement and Supply Management (3) Addresses the processes that facilitate the structure, development, and management of value added transactions and relationships between supplier and customer organizations in a global supply chain context. The course examines the implementation of the business purchasing function, including supplier selection and development, quality control, cost management, and performance measurement. Prereq: 411.
460 Strategic Logistics in a Global Supply Chain Environment (3) Capstone course for logistics, with emphasis on strategic logistics from a global supply chain perspective. Integrates logistics concepts, framework, processes and tools learned in previous logistics coursework. Prereq: 411.
492 Logistics Off-Campus Study (1-6) Prereq: Consent of instructor. Satisfactory/No Credit grading only. May be repeated. Maximum 6 hours.
493 Independent Study (1-6) Directed research on subject of mutual interest to student and staff member. Prereq: Consent of instructor. May be repeated. Maximum 6 hours.

MANAGEMENT (625)
300 Organizational Management (3) Not for business majors. The study of the theories of organizations and the practice of management within them. Prereq: Business Administration 201 and junior standing.
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 Human Resource Management I (3) Theory, methods, and issues pertaining to successful personnel management. Prereq: Business Administration 341, senior standing.
440 Organizational Psychology (3) (See Psychology 440.)
471 International Management (3) Factors significant to the manager in international business activities. Prereq: Business Administration 361.
472 International Human Resource Management (3) Introduction to international human resource management from the perspective of the multinational firm. Topics include: globalization and human resource strategy, understanding culture in the management of human resources, intercultural differences, selecting employees for international assignments, training and developing expatriate employees, and evaluation and compensation of employees in international assignments. Prereq: Business Administration 201.
481 Experiential Cross-Cultural Leadership (3) Examination of the challenges and opportunities of leading people and organizations in cross-cultural settings through experiential methodologies. Topics include: multinational organizational culture, intercultural communications, intercultural decision-making, managing political risks, and motivation and leadership in cross-cultural settings. Prereq: Business Administration 361.
492 Management Off-Campus Study (1-6) Prereq: Consent of instructor. Satisfactory/No Credit grading only. May be repeated. Maximum 6 hours.
493 Independent Study (3) Readings, research, and special projects. Prereq: Consent of instructor. May be repeated. Maximum 6 hours.

MARKETING (632)
300 Marketing and Supply Chain Management (3) Practical applications-oriented overview of what every manager needs to know in order to effectively provide value to customers of the organization, and improve long-term performance through the systematic, strategic coordination of traditional business functions within a particular company and across businesses. Prereq: Business Administration 201 and Junior standing. Not for business majors.
340 Marketing Strategy Frameworks (3) Examines the marketing strategies that customer focused organizations use to acquire and retain customers. Students learn skills needed to create and implement these strategies. Topics include market opportunity analysis, marketing strategy planning, segmentation and targeting decisions, value positioning decisions, customer focused strategies (e.g., Integrated Marketing Communication, brand equity, Customer Relationship Management), and translation of customer learning into marketing strategy. Prereq: Business Administration 332.
345 Marketing Analytics (2) Develops students’ analytical and decision-making skills through specific exercises and examples that apply various statistics principles to marketing-specific content. Students learn how to organize data into customer databases and how to analyze these databases through learning of statistical techniques, decision analysis techniques, and spreadsheet analysis techniques. Prereq: Business Administration 332. Coreq: 340.

350 Customer Value Analysis (3) Examines how organizations conceptualize, gather, analyze, and interpret data needed by managers to learn about customers in markets. Topics include selected consumer/customer behavior theories, customer value determination, and selected marketing research techniques. Prerequisite: 340. Marketing major and co-concentration students only: 350 is a Prereq/Coreq for 452, 456, and 458.

400 Special Topics in Marketing (3) Topics of current interest in marketing. Topic announced prior to offering. Prereq: Business Administration 332. May be repeated provided topic is different. Maximum 6 hours.

452 Product/Service Management (2) Examines how organizations deliver value to customers through product and service strategies. Topics in product management include new product development, product life cycle, product mix management, and brand marketing. Topics in services management include service design, service delivery, service quality/productivity, service failure/recovery, and role of technology. Prereq: 340. Marketing major and co-concentration students only: 350 is a Prereq/Coreq for 452.

456 Integrated Marketing Communications Management (2) Examines how organizations communicate value to customers. Communication topics will be presented in the framework of an Integrated Marketing Communication strategy. Topics will include advertising management, sales promotion, publicity and public relations, sponsorship marketing, direct marketing and e-marketing. Prereq: 340. Marketing major and co-concentration students only: 350 is a Prereq/Coreq for 456.

458 Sales Force Management (2) Examines how organizations connect value to customers through face-to-face selling. Focuses on the activities and problems of sales representatives and first line sales managers. Topics include the selling process, sales force organization, recruiting, motivating, forecasting, territory design, and evaluation. Prereq: 340. Marketing major and co-concentration students only: 350 is a Prereq/Coreq for 458.

460 Global Marketing Strategy (3) Capstone course for Marketing to integrate concepts, frameworks, processes and tools presented in all prior coursework. Students examine the application of marketing knowledge and skills in a global context, with particular emphasis on how organizations respond with global marketing strategies. Prereq: 350 and two of the following—452, 456, or 458.

492 Marketing Off-Campus Study (1-6) Prereq: Consent of instructor. Satisfactory/No Credit grading only. May be repeated. Maximum 6 hours.

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

MATERIALS SCIENCE AND ENGINEERING (638)

101 Advances in Materials Science and Engineering (1) Review modern advances in Materials Science and Engineering. Expose students to a variety of materials science and engineering case studies to demonstrate the societal impact of materials science and engineering profession. Satisfactory/No Credit grading only.

201 Introduction to Materials Science and Engineering (3) Correlation of atomic structure, crystal structure and microstructure of solids with mechanical, physical and chemical properties of engineering significance. Prereq: Chemistry 120.

220 Selection and Use of Soft Goods Manufacture (3) Study of textile products for apparel and interior furnishings; emphasis on the selection of fibers, yarns, fabrics, finishes and construction details to optimize properties needed for particular end uses.

250 Introduction to Materials Kinetics and Transport Phenomena (4) Mass and energy balances; reaction kinetics; steady state and transient heat transfer; viscous flow of gases and liquids; applications to synthesis and processing of engineering materials and technologies; analytical and numerical problem solving. 3 hours lecture, 1 hour lab. Prereq: Mathematics 121; Coreq: MSE 201, Mathematics 231.

260 Materials Engineering Thermodynamics (3) Thermodynamic laws; entropy, internal energy, state functions; one-component and two-component phase equilibria; characteristics of small and large molecular systems; macroscopic properties; material defects. Prereq: Engineering Fundamentals 152, Chemistry 130, Mathematics 142. Coreq: 201.

290-291 Materials Seminar (0.1) Professionalism, ethical considerations, safety, patents, product liability, field trips, industrial speakers, materials science in a global/societal context, teamwork, contemporary issues, life-long learning. May be repeated up to four times. Satisfactory/No Credit grading only.

300 Materials Laboratory Procedures (1) Thermometry, sample preparation for microscopic examination; word processing and graphics usage, data analysis, report writing. Prereq: 201.

301 Application of Statistical and Numerical Techniques in Engineering (3) (See Chemical Engineering 301.)

302 Mechanical Behavior of Materials I (3) Fundamentals of deformation and fracture in solids including metals, ceramics, polymers, and composites. Topics include: stress and strain tensors; isotropic and anisotropic elasticity; anelastic and viscoelastic deformation; plasticity; tensile testing; mechanisms of plastic deformation in crystalline solids; basic strengthening mechanisms; elementary fracture mechanics. Prereq: 201 or consent of instructor.


320 Diffusion and Phase Transformations (3) Introduction to diffusion in solids; the diffusion equations, point defects and atomic mechanisms of diffusion. Thermodynamics of phase equilibria. Introduction to the kinetics and morphology of phase transformations. Prereq: 201, 250, 260.

340 Principles of Polymeric Materials (3) Synthesis and molecular structure of polymers; polymerization kinetics; molecular characterization; crystalline and glass transitions; crystallization kinetics; mechanical properties; rheology and processing. Prereq: 201.

350 Principles of Electronic, Optical, and Magnetic Materials (3) Fundamental electronic, optical, and magnetic properties of solid state materials. Basic bonding and crystallography correlations to electronic, optical, and magnetic properties of materials. Specific subjects that will be covered include: wave properties of electrons, Schrodinger’s equation, energy bands in crystals, electronic conduction in metals and semiconductors, classical and quantum mechanical treatments of optical properties, and magnetic phenomena. Prereq: 201.

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

370 Materials Processing (3) Application of fundamentals of mass and energy balances, mechanics, heat and mass transfer, chemical thermodynamics and kinetics to the processing of materials and manufacturing of products. A wide range of materials (metals, ceramics, polymers), geometries (bulk, fibers, films, coatings) and processes (casting, molding, extrusion, forging, powder processing, coating technologies, etc.) are studied as examples of processing technologies. Elementary ideas of process measurement and control. Prereq: 201, 320; Chemical Engineering 201, 240, or equivalent.

390 Principles of Metallic Materials (3) Property control through composition, mechanical and thermal processing; ferrous and nonferrous alloys; alloy selection. Prereq: 201.

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


421 Mechanical Behavior of Materials II (3) Description of stress and strain; linear elastic constitutive equations, isotropic and anisotropic moduli in various materials; yield criteria; brittle fracture; crazing; plastic strain constitutive equations, forming operations and limit criteria. Prereq: 302, Engineering Science 321, sophomore mathematics.
429 Introduction to Ceramic Matrix Composites (3) Characteristics of composites, including ceramic matrix composites; macromechanics and materials design; overview of fabrication techniques; microstructural characterization; physical and mechanical property evaluation; current and potential applications. Prereq: 201, Engineering Science 321, or equivalent.

445 Polymer Engineering Processing and Characterization Laboratory (3) Polymer film casting, film blowing, mixing and extrusion are operated and studied. Flow rates, temperatures, pressures and velocity profiles are acquired and used in finite element modeling and simulation to correlate the polymeric material properties and morphology. Supporting instrumentation includes linear viscoelastic rheometry, capillary viscometry, SEM, OM, EDS, etc. Coreq: 201 and consent of instructor.

470 Environmental Degradation of Materials (3) Mechanisms, measurement techniques and control of environmental degradation processes in metals, polymers, ceramics and composites; materials selection and design considerations. Prereq: 201. Recommended for chemical engineering, mechanical engineering, civil engineering, engineering science and mechanics majors.

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.

474 Biomaterials (3) Metals, polymers and ceramics utilized in orthopedic, cardiovascular, and dental surgical implant devices; corrosion and degradation problems; material properties of primary importance; tissue response to synthetic materials. Prereq: 201. Recommended for engineering science and mechanics majors.

476 Overview of Intermetallic Compounds and Composites (3) Fabrication and processing, ultrafine-grained materials nanotechnology, thermodynamics and stability, microstructural characteristics, mechanical properties, corrosion and oxidation properties, theoretical modeling, and design and industrial applications of intermetallics and composites. Laboratory demonstrations and group projects. Prereq: 201.

480 Materials Selection in Design (3) Systematic materials selection in design. Review of material properties; use of property selection charts and indices. Materials selection, with and without shape constraints; materials processing in design; case studies. Sources of material property data, utilization of material data bases. Industrial design, aesthetics, economics, regulations, forces for changes. Prereq: Junior standing.

484 Introduction to Maintainability Engineering (3) (See Nuclear Engineering 484.)

489 Materials Design (3) Project involving materials selection and performance. Prereq: Senior standing.

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

495 Thesis (3) Research problems in materials science and engineering with prior approval of a professor. Prereq: Senior standing or consent of instructor. May be repeated. Maximum 6 hours.

MATHEMATICS (641)

100 Intermediate Algebra (3) First degree equations and inequalities, polynomials, rational expressions, exponents, graphing, second degree equations and inequalities, systems of equations, introduction to exponential and logarithmic functions. The course is designed to prepare students for enrollment in Mathematics 119, 130, 201, and 202. Course does not count toward the total number of hours required for graduation, nor does it fulfill any mathematics requirement. A, B, C, No Credit grading.

109 Algebra Workshop (1) Self-paced tutorial center for students taking 119, 125, 130, or 141 who need additional help (as determined by placement exams, assessment exams, or classroom performance). Individual and computerized instruction on various pertinent algebra and trigonometry skills. Student must be concurrently enrolled in 119, 125, 130, or 141. May be repeated. Maximum 3 hours. Satisfactory/No Credit grading only.

113 Mathematical Reasoning (3) Classical and modern topics in number theory, logic, geometry, and probability with emphasis on problem solving. Consumer mathematics and other real-world applications. (QR)

115 Statistical Reasoning (3) An introduction to probability and statistics without calculus. Not available for credit to students in the College of Business Administration. (QR)

117 Honors: Mathematical Reasoning (3) Topics will be selected from: number theory, logic, geometry, elementary topology, fractals, or probability with an emphasis on problem solving. Consumer mathematics, fair division, voting theory or other real-world applications may be included. Prereq: ACT composite score of at least 31 (or 1380 SAT) or consent of instructor. (QR)

119 College Algebra (3) A review of algebraic functions, equations, and inequalities for students who satisfy the course prerequisites for 123 or 125 but whose placement test scores indicated additional preparation is necessary. Prereq: Satisfactory placement test scores or 100. This course should not be taken to remove an entrance requirement. Students who receive a grade of C or better in any course numbered 123 or higher (except for 201 or 202) may not subsequently receive credit for 119.

123 Finite Mathematics (3) For students not planning to major in the physical sciences, engineering, mathematics, or computer science. Exponential and logarithmic functions, interest and annuities, linear systems and matrices, optimization. Prereq: Satisfactory placement test score or 119 or 130. (QR)

125 Basic Calculus (3) For students not planning to major in the physical sciences, engineering, mathematics, or computer science. Calculus of algebraic, exponential, and logarithmic functions, with applications. Prereq: Satisfactory placement test score, or 119 or 130. No student who has received credit for 141 or 152 with a grade of C or better may subsequently receive credit for 125. (QR)

130 Pre calculus I (4) Review of algebraic, logarithmic, exponential, and trigonometric functions for students who satisfy the course prerequisites for 141 or 151, but whose placement test scores indicate additional preparation is necessary. Coreq: 109 for students who did not study trigonometry in high school or college. Students who did not study trigonometry in high school may take the noncredit course in trigonometry simultaneously with 130. Students who have earned a grade of C or better in 141 or 151 may not subsequently receive credit for 130.

141-142 Calculus I, II (4, 4) Standard first-year course in single variable calculus, especially for students of science, engineering, mathematics, and computer science. Differential and integral calculus with applications. Prereq: Satisfactory placement test scores, or 130. (QR)

147-148 Honors Calculus I, II (4, 4) Honors version of 141-42 for well-prepared students. Students having 32 Mathematics ACT, 700 Quantitative SAT scores, or permission from the instructor may enroll in Mathematics 147. Students with the above scores and credit for Mathematics 141, an AP Calculus AB score of 5, or permission of the instructor, may enroll in Mathematics 148. Credit will not be given for both 147 and 141 or 152. (QR)

151-152 Mathematics for the Life Sciences I, II (3, 3) For students majoring in the Life Sciences. Does not serve as a prerequisite for 231 or 241. Topics include: descriptive statistics, linear regression, discrete probability, matrix algebra, difference equations, calculus, and differential equations. Emphasis on applications in the life sciences. Includes computer projects. Prereq: Two years of algebra, one year of geometry, and half a year of trigonometry in high school, plus satisfactory placement test scores, or 130. Students who receive a grade of C or better in Mathematics 141 cannot subsequently receive credit for 152. (QR)

171 Computer Literacy for Mathematics (3) Introduction to computers, the internet, mathematical packages and programming for prospective mathematics majors. Prereq: 141.

200 Matrix Computations (1) Introduction to matrix calculations, including determinants, eigenvalues and eigenvectors. For students in the College of Engineering and College of Business statistics majors only. Prereq: 241 or 247. Students who have received a grade of C or better in 251 may not subsequently receive credit for 200.

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

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

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

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

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

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

299 Studies in Mathematics (1-3) Prereq: Consent of instructor. May be repeated. Maximum 9 hours.

300 Introduction to Abstract Mathematics (3) Algebra of sets, functions, relations, mathematical induction, algebraic structure of the real number system, order properties, and completeness. Prereq: 142.

323 Probability and Statistics (3) Discrete and continuous random variables; conditional probability, expectation, moment generating functions; law of large numbers, central limit theorem. Elements of statistical inference, estimation, and hypothesis testing. Prereq: 241 or 247, 300.

341 Analysis I (3) Introduction to the theory of the real number system, limits of sequences, and functions of a real variable. Prereq: 241 or 247, 300.

351 Algebra I (3) Introduction to abstract algebra, emphasizing integers and polynomial rings. Prereq: 251 or 257, 300.

371 Numerical Algorithms (3) Development and application of fundamental algorithms for finding roots of equations, solving systems of linear equations, interpolating, fitting data using least-squares, differentiation, integration, and solving ordinary differential equations. Prereq: A high level programming language (e.g., 171 or Computer Science 102), 231, 241 or 247, and basic matrix algebra (e.g., 200 or 251 or 257).

399 Studies in Mathematics (1-3) Prereq: Consent of instructor. May be repeated. Maximum 9 hours.

400 History of Mathematics (3) Development of major ideas in mathematics from ancient to modern times and the influence of these ideas in science, technology, philosophy, art, and other areas. Prereq: 251 or 257, 300. Writing-emphasis course: at least one in-class essay examination and 3000 words of writing outside the classroom.

401 Mathematics and Microcomputers (3) Primarily for students seeking certification as mathematics teachers at the secondary level. The use of microcomputers to study concepts and problems in mathematics. Does not satisfy major requirements for a Bachelor of Science or Master of Science in Mathematics. Prereq: 141 or 147.

403 Mathematical Methods for Engineers and Scientists (3) Matrix computations, numerical methods, partial differential equations, Sturm-Liouville Theory and special functions as used in engineering and science. Does not satisfy major requirements for a Bachelor of Science or Master of Science in Mathematics. Prereq: 231, 241, and familiarity with an operating system and a programming language (e.g., 171 or Computer Science 102).

404 Applied Vector Calculus (3) Topics from multivariable and vector calculus including line and surface integrals, the divergence theorem and the theorems of Gauss and Stokes. Prereq: 241 or 247.

405 Models in Biology (3) Difference and differential equation models of biological systems. Prereq: 142 or 148 or 152.

411 Mathematical Modeling (3) Construction and analysis of mathematical models used in science and industry. Projects emphasized. Prereq: 231, 241, and 251 or 257. Writing-emphasis course.

421 Combinatorics (3) Introduction to problems of construction and enumeration for discrete structures such as sequences, partitions, graphs, finite fields and geometries, and experimental designs. Prereq: 323 or consent of instructor.

423 Probability I (3) Axiomatic probability, multivariate distributions, conditional probability and expectations, methods of moment generating/characteristic functions. Laws of large numbers and the central limit theorem. Prereq: 300-level probability or consent of instructor.

424 Probability II (3) Elements of stochastic processes: Random walk, Markov chains and Poisson processes. Other topics as selected by the instructor. Prereq: 423.

425 Statistics (3) Derivation of standard statistical distributions including t, F and X²; independence of sample mean and variance; basic limit theorems; point and interval estimation, Bayesian estimates; statistical hypotheses, Neyman-Pearson theorem; likelihood ratio and other parametric and nonparametric tests; sufficient statistics. Prereq: 423 or consent of instructor.


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

445-446 Advanced Calculus I, II (3,3) Introduction to the theory of sequences, series, differentiation, and Riemann integration of functions of one or more variables. Prereq: 241 or 247, 300 or consent of instructor.

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

453 Matrix Algebra II (3) Advanced topics in matrix theory, including the Jordan canonical form. Prereq: 251 or 257.

455-456 Abstract Algebra I, II (3,3) Introduction to algebraic structures such as groups, rings, fields, vector spaces and linear transformations. Prereq: 251 or 257 and 300, or consent of instructor.

457-458 Honors: Abstract Algebra I, II (3,3) Honors version of 455-456. Prereq: 351 or consent of instructor.

460 Geometry (3) Axiomatic and historical development of neutral, Euclidean, and hyperbolic geometry stressing proof technique and critical reasoning. Models of Non-Euclidean geometries. Prereq: 300 or consent of instructor.

461 Topology (3) Includes topology of line and plane, separation properties, compactness, connectedness, continuous functions, homeomorphisms, continua, and topological invariants. Prereq: 241 or 247, 300 or consent of instructor.

471 Numerical Analysis (3) Introduction to computation, instabilities, and rounding. Interpolation and approximation by polynomials and piecewise polynomials. Quadrature and numerical solution of initial and boundary value problems of ordinary differential equations, including stiff systems. Prereq: 371 or consent of instructor. (Same as Computer Science 471.)


475 Industrial Mathematics (3) Modeling, analysis, and computation applied to scientific/technical/industrial problems. Prereq: 231 and familiarity with an operating system and a programming language (e.g., 171, 371, or Computer Science 102).

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

495 Seminar in Actuarial Mathematics (1-3) Introduction to principles and problem solving techniques in actuarial sciences with emphasis on the mathematical topics included in the initial Actuarial Exams. Prereq: 241, 251, 323.

497 Undergraduate Honors Seminar (2) Open to students in the mathematics department undergraduate honors program. Forum for presentation of student theses and other undergraduate research projects. May be repeated. Maximum 8 hours. Satisfactory/No Credit grading only.

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

MATHEMATICS EDUCATION (642)

485 Teaching of Mathematics, Grades 7-12 (3) Preparation of teaching plans, evaluation, materials for teaching mathematics; teaching simulation and directed observation in schools. Prereq: Admission to Teacher Education Program.
MECHANICAL ENGINEERING (650)

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: Engineering Fundamentals 152, 202; Mathematics 142.


331 Thermodynamics (3) Energy and laws governing energy transformations; thermodynamic properties; thermodynamic cycles; ideal gas turbines; applications to engineering problems. Coreq: Mathematics 241.


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

363 System Dynamics (3) Free and forced vibrations of damped and undamped lumped parameter systems; transient and frequency response of lumped parameter systems; introduction to feedback control systems. Coreq: 345.


401 Thesis (3) Research and design problems in mechanical engineering with prior approval of instructor. Prereq: Senior standing or consent of instructor.


410 Professional Development (2) Topics relating to professional responsibility, communications, and organization. Formal oral presentation by each student on an engineering topic chosen by the student and approved by the Instructor. Prereq: English 102, Senior standing.

420-421 Clinical Chemistry (4,4) Includes clinical aspects of biochemistry, principles, theories, and instrumentation related to qualitative and quantitative evaluation of cellular elements of blood and other body fluids; factors of hemostasis, quantitative chemical analysis of urine, and renal function studies. Emphasis on microscopic identification of cells and the significance and correlation of laboratory data.


457 Engineering Entrepreneurship (3) Technology and innovation, technology transfer, patent protection, legal formation and intellectual property, knowledge management, generation, and transmission, creating a business plan and marketing plan, launching a technology based business, sources of capital, small business growth and operation. Prereq: Senior standing or consent of instructor.

460 Mechanical Engineering Design II (1-4) Synthesis and design of a complete mechanical engineering system. Participation in team design effort including formal oral presentations and written design report. Prereq: 450. May be taken once for 1–4 hours credit.


467 Smart Structures and Materials (3) Fundamentals of electromechanical properties of ferroelectric materials (piezoelectric and electrostrictive), shape memory alloys, and other electrically and magnetically activated materials, with application. Course includes semester project. Prereq: 231, 321.

475 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.

480 Introduction to Hybrid Electric Vehicles (3) Steady-state HEV force and power modeling. Introduction to internal combustion engines, motors, energy storage systems and control strategies. Powetrain design and analysis using various computer simulation tools. Coreq: 475.

483 Introduction to Reliability Engineering (3) (See Nuclear Engineering 483.)

484 Introduction to Maintainability Engineering (3) (See Nuclear Engineering 484.)

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

MEDICAL TECHNOLOGY (669)

Courses are open only to qualified students who have completed the first three years of the Medical Technology curriculum.


420-421 Clinical Chemistry (5,5) Clinical aspects of biochemistry, including overview of principles and instrumentation with emphasis on practical laboratory application of analytical procedures, specimen collection and handling, significance of results, and quality assurance. Includes blood gas analysis, including radioimmunoassay, and analysis of blood and other body fluids for enzymes, hormones, and other constituents of clinical interest, utilizing both automated and manual techniques, physical characteristics, detection, and use of short half-life radioactive materials for in vivo procedures such as radioimmunoassay which utilize radioisotopes.

430-431 Hematology and Clinical Microscopy (4,4) Principles, theories, and instrumentation related to qualitative and quantitative evaluation of cellular elements of blood and other body fluids; factors of hemostasis, quantitative chemical analysis of urine, and renal function studies. Emphasis on microscopic identification of cells and the significance and correlation of laboratory data.


450 Clinical Serology and Immunology (2) Performance and interpretation of broad range of clinical serological and immunological procedures with emphasis on principles and clinical correlation. Formal lecture series included.
268 C OURSES OF INSTRUCTION

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

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

MEDIEVAL STUDIES (674)

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

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 500-1000 AD, 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.

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

312-313 Medieval History (3,3) (See History 312-313.)

322 Medieval Philosophy (3) (See Philosophy 322.) (WC)

401 Dante and Medieval Culture (3) (See Italian 401.)

402 Petrarch and Boccaccio (3) (See Italian 402.)

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

405 Medieval Literature (3) (See English 401.)

406 Chaucer (3) (See English 402.)

410 Medieval French Literature (3) (See French 410.)

415 Medieval Architecture (3) (See Architecture 415.)

431 Medieval Art of the West, 800-1400 (3) (See Art History 431.)

441 Northern European Painting, 1350-1600 (3) (See Art History 441.)

451 The Art of Italy, 1250-1450 (3) (See Art History 451.)

475 Ancient and Medieval Political Thought (3) (See Political Science 475.)

491 Foreign Study (1-15)

492 Off-Campus Study (1-15)

493 Independent Study (1-15)

MILITARY SCIENCE AND LEADERSHIP (689)

101 Foundations of Officerhood (2) Discusses organization and role of the Army. Emphasizes basic life skills pertaining to fitness and communication. Analyzes Army values and expected ethical behavior. Adventure training skills lab introduces land navigation, rifle marksmanship, mountaineering, and optional field-training exercises. Letter grade only. Maximum 4 hours.

102 Basic Leadership (2) Develops basic skills that underlie effective problem solving. Examines factors that influence leader and group effectiveness. Emphasizes communication skills to include active-listening and feedback techniques. Adventure training skills lab introduces land navigation, rifle marksmanship, mountaineering, and optional field-training exercises. Letter grade only. Maximum 4 hours.

103 Army ROTC Fitness Program (1) Develops individual muscular strength, muscular endurance, and cardio-respiratory endurance. Classes are divided into groups based on ability and exercises are geared toward personal improvement. Primary evaluation is the Army Physical Fitness Test which consists of pushups, sit-ups and a two-mile run. May be repeated. Maximum 8 hours.

200 Leader’s Training Course (4) A 28-day leadership practicum at Fort Knox, Kentucky. Familiarizes students with Army physical fitness, land navigation, rifle marksmanship, mountaineering, and optional field-training exercises. Letter grade only.

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

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

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

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


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

429 Medical Microbiology Laboratory (2) Laboratory exercises in medically important areas of microbiology including microorganisms, pathogenesis and immunology. Prereq: 319, 430. Coreq: 420.

430 Immunology (3) 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 240.


491 Foreign Study (1-15)

492 Off-Campus Study (1-15)

493 Independent Study (1-15)

495 Senior Seminar (3) In-depth consideration of microbiological problems of current interest requiring an integration of two or more disciplines. Emphasis on original literature and the experimental basis of current knowledge. Historical background, impact on society, predictions of the future, and the basis of moral and ethical judgments. Written reports required. A capstone course. Prereq: 320, senior standing. Only 3 hours may be counted toward the major. Writing-emphasis course. May be repeated. Maximum 6 hours.
202 Leadership and Teamwork (3) Focuses on self-development through understanding of self and group processes. Examines leadership through group projects and historical case studies. Adventure training skills lab introduces land navigation, rifle marksmanship, mountaineering, and optional field training exercises. Prereq: 201 or consent of the Professor of Military Science and Leadership. Letter grade only.

301 Leadership and Problem Solving (4) Examines the basic skills that underlie effective problem solving. Analyzes the role of Army officers played in the transition of the Army from Vietnam to the 21st century. Instruction on analyzing and planning military operations. Emphasis on small unit tactics with a concentration on squad battle drills. Lab practicum concentrates on competency in land navigation, rifle marksmanship, and small unit operations. 3 hours and 1 hour lab. Prereq: United States citizen or pursuing citizenship; minimum of 55 credit hours passed and at least two years remaining to complete degree (undergraduate or graduate); physically qualified; cumulative GPA 2.00 or higher; legally qualified; 3 or 4 years of ROTC or completion of 101, 102, 201, 202 or completion of 200 or basic training. Letter grade only.

302 Leadership and Ethics (4) Probes leader responsibilities that foster an ethical command climate. Applies principles of effective writing and oral communication. Builds on previous instruction to further develop leadership competencies. Lab practicum concentrates on preparation for Military Science and Leadership 400 National Advanced Leaders Camp. Emphasis on land navigation, rifle marksmanship, and small unit operations. Prereq: 301. Letter grade only.

303 Military History (3) Primary emphasis on 21st Century warfare. Examines critical thinking in the study of military history and the relevance of military history to the modern day professional soldier. Provides framework for lifetime study of military history. Prereq: ROTC Advance Course Student (101, 102, 201, 202) or consent of the department head of Military Science and Leadership. Letter grade only.

400 National Advanced Leadership Camp (4) A 31-day leadership practicum held at Fort Lewis, Washington. Students are evaluated in varied leadership positions, rifle marksmanship, land navigation, field leadership reaction course, and tactical small unit leadership. Prereq: 301, 302. Letter grade only.

401 Leadership and Management (4) Discusses Army staff organization, functions, and processes. Analyzes counseling responsibilities and methods. Examines principles of subordinate motivation and organizational change. Applies leadership and problem-solving principles to complex case studies and simulation. 3 hours and 1-hour lab. Prereq: 301 and 302, 400, or consent of instructor. Letter grade only.

402 Officership (4) A capstone course designed to explore topics relevant to second lieutenants entering the Army. Examines common platoon leader actions. Discusses leader responsibilities and actions that foster an ethical command climate. Familiarizes students with Army administrative and logistics management functions. Examines legal aspects of decision-making and leadership. 3 hours and 1-hour lab. Prereq: 301, 302, 400, 401 or consent of instructor. Letter grade only.

430 U.S. Military History, 1754 to the present (3) (See History 451.)

493 Military Leadership Topics (1) Topics on principles and styles of military leadership. Students conduct in-depth profile of a contemporary or historic military leader. Prereq: Consent of instructor. May be repeated. Maximum 4 hours. Letter grade only.

MUSIC EDUCATION (707)

200 Conducting Laboratory (1) A laboratory course designed to afford conducting opportunities for student conductors and to acquaint students with a variety of music literature. May be repeated. Can be taken as elective credit by any student except those registered for 310, 320. Letter grade only.

201 Field Experience in General Music (1) Observing and assisting in an approved elementary or middle school classroom. May be repeated. Maximum 3 hours. Satisfactory/No Credit grading only.

210 Class Woodwind Methods I (1) Structure, use, techniques of playing, care and repair of the clarinet in school instrumental organizations. Emphasis on techniques necessary for basic understanding and effective teaching of the instruments. Practical use of current instructional materials. May be repeated. Letter grade only.

211 Class Woodwind Methods II (1) Structure, use, techniques of playing, care and repair of the flute and saxophone in school instrumental organizations. Emphasis on techniques necessary for basic understanding and effective teaching of the instruments. Practical use of current instructional materials. May be repeated. Letter grade only.

212 Class Woodwind Methods III (1) Structure, use, techniques of playing, care and repair of the oboe and bassoon in school instrumental organizations. Emphasis on techniques necessary for basic understanding and effective teaching of the instruments. Practical use of current instructional materials. May be repeated. Letter grade only.

220 Class Brass Methods (1) Structure, use, techniques of playing, care and repair of the upper brass instruments in school instrumental organizations. Emphasis on techniques necessary for basic understanding and effective teaching of the instruments. Practical use of current instructional materials. May be repeated. Letter grade only.

230 Class Percussion Methods I (1) 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. May be repeated. Letter grade only.

231 Class Percussion Methods II (1) Ethnic instruments, marching percussion trends and concepts, percussion literature and training concepts, traditional and non-traditional percussion accessories, steel drums. Letter grade only.

240 Class String Methods I (1) Structure, use, techniques of playing, care and repair of upper string instruments in school instrumental organizations. Emphasis on techniques necessary for basic understanding and effective teaching of the instruments. Practical use of current instructional materials. May be repeated. Letter grade only.

241 Class String Methods II (1) Structure, use, techniques of playing, care and repair of lower string instruments in school instrumental organizations. Emphasis on techniques necessary for basic understanding and effective teaching of the instruments. Practical use of current instructional materials. May be repeated. Letter grade only.

250 Functional Piano for Teachers (1) Practical piano skills for the general/vocal teacher who does not have a keyboard instrument as the applied principal. Transposition, improvisation, reading open vocal scores, simple accompaniments. May be repeated. Maximum 2 hours.

260 Eurhythmics (1) Principles and practice of eurhythmics, as developed by Emile Jaques-Dalcroze. Prereq: Consent of instructor. May be repeated. Maximum 2 hours. Letter grade only.

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.

310 Conducting I (3) Basic skills of conducting; baton, time beating of traditional patterns, preparatory beat, cutoffs, cueing. Development of the left hand, fermata, subdividing. Mechanics of full score. Conducting live groups. Prereq: 2 years of music theory or consent of instructor. Letter grade only.

320 Conducting II (2) Developing advanced baton technique. Multiple rhythms, modern beat patterns and their variations. Studying, analyzing and interpretation of the full score. Achieving complete physical control. Rehearsal techniques. Conducting live groups in advanced works. Prereq: Conducting I or consent of instructor. Letter grade only.

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.

340 General/Vocal Music Methods (3) School methods and materials for teaching music in the elementary, middle, and high schools. Intended for the instrumental music education major. Letter grade only.

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 grading only.
400 Student Teaching in Music (12) Full time teaching practicum in an approved public school. Prereq: Admission to the teacher education program and completion of all Music Education courses required for the Bachelor of Music degree (4-year alternative) in Music Education. Coreq: Music Education 401.

401 Senior Seminar (0) Issues related to the music teaching profession as experienced in Student Teaching. Coreq: Music Education 400.

420 Music Methods for the Junior High School and Middle School (3) Methods and materials for teaching vocal, instrumental, and general music at the junior high school or middle school level. Prereq: Admission to Teacher Education Program and consent of instructor. Letter grade only.

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. (WC)

440 Marching Band Techniques (2) Functions, organization, and direction of a school marching band. Letter grade only.

441 String Orchestra Pedagogy and Rehearsal Techniques (2) Function, organization and direction of a school orchestra program. Letter grade only.

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: Admission to Teacher Education Program. Satisfactory/No Credit grading only.

490 Special Topics in Music Education (1-3) Prereq: Consent of instructor. May be repeated. Maximum 9 hours. Letter grade only.

493 Independent Study in Music Education (1-5) Prereq: Consent of instructor. May be repeated. Maximum 9 hours. Letter grade only.

**MUSIC ENSEMBLE (708)**

*Prerequisite: By audition or consent of instructor.*

301 Woodwind Choir (1) May be repeated.

302 Jazz-Saxophone Ensemble (1) May be repeated. Maximum 4 hours.

303 Small Jazz Ensemble (1) May be repeated. Maximum 12 hours.

304 Jazz Ensemble (1) May be repeated.

305 Studio Orchestra (1) May be repeated. Maximum 12 hours.

306 Trombone Choir (1) May be repeated.

309 Tuba Ensemble (1) May be repeated.

310 Percussion Ensemble (1) May be repeated.

311 Marimba Choir (1) May be repeated.

315 Chamber Music Ensemble (1) May be repeated.

320 UT Singers (1) May be repeated.

330 Chamber Singers (1) May be repeated.

334 Saxophone Choir (1) May be repeated.

340 Opera Theatre (1) May be repeated.

350 Concert Band (1) May be repeated.

352 Symphonic Band (1) May be repeated.

353 Wind Ensemble (1) May be repeated.

354 Pep Band (1) May be repeated.

359 Marching Band (1) May be repeated.

370 Symphony Orchestra (1) May be repeated.

380 Concert Choir (1) May be repeated.

383 Men's Chorale (1) May be repeated.

389 Women's Chorale (1) May be repeated.

399 Accompanying (1) May be repeated.

**MUSIC GENERAL (698)**

101 Fundamentals of Performance (1-2) Private instrumental or vocal study, one or two half lessons per week. (1 hour credit - elective, secondary or minor; 2 hours credit - major) Admission by audition. This course is designed to prepare students for enrollment in Music Performance 103-195. Cannot be used to satisfy applied music requirements at the principal level in the Bachelor of Music or the Bachelor of Arts degree in Music. Requires payment of applied music fees. May be repeated. Maximum 12 hours. A, B, C, No Credit grading.

200 Solo Class (0)

301 Junior Recital (0) Prereq: Music Theory 120, 140; Musicology 200 or 110. Coreq: 300-level Music Performance.

310 Practical Experience in Arts Management (3) Arts management practicum with approved arts organization. Individualized work with music instructor in conjunction with supervised experience in arts organization management. For music majors only. Prereq: Consent of instructor. May be repeated for credit in another area of arts management.

401 Senior Recital (0) Prereq: Music Theory 220, 240; Musicology 220; Music General 301. Coreq: 400-level Music Performance.

411 Lecture Recital (0) Prereq: Music Theory 220, 240; Musicology 220. Coreq: 400-level Music Performance.

421 Special Topics in Performance (1-3) Prereq: Consent of department head. May be repeated. Maximum 4 hours.

431 Special Topics in Pedagogy (1-3) Prereq: Consent of department head. May be repeated. Maximum 4 hours.

495 Sacred Music Internship (3) Observation, participation, and supervised leadership experience in the music program of an approved local church. Prereq: Senior standing in a Bachelor of Music Sacred Music Track. Satisfactory/No Credit grading only.

**MUSIC INSTRUMENTAL (710)**

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

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

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

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

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

**MUSIC JAZZ (711)**

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

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

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

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

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

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

410 Advanced Improvisation (3) Development of individual skills and solving individual problems in jazz improvisation. Prereq: 210, 220.

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 (712)**

110-120 Class Piano I, II (1,1) Development of keyboard skills in reading, technique, repertoire, harmonization, and transposition. Must be taken in sequence. Intended for music majors and minors. Prereq: Successful completion of music audition and theory placement exam.

210-220 Class Piano III, IV (1,1) Continuation of 110-120; 220 completes piano competency requirement; must be taken in sequence.

230 Keyboard Harmony (1) Melody harmonization, figured bass realization, and improvisation. Prereq: Music Theory 110-120.

260 Early Keyboard Instruments (1) An introduction to the harpsichord, clavichord, and baroque organ. Emphasis on appropriate playing techniques. Brief survey of instrument types, repertoire, and performance practice issues. Prereq: Ability to perform keyboard literature at the 180, 185, or 190 level.

340-350 Piano Pedagogy I, II (3,3) Pedagogical methods and materials related to the development of principles of learning; collateral teaching experience. Must be taken in sequence.


410 Organ Practicum (1) Improvisation, hymn playing, and accompanying on the organ. Prereq: Organ proficiency at the 200 level. May be repeated. Maximum 3 hours.

420-430 Piano Literature I, II (3,3) 420—from 1750 to middle 19th century; 430—middle 19th century to present.

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/Coreq: Musicology 220, consent of instructor.

480 Teaching Class Piano (3) Historical survey and evaluation of teaching materials and methodology for college and/or adult beginning piano classes, with collateral teaching experience. Prereq: Consent of instructor.

485 Suzuki Piano Method I (2) Study of the psychology, procedures, and literature of the Suzuki piano method. Must be taken in sequence. Prereq: Consent of instructor.

490-491 Internship (2,2) Opportunity for pedagogy students to gain experience in teaching beginning students under the supervision of experienced instructors. Includes weekly discussion seminars.

495 Suzuki Piano Method II (2) Study of the psychology, procedures, and literature of the Suzuki Piano Method. Prereq: Consent of instructor.

**MUSIC PERFORMANCE (713)**

Prerequisite: By audition only; Music General 101 or equivalent.

103 Flute (1-3) By audition only. Prereq: Music General 101 or equivalent. Coreq: Ensemble appropriate to degree program (see School of Music Undergraduate Handbook). May be taken once for 1-3 hours.

104 Flute (1-3) By audition only. Prereq: Music General 101 or equivalent; Music Performance 103, grade C or higher. Coreq: Ensemble appropriate to degree program (see School of Music Undergraduate Handbook). May be taken once for 1-3 hours.

105 Oboe (1-3) By audition only. Music General 101 or equivalent. Coreq: Ensemble appropriate to degree program (see School of Music Undergraduate Handbook). May be taken once for 1-3 hours.

106 Oboe (1-3) By audition only. Prereq: Music General 101 or equivalent; Music Performance 105, grade C or higher. Coreq: Ensemble appropriate to degree program (see School of Music Undergraduate Handbook). May be taken once for 1-3 hours.

110 Bassoon (1-3) By audition only. Prereq: Music General 101 or equivalent. Coreq: Ensemble appropriate to degree program (see School of Music Undergraduate Handbook). May be taken once for 1-3 hours.

111 Bassoon (1-3) By audition only. Prereq: Music General 101 or equivalent; Music Performance 110, grade C or higher. Coreq: Ensemble appropriate to degree program (see School of Music Undergraduate Handbook). May be taken once for 1-3 hours.

115 Clarinet (1-3) By audition only. Prereq: Music General 101 or equivalent. Coreq: Ensemble appropriate to degree program (see School of Music Undergraduate Handbook). May be taken once for 1-3 hours.

116 Clarinet (1-3) By audition only. Prereq: Music General 101 or equivalent; Music Performance 115, grade C or higher. Coreq: Ensemble appropriate to degree program (see School of Music Undergraduate Handbook). May be taken once for 1-3 hours.

120 Saxophone (1-3) By audition only. Prereq: Music General 101 or equivalent. Coreq: Ensemble appropriate to degree program (see School of Music Undergraduate Handbook). May be taken once for 1-3 hours.

121 Saxophone (1-3) By audition only. Prereq: Music General 101 or equivalent; Music Performance 120, grade C or higher. Coreq: Ensemble appropriate to degree program (see School of Music Undergraduate Handbook). May be taken once for 1-3 hours.

125 Horn (1-3) By audition only. Prereq: Music General 101 or equivalent. Coreq: Ensemble appropriate to degree program (see School of Music Undergraduate Handbook). May be taken once for 1-3 hours.

126 Horn (1-3) By audition only. Prereq: Music General 101 or equivalent; Music Performance 125, grade C or higher. Coreq: Ensemble appropriate to degree program (see School of Music Undergraduate Handbook). May be taken once for 1-3 hours.

130 Trumpet (1-3) By audition only. Prereq: Music General 101 or equivalent. Coreq: Ensemble appropriate to degree program (see School of Music Undergraduate Handbook). May be taken once for 1-3 hours.

131 Trumpet (1-3) By audition only. Prereq: Music General 101 or equivalent; Music Performance 130, grade C or higher. Coreq: Ensemble appropriate to degree program (see School of Music Undergraduate Handbook). May be taken once for 1-3 hours.

136 Trombone (1-3) By audition only. Prereq: Music General 101 or equivalent; Music Performance 135, grade C or higher. Coreq: Ensemble appropriate to degree program (see School of Music Undergraduate Handbook). May be taken once for 1-3 hours.

140 Baritone (1-3) By audition only. Prereq: Music General 101 or equivalent. Coreq: Ensemble appropriate to degree program (see School of Music Undergraduate Handbook). May be taken once for 1-3 hours.

141 Baritone (1-3) By audition only. Prereq: Music General 101 or equivalent; Music Performance 140, grade C or higher. Coreq: Ensemble appropriate to degree program (see School of Music Undergraduate Handbook). May be taken once for 1-3 hours.

145 Tuba (1-3) By audition only. Prereq: Music General 101 or equivalent. Coreq: Ensemble appropriate to degree program (see School of Music Undergraduate Handbook). May be taken once for 1-3 hours.

146 Tuba (1-3) By audition only. Prereq: Music General 101 or equivalent; Music Performance 145, grade C or higher. Coreq: Ensemble appropriate to degree program (see School of Music Undergraduate Handbook). May be taken once for 1-3 hours.

150 Percussion (1-3) By audition only. Prereq: Music General 101 or equivalent. Coreq: Ensemble appropriate to degree program (see School of Music Undergraduate Handbook). May be taken once for 1-3 hours.

151 Percussion (1-3) By audition only. Prereq: Music General 101 or equivalent; Music Performance 150, grade C or higher. Coreq: Ensemble appropriate to degree program (see School of Music Undergraduate Handbook). May be taken once for 1-3 hours.

155 Voice (1-3) By audition only. Prereq: Music General 101 or equivalent. Coreq: Ensemble appropriate to degree program (see School of Music Undergraduate Handbook). May be taken once for 1-3 hours.

156 Voice (1-3) By audition only. Prereq: Music General 101 or equivalent; Music Performance 155 grade C or higher. Coreq: Ensemble appropriate to degree program (see School of Music Undergraduate Handbook). May be taken once for 1-3 hours.

160 Violin (1-3) By audition only. Prereq: Music General 101 or equivalent. Coreq: Ensemble appropriate to degree program (see School of Music Undergraduate Handbook). May be taken once for 1-3 hours.
161 Violin (1-3) By audition only. Prereq: Music General 101 or equivalent; Music Performance 160, grade C or higher. Coreq: Ensemble appropriate to degree program (see School of Music Undergraduate Handbook). May be taken once for 1-3 hours.

165 Viola (1-3) By audition only. Prereq: Music General 101 or equivalent. Coreq: Ensemble appropriate to degree program (see School of Music Undergraduate Handbook). May be taken once for 1-3 hours.

166 Viola (1-3) By audition only. Prereq: Music General 101 or equivalent; Music Performance 165, grade C or higher. Coreq: Ensemble appropriate to degree program (see School of Music Undergraduate Handbook). May be taken once for 1-3 hours.

170 Cello (1-3) By audition only. Prereq: Music General 101 or equivalent. Coreq: Ensemble appropriate to degree program (see School of Music Undergraduate Handbook). May be taken once for 1-3 hours.

171 Cello (1-3) By audition only. Prereq: Music General 101 or equivalent; Music Performance 170, grade C or higher. Coreq: Ensemble appropriate to degree program (see School of Music Undergraduate Handbook). May be taken once for 1-3 hours.

172 Electric Bass (1-3) By audition only. Prereq: Music General 101 or equivalent. Coreq: Ensemble appropriate to degree program (see School of Music Undergraduate Handbook). May be taken once for 1-3 hours.

173 Electric Bass (1-3) By audition only. Prereq: Music General 101 or equivalent; Music Performance 172, grade C or higher. Coreq: Ensemble appropriate to degree program (see School of Music Undergraduate Handbook). May be taken once for 1-3 hours.

174 String Bass (1-3) By audition only. Prereq: Music General 101 or equivalent. Coreq: Ensemble appropriate to degree program (see School of Music Undergraduate Handbook). May be taken once for 1-3 hours.

175 String Bass (1-3) By audition only. Prereq: Music General 101 or equivalent; Music Performance 174, grade C or higher. Coreq: Ensemble appropriate to degree program (see School of Music Undergraduate Handbook). May be taken once for 1-3 hours.

180 Piano (1-3) By audition only. Prereq: Music General 101 or equivalent. Coreq: Ensemble appropriate to degree program (see School of Music Undergraduate Handbook). May be taken once for 1-3 hours.

181 Piano (1-3) By audition only. Prereq: Music General 101 or equivalent; Music Performance 180, grade C or higher. Coreq: Ensemble appropriate to degree program (see School of Music Undergraduate Handbook). May be taken once for 1-3 hours.

184 Guitar (1-3) By audition only. Prereq: Music General 101 or equivalent; Music Performance 183, grade C or higher. Coreq: Ensemble appropriate to degree program (see School of Music Undergraduate Handbook). May be taken once for 1-3 hours.

185 Harpsichord (1-3) By audition only. Prereq: Music General 101 or equivalent. Coreq: Ensemble appropriate to degree program (see School of Music Undergraduate Handbook). May be taken once for 1-3 hours.

186 Harpsichord (1-3) By audition only. Prereq: Music General 101 or equivalent; Music Performance 185, grade C or higher. Coreq: Ensemble appropriate to degree program (see School of Music Undergraduate Handbook). May be taken once for 1-3 hours.

189 Organ (1-3) By audition only. Prereq: Music General 101 or equivalent. Coreq: Ensemble appropriate to degree program (see School of Music Undergraduate Handbook). May be taken once for 1-3 hours.

190 Organ (1-3) By audition only. Prereq: Music General 101 or equivalent; Music Performance 189, grade C or higher. Coreq: Ensemble appropriate to degree program (see School of Music Undergraduate Handbook). May be taken once for 1-3 hours.

203 Flute (1-3) By audition only. Prereq: Music General 101 or equivalent; Music Performance 104, grade C or higher. Coreq: Ensemble appropriate to degree program (see School of Music Undergraduate Handbook). May be repeated by non-BM students. Maximum 8 hours.

204 Flute (1-3) By audition only. Prereq: Music General 101 or equivalent; Music Performance 203, grade C or higher. Coreq: Ensemble appropriate to degree program (see School of Music Undergraduate Handbook). May be repeated by non-BM students. Maximum 8 hours.

205 Oboe (1-3) By audition only. Prereq: Music General 101 or equivalent; Music Performance 106, grade C or higher. Coreq: Ensemble appropriate to degree program (see School of Music Undergraduate Handbook). May be repeated by non-BM students. Maximum 8 hours.

206 Oboe (1-3) By audition only. Prereq: Music General 101 or equivalent; Music Performance 205, grade C or higher. Coreq: Ensemble appropriate to degree program (see School of Music Undergraduate Handbook). May be repeated by non-BM students. Maximum 8 hours.

210 Bassoon (1-3) By audition only. Prereq: Music General 101 or equivalent; Music Performance 111, grade C or higher. Coreq: Ensemble appropriate to degree program (see School of Music Undergraduate Handbook). May be repeated by non-BM students. Maximum 8 hours.

211 Bassoon (1-3) By audition only. Prereq: Music General 101 or equivalent; Music Performance 210, grade C or higher. Coreq: Ensemble appropriate to degree program (see School of Music Undergraduate Handbook). May be repeated by non-BM students. Maximum 8 hours.

215 Clarinet (1-3) By audition only. Prereq: Music General 101 or equivalent; Music Performance 116, grade C or higher. Coreq: Ensemble appropriate to degree program (see School of Music Undergraduate Handbook). May be repeated by non-BM students. Maximum 8 hours.

216 Clarinet (1-3) By audition only. Prereq: Music General 101 or equivalent; Music Performance 215, grade C or higher. Coreq: Ensemble appropriate to degree program (see School of Music Undergraduate Handbook). May be repeated by non-BM students. Maximum 8 hours.

220 Saxophone (1-3) By audition only. Prereq: Music General 101 or equivalent; Music Performance 121, grade C or higher. Coreq: Ensemble appropriate to degree program (see School of Music Undergraduate Handbook). May be repeated by non-BM students. Maximum 8 hours.

221 Saxophone (1-3) By audition only. Prereq: Music General 101 or equivalent; Music Performance 220, grade C or higher. Coreq: Ensemble appropriate to degree program (see School of Music Undergraduate Handbook). May be repeated by non-BM students. Maximum 8 hours.

225 Horn (1-3) By audition only. Prereq: Music General 101 or equivalent; Music Performance 126, grade C or higher. Coreq: Ensemble appropriate to degree program (see School of Music Undergraduate Handbook). May be repeated by non-BM students. Maximum 8 hours.

226 Horn (1-3) By audition only. Prereq: Music General 101 or equivalent; Music Performance 225, grade C or higher. Coreq: Ensemble appropriate to degree program (see School of Music Undergraduate Handbook). May be repeated by non-BM students. Maximum 8 hours.

230 Trumpet (1-3) By audition only. Prereq: Music General 101 or equivalent; Music Performance 131, grade C or higher. Coreq: Ensemble appropriate to degree program (see School of Music Undergraduate Handbook). May be repeated by non-BM students. Maximum 8 hours.

231 Trumpet (1-3) By audition only. Prereq: Music General 101 or equivalent; Music Performance 230, grade C or higher. Coreq: Ensemble appropriate to degree program (see School of Music Undergraduate Handbook). May be repeated by non-BM students. Maximum 8 hours.

235 Trombone (1-3) By audition only. Prereq: Music General 101 or equivalent; Music Performance 136, grade C or higher. Coreq: Ensemble appropriate to degree program (see School of Music Undergraduate Handbook). May be repeated by non-BM students. Maximum 8 hours.

236 Trombone (1-3) By audition only. Prereq: Music General 101 or equivalent; Music Performance 235, grade C or higher. Coreq: Ensemble appropriate to degree program (see School of Music Undergraduate Handbook). May be repeated by non-BM students. Maximum 8 hours.

240 Baritone (1-3) By audition only. Prereq: Music General 101 or equivalent; Music Performance 141, grade C or higher. Coreq: Ensemble appropriate to degree program (see School of Music Undergraduate Handbook). May be repeated by non-BM students. Maximum 8 hours.

241 Baritone (1-3) By audition only. Prereq: Music General 101 or equivalent; Music Performance 240, grade C or higher. Coreq: Ensemble appropriate to degree program (see School of Music Undergraduate Handbook). May be repeated by non-BM students. Maximum 8 hours.

245 Tuba (1-3) By audition only. Prereq: Music General 101 or equivalent; Music Performance 146, grade C or higher. Coreq: Ensemble appropriate to degree program (see School of Music Undergraduate Handbook). May be repeated by non-BM students. Maximum 8 hours.
246 Tuba (1-3) By audition only. Prereq: Music General 101 or equivalent; Music Performance 245, grade C or higher. Coreq: Ensemble appropriate to degree program (see School of Music Undergraduate Handbook). May be repeated by non-BM students. Maximum 8 hours.

250 Percussion (1-3) By audition only. Prereq: Music General 101 or equivalent; Music Performance 151, grade C or higher. Coreq: Ensemble appropriate to degree program (see School of Music Undergraduate Handbook). May be repeated by non-BM students. Maximum 8 hours.

251 Percussion (1-3) By audition only. Prereq: Music General 101 or equivalent; Music Performance 250, grade C or higher. Coreq: Ensemble appropriate to degree program (see School of Music Undergraduate Handbook). May be repeated by non-BM students. Maximum 8 hours.

255 Voice (1-3) By audition only. Prereq: Music General 101 or equivalent; Music Performance 156, grade C or higher. Coreq: Ensemble appropriate to degree program (see School of Music Undergraduate Handbook). May be repeated by non-BM students. Maximum 8 hours.

256 Voice (1-3) By audition only. Prereq: Music General 101 or equivalent; Music Performance 255, grade C or higher. Coreq: Ensemble appropriate to degree program (see School of Music Undergraduate Handbook). May be repeated by non-BM students. Maximum 8 hours.

260 Violin (1-3) By audition only. Prereq: Music General 101 or equivalent; Music Performance 161, grade C or higher. Coreq: Ensemble appropriate to degree program (see School of Music Undergraduate Handbook). May be repeated by non-BM students. Maximum 8 hours.

261 Violin (1-3) By audition only. Prereq: Music General 101 or equivalent; Music Performance 260, grade C or higher. Coreq: Ensemble appropriate to degree program (see School of Music Undergraduate Handbook). May be repeated by non-BM students. Maximum 8 hours.

265 Viola (1-3) By audition only. Prereq: Music General 101 or equivalent; Music Performance 166, grade C or higher. Coreq: Ensemble appropriate to degree program (see School of Music Undergraduate Handbook). May be repeated by non-BM students. Maximum 8 hours.

266 Viola (1-3) By audition only. Prereq: Music General 101 or equivalent; Music Performance 265, grade C or higher. Coreq: Ensemble appropriate to degree program (see School of Music Undergraduate Handbook). May be repeated by non-BM students. Maximum 8 hours.

270 Cello (1-3) By audition only. Prereq: Music General 101 or equivalent; Music Performance 270, grade C or higher. Coreq: Ensemble appropriate to degree program (see School of Music Undergraduate Handbook). May be repeated by non-BM students. Maximum 8 hours.

271 Cello (1-3) By audition only. Prereq: Music General 101 or equivalent; Music Performance 270, grade C or higher. Coreq: Ensemble appropriate to degree program (see School of Music Undergraduate Handbook). May be repeated by non-BM students. Maximum 8 hours.

272 Electric Bass (1-3) By audition only. Prereq: Music General 101 or equivalent; Music Performance 173, grade C or higher. Coreq: Ensemble appropriate to degree program (see School of Music Undergraduate Handbook). May be repeated by non-BM students. Maximum 8 hours.

273 Electric Bass (1-3) By audition only. Prereq: Music General 101 or equivalent; Music Performance 272, grade C or higher. Coreq: Ensemble appropriate to degree program (see School of Music Undergraduate Handbook). May be repeated by non-BM students. Maximum 8 hours.

274 String Bass (1-3) By audition only. Prereq: Music General 101 or equivalent; Music Performance 175, grade C or higher. Coreq: Ensemble appropriate to degree program (see School of Music Undergraduate Handbook). May be repeated by non-BM students. Maximum 8 hours.

275 String Bass (1-3) By audition only. Prereq: Music General 101 or equivalent; Music Performance 274, grade C or higher. Coreq: Ensemble appropriate to degree program (see School of Music Undergraduate Handbook). May be repeated by non-BM students. Maximum 8 hours.

280 Piano (1-3) By audition only. Prereq: Music General 101 or equivalent; Music Performance 181, grade C or higher. Coreq: Ensemble appropriate to degree program (see School of Music Undergraduate Handbook). May be repeated by non-BM students. Maximum 8 hours.

281 Piano (1-3) By audition only. Prereq: Music General 101 or equivalent; Music Performance 280, grade C or higher. Coreq: Ensemble appropriate to degree program (see School of Music Undergraduate Handbook). May be repeated by non-BM students. Maximum 8 hours.

283 Guitar (1-3) By audition only. Prereq: Music General 101 or equivalent; Music Performance 184, grade C or higher. Coreq: Ensemble appropriate to degree program (see School of Music Undergraduate Handbook). May be repeated by non-BM students. Maximum 8 hours.

284 Guitar (1-3) By audition only. Prereq: Music General 101 or equivalent; Music Performance 283, grade C or higher. Coreq: Ensemble appropriate to degree program (see School of Music Undergraduate Handbook). May be repeated by non-BM students. Maximum 8 hours.

285 Harpsichord (1-3) By audition only. Prereq: Music General 101 or equivalent; Music Performance 186, grade C or higher. Coreq: Ensemble appropriate to degree program (see School of Music Undergraduate Handbook). May be repeated by non-BM students. Maximum 8 hours.

286 Harpsichord (1-3) By audition only. Prereq: Music General 101 or equivalent; Music Performance 285, grade C or higher. Coreq: Ensemble appropriate to degree program (see School of Music Undergraduate Handbook). May be repeated by non-BM students. Maximum 8 hours.

289 Organ (1-3) By audition only. Prereq: Music General 101 or equivalent; Music Performance 190, grade C or higher. Coreq: Ensemble appropriate to degree program (see School of Music Undergraduate Handbook). May be repeated by non-BM students. Maximum 8 hours.

303 Flute (1-3) By audition only. Prereq: Music General 101 or equivalent; Music Performance 204, grade C or higher. Coreq: Ensemble appropriate to degree program (see School of Music Undergraduate Handbook). May be repeated. Maximum 8 hours.

304 Flute (1-3) By audition only. Prereq: Music General 101 or equivalent; Music Performance 303, grade C or higher. Coreq: Ensemble appropriate to degree program (see School of Music Undergraduate Handbook). May be repeated. Maximum 8 hours.

305 Oboe (1-3) By audition only. Prereq: Music General 101 or equivalent; Music Performance 206, grade C or higher. Coreq: Ensemble appropriate to degree program (see School of Music Undergraduate Handbook). May be repeated. Maximum 8 hours.

306 Oboe (1-3) By audition only. Prereq: Music General 101 or equivalent; Music Performance 305, grade C or higher. Coreq: Ensemble appropriate to degree program (see School of Music Undergraduate Handbook). May be repeated. Maximum 8 hours.

310 Bassoon (1-3) By audition only. Prereq: Music General 101 or equivalent; Music Performance 211, grade C or higher. Coreq: Ensemble appropriate to degree program (see School of Music Undergraduate Handbook). May be repeated. Maximum 8 hours.

311 Bassoon (1-3) By audition only. Prereq: Music General 101 or equivalent; Music Performance 310, grade C or higher. Coreq: Ensemble appropriate to degree program (see School of Music Undergraduate Handbook). May be repeated. Maximum 8 hours.

315 Clarinet (1-3) By audition only. Prereq: Music General 101 or equivalent; Music Performance 216, grade C or higher. Coreq: Ensemble appropriate to degree program (see School of Music Undergraduate Handbook). May be repeated. Maximum 8 hours.

316 Clarinet (1-3) By audition only. Prereq: Music General 101 or equivalent; Music Performance 315, grade C or higher. Coreq: Ensemble appropriate to degree program (see School of Music Undergraduate Handbook). May be repeated. Maximum 8 hours.

320 Saxophone (1-3) By audition only. Prereq: Music General 101 or equivalent; Music Performance 221, grade C or higher. Coreq: Ensemble appropriate to degree program (see School of Music Undergraduate Handbook). May be repeated. Maximum 8 hours.
321 Saxophone (1-3) By audition only. Prereq: Music General 101 or equivalent; Music Performance 320, grade C or higher. Coreq: Ensemble appropriate to degree program (see School of Music Undergraduate Handbook). May be repeated. Maximum 8 hours.

325 Horn (1-3) By audition only. Prereq: Music General 101 or equivalent; Music Performance 226, grade C or higher. Coreq: Ensemble appropriate to degree program (see School of Music Undergraduate Handbook). May be repeated. Maximum 8 hours.

326 Horn (1-3) By audition only. Prereq: Music General 101 or equivalent; Music Performance 325, grade C or higher. Coreq: Ensemble appropriate to degree program (see School of Music Undergraduate Handbook). May be repeated. Maximum 8 hours.

330 Trumpet (1-3) By audition only. Prereq: Music General 101 or equivalent; Music Performance 231, grade C or higher. Coreq: Ensemble appropriate to degree program (see School of Music Undergraduate Handbook). May be repeated. Maximum 8 hours.

331 Trumpet (1-3) By audition only. Prereq: Music General 101 or equivalent; Music Performance 330, grade C or higher. Coreq: Ensemble appropriate to degree program (see School of Music Undergraduate Handbook). May be repeated. Maximum 8 hours.

335 Trombone (1-3) By audition only. Prereq: Music General 101 or equivalent; Music Performance 236, grade C or higher. Coreq: Ensemble appropriate to degree program (see School of Music Undergraduate Handbook). May be repeated. Maximum 8 hours.

340 Baritone (1-3) By audition only. Prereq: Music General 101 or equivalent; Music Performance 241, grade C or higher. Coreq: Ensemble appropriate to degree program (see School of Music Undergraduate Handbook). May be repeated. Maximum 8 hours.

341 Baritone (1-3) By audition only. Prereq: Music General 101 or equivalent; Music Performance 340, grade C or higher. Coreq: Ensemble appropriate to degree program (see School of Music Undergraduate Handbook). May be repeated. Maximum 8 hours.

345 Tuba (1-3) By audition only. Prereq: Music General 101 or equivalent; Music Performance 246, grade C or higher. Coreq: Ensemble appropriate to degree program (see School of Music Undergraduate Handbook). May be repeated. Maximum 8 hours.

346 Tuba (1-3) By audition only. Prereq: Music General 101 or equivalent; Music Performance 345, grade C or higher. Coreq: Ensemble appropriate to degree program (see School of Music Undergraduate Handbook). May be repeated. Maximum 8 hours.

350 Percussion (1-3) By audition only. Prereq: Music General 101 or equivalent; Music Performance 251, grade C or higher. Coreq: Ensemble appropriate to degree program (see School of Music Undergraduate Handbook). May be repeated. Maximum 8 hours.

351 Percussion (1-3) By audition only. Prereq: Music General 101 or equivalent; Music Performance 350, grade C or higher. Coreq: Ensemble appropriate to degree program (see School of Music Undergraduate Handbook). May be repeated. Maximum 8 hours.

355 Voice (1-3) By audition only. Prereq: Music General 101 or equivalent; Music Performance 256, grade C or higher. Coreq: Ensemble appropriate to degree program (see School of Music Undergraduate Handbook). May be repeated. Maximum 8 hours.

356 Voice (1-3) By audition only. Prereq: Music General 101 or equivalent; Music Performance 355, grade C or higher. Coreq: Ensemble appropriate to degree program (see School of Music Undergraduate Handbook). May be repeated. Maximum 8 hours.

360 Violin (1-3) By audition only. Prereq: Music General 101 or equivalent; Music Performance 261, grade C or higher. Coreq: Ensemble appropriate to degree program (see School of Music Undergraduate Handbook). May be repeated. Maximum 8 hours.

361 Violin (1-3) By audition only. Prereq: Music General 101 or equivalent; Music Performance 360, grade C or higher. Coreq: Ensemble appropriate to degree program (see School of Music Undergraduate Handbook). May be repeated. Maximum 8 hours.

365 Viola (1-3) By audition only. Prereq: Music General 101 or equivalent; Music Performance 266, grade C or higher. Coreq: Ensemble appropriate to degree program (see School of Music Undergraduate Handbook). May be repeated. Maximum 8 hours.

366 Viola (1-3) By audition only. Prereq: Music General 101 or equivalent; Music Performance 365, grade C or higher. Coreq: Ensemble appropriate to degree program (see School of Music Undergraduate Handbook). May be repeated. Maximum 8 hours.

370 Cello (1-3) By audition only. Prereq: Music General 101 or equivalent; Music Performance 271, grade C or higher. Coreq: Ensemble appropriate to degree program (see School of Music Undergraduate Handbook). May be repeated. Maximum 8 hours.

371 Cello (1-3) By audition only. Prereq: Music General 101 or equivalent; Music Performance 370, grade C or higher. Coreq: Ensemble appropriate to degree program (see School of Music Undergraduate Handbook). May be repeated. Maximum 8 hours.

372 Electric Bass (1-3) By audition only. Prereq: Music General 101 or equivalent; Music Performance 273, grade C or higher. Coreq: Ensemble appropriate to degree program (see School of Music Undergraduate Handbook). May be repeated. Maximum 8 hours.

373 Electric Bass (1-3) By audition only. Prereq: Music General 101 or equivalent; Music Performance 372, grade C or higher. Coreq: Ensemble appropriate to degree program (see School of Music Undergraduate Handbook). May be repeated. Maximum 8 hours.

375 String Bass (1-3) By audition only. Prereq: Music General 101 or equivalent; Music Performance 374, grade C or higher. Coreq: Ensemble appropriate to degree program (see School of Music Undergraduate Handbook). May be repeated. Maximum 8 hours.

380 Piano (1-3) By audition only. Prereq: Music General 101 or equivalent; Music Performance 281, grade C or higher. Coreq: Ensemble appropriate to degree program (see School of Music Undergraduate Handbook). May be repeated. Maximum 8 hours.

381 Piano (1-3) By audition only. Prereq: Music General 101 or equivalent; Music Performance 284, grade C or higher. Coreq: Ensemble appropriate to degree program (see School of Music Undergraduate Handbook). May be repeated. Maximum 8 hours.

383 Guitar (1-3) By audition only. Prereq: Music General 101 or equivalent; Music Performance 286, grade C or higher. Coreq: Ensemble appropriate to degree program (see School of Music Undergraduate Handbook). May be repeated. Maximum 8 hours.

384 Guitar (1-3) By audition only. Prereq: Music General 101 or equivalent; Music Performance 383, grade C or higher. Coreq: Ensemble appropriate to degree program (see School of Music Undergraduate Handbook). May be repeated. Maximum 8 hours.

385 Harpsichord (1-3) By audition only. Prereq: Music General 101 or equivalent; Music Performance 286, grade C or higher. Coreq: Ensemble appropriate to degree program (see School of Music Undergraduate Handbook). May be repeated. Maximum 8 hours.

386 Harpsichord (1-3) By audition only. Prereq: Music General 101 or equivalent; Music Performance 385, grade C or higher. Coreq: Ensemble appropriate to degree program (see School of Music Undergraduate Handbook). May be repeated. Maximum 8 hours.

389 Organ (1-3) By audition only. Prereq: Music General 101 or equivalent; Music Performance 290, grade C or higher. Coreq: Ensemble appropriate to degree program (see School of Music Undergraduate Handbook). May be repeated. Maximum 8 hours.

390 Organ (1-3) By audition only. Prereq: Music General 101 or equivalent; Music Performance 389, grade C or higher. Coreq: Ensemble appropriate to degree program (see School of Music Undergraduate Handbook). May be repeated. Maximum 8 hours.

394 Composition (1-3) By audition only. Prereq: Music General 101 or equivalent; Music Performance 295, grade C or higher. Coreq: Ensemble appropriate to degree program (see School of Music Undergraduate Handbook). May be repeated. Maximum 8 hours.
395 Composition (1-3) By audition only. Prerequisite: Music General 101 or equivalent; Music Performance 394, grade C or higher. Corequisite: Ensemble appropriate to degree program (see School of Music Undergraduate Handbook). May be repeated. Maximum 8 hours.

396 Composition with Electronic Media (1-3) By audition only. Prerequisite: Music General 101 or equivalent; Music Theory 210, 230, grade of C or higher, or consent of instructor. Corequisite: Ensemble appropriate to degree program (see School of Music Undergraduate Handbook). May be repeated. Maximum 8 hours.

403 Flute (1-3) By audition only. Prerequisite: Music General 101 or equivalent; Music Performance 304, grade C or higher. Corequisite: Ensemble appropriate to degree program (see School of Music Undergraduate Handbook). May be repeated. Maximum 8 hours.

404 Flute (1-3) By audition only. Prerequisite: Music General 101 or equivalent; Music Performance 403, grade C or higher. Corequisite: Ensemble appropriate to degree program (see School of Music Undergraduate Handbook). May be repeated. Maximum 8 hours.

405 Oboe (1-3) By audition only. Prerequisite: Music General 101 or equivalent; Music Performance 306, grade C or higher. Corequisite: Ensemble appropriate to degree program (see School of Music Undergraduate Handbook). May be repeated. Maximum 8 hours.

406 Oboe (1-3) By audition only. Prerequisite: Music General 101 or equivalent; Music Performance 405, grade C or higher. Corequisite: Ensemble appropriate to degree program (see School of Music Undergraduate Handbook). May be repeated. Maximum 8 hours.

410 Bassoon (1-3) By audition only. Prerequisite: Music General 101 or equivalent; Music Performance 311, grade C or higher. Corequisite: Ensemble appropriate to degree program (see School of Music Undergraduate Handbook). May be repeated. Maximum 8 hours.

411 Bassoon (1-3) By audition only. Prerequisite: Music General 101 or equivalent; Music Performance 410, grade C or higher. Corequisite: Ensemble appropriate to degree program (see School of Music Undergraduate Handbook). May be repeated. Maximum 8 hours.

415 Clarinet (1-3) By audition only. Prerequisite: Music General 101 or equivalent; Music Performance 316, grade C or higher. Corequisite: Ensemble appropriate to degree program (see School of Music Undergraduate Handbook). May be repeated. Maximum 8 hours.

416 Clarinet (1-3) By audition only. Prerequisite: Music General 101 or equivalent; Music Performance 415, grade C or higher. Corequisite: Ensemble appropriate to degree program (see School of Music Undergraduate Handbook). May be repeated. Maximum 8 hours.

420 Saxophone (1-3) By audition only. Prerequisite: Music General 101 or equivalent; Music Performance 321, grade C or higher. Corequisite: Ensemble appropriate to degree program (see School of Music Undergraduate Handbook). May be repeated. Maximum 8 hours.

421 Saxophone (1-3) By audition only. Prerequisite: Music General 101 or equivalent; Music Performance 420, grade C or higher. Corequisite: Ensemble appropriate to degree program (see School of Music Undergraduate Handbook). May be repeated. Maximum 8 hours.

425 Horn (1-3) By audition only. Prerequisite: Music General 101 or equivalent; Music Performance 326, grade C or higher. Corequisite: Ensemble appropriate to degree program (see School of Music Undergraduate Handbook). May be repeated. Maximum 8 hours.

426 Horn (1-3) By audition only. Prerequisite: Music General 101 or equivalent; Music Performance 425, grade C or higher. Corequisite: Ensemble appropriate to degree program (see School of Music Undergraduate Handbook). May be repeated. Maximum 8 hours.

430 Trumpet (1-3) By audition only. Prerequisite: Music General 101 or equivalent; Music Performance 331, grade C or higher. Corequisite: Ensemble appropriate to degree program (see School of Music Undergraduate Handbook). May be repeated. Maximum 8 hours.

431 Trumpet (1-3) By audition only. Prerequisite: Music General 101 or equivalent; Music Performance 430, grade C or higher. Corequisite: Ensemble appropriate to degree program (see School of Music Undergraduate Handbook). May be repeated. Maximum 8 hours.

435 Trombone (1-3) By audition only. Prerequisite: Music General 101 or equivalent; Music Performance 336, grade C or higher. Corequisite: Ensemble appropriate to degree program (see School of Music Undergraduate Handbook). May be repeated. Maximum 8 hours.

436 Trombone (1-3) By audition only. Prerequisite: Music General 101 or equivalent; Music Performance 435, grade C or higher. Corequisite: Ensemble appropriate to degree program (see School of Music Undergraduate Handbook). May be repeated. Maximum 8 hours.

440 Baritone (1-3) By audition only. Prerequisite: Music General 101 or equivalent; Music Performance 341, grade C or higher. Corequisite: Ensemble appropriate to degree program (see School of Music Undergraduate Handbook). May be repeated. Maximum 8 hours.

441 Baritone (1-3) By audition only. Prerequisite: Music General 101 or equivalent; Music Performance 440, grade C or higher. Corequisite: Ensemble appropriate to degree program (see School of Music Undergraduate Handbook). May be repeated. Maximum 8 hours.

445 Tuba (1-3) By audition only. Prerequisite: Music General 101 or equivalent; Music Performance 450, grade C or higher. Corequisite: Ensemble appropriate to degree program (see School of Music Undergraduate Handbook). May be repeated. Maximum 8 hours.

446 Tuba (1-3) By audition only. Prerequisite: Music General 101 or equivalent; Music Performance 454, grade C or higher. Corequisite: Ensemble appropriate to degree program (see School of Music Undergraduate Handbook). May be repeated. Maximum 8 hours.

450 Percussion (1-3) By audition only. Prerequisite: Music General 101 or equivalent; Music Performance 351, grade C or higher. Corequisite: Ensemble appropriate to degree program (see School of Music Undergraduate Handbook). May be repeated. Maximum 8 hours.

451 Percussion (1-3) By audition only. Prerequisite: Music General 101 or equivalent; Music Performance 450, grade C or higher. Corequisite: Ensemble appropriate to degree program (see School of Music Undergraduate Handbook). May be repeated. Maximum 8 hours.

455 Voice (1-3) By audition only. Prerequisite: Music General 101 or equivalent; Music Performance 356, grade C or higher. Corequisite: Ensemble appropriate to degree program (see School of Music Undergraduate Handbook). May be repeated. Maximum 8 hours.

456 Voice (1-3) By audition only. Prerequisite: Music General 101 or equivalent; Music Performance 455, grade C or higher. Corequisite: Ensemble appropriate to degree program (see School of Music Undergraduate Handbook). May be repeated. Maximum 8 hours.

460 Violin (1-3) By audition only. Prerequisite: Music General 101 or equivalent; Music Performance 361, grade C or higher. Corequisite: Ensemble appropriate to degree program (see School of Music Undergraduate Handbook). May be repeated. Maximum 8 hours.

461 Violin (1-3) By audition only. Prerequisite: Music General 101 or equivalent; Music Performance 460, grade C or higher. Corequisite: Ensemble appropriate to degree program (see School of Music Undergraduate Handbook). May be repeated. Maximum 8 hours.

465 Viola (1-3) By audition only. Prerequisite: Music General 101 or equivalent; Music Performance 366, grade of C or better. Corequisite: Ensemble appropriate to degree program (see School of Music Undergraduate Handbook). May be repeated. Maximum 8 hours.

466 Viola (1-3) By audition only. Prerequisite: Music General 101 or equivalent; Music Performance 465, grade C or higher. Corequisite: Ensemble appropriate to degree program (see School of Music Undergraduate Handbook). May be repeated. Maximum 8 hours.

470 Cello (1-3) By audition only. Prerequisite: Music General 101 or equivalent; Music Performance 471, grade C or higher. Corequisite: Ensemble appropriate to degree program (see School of Music Undergraduate Handbook). May be repeated. Maximum 8 hours.

471 Cello (1-3) By audition only. Prerequisite: Music General 101 or equivalent; Music Performance 470, grade C or higher. Corequisite: Ensemble appropriate to degree program (see School of Music Undergraduate Handbook). May be repeated. Maximum 8 hours.

472 Electric Bass (1-3) By audition only. Prerequisite: Music General 101 or equivalent; Music Performance 373, grade C or higher. Corequisite: Ensemble appropriate to degree program (see School of Music Undergraduate Handbook). May be repeated. Maximum 8 hours.

473 Electric Bass (1-3) By audition only. Prerequisite: Music General 101 or equivalent; Music Performance 472, grade C or higher. Corequisite: Ensemble appropriate to degree program (see School of Music Undergraduate Handbook). May be repeated. Maximum 8 hours.
290 Sound Recording Techniques (3) Theory and applications of tape recording's sound reproduction and reinforcement systems. Topics include room acoustics, audio measurements, microphones, studio and real-time processing, noise reduction, mixing, editing, monitors, system wiring, and maintenance. (QR)

440-440 Counterpoint I, II (3,3) 430—Species counterpoint in modal and tonal styles with emphasis on works of Palestrina and J.S. Bach. Prereq: 430: 210, 230, grade of C or higher, or consent of instructor.

450 Choral Arranging (2) Analysis of scores and writing of arrangements for choirs. Prereq: Music Theory 210 and 240, grade C or higher, or consent of instructor.

493 Independent Study in Music Theory (1-15) Prereq: Consent of department head. May be repeated.

MUSIC VOICE (715)

110 Class Voice I (1) Development of basic vocal skills. May be repeated for credit. Maximum 2 hours.

230 Acting for Singers (1) Advanced work on song presentation and interpretation; scene study and characterization. Prereq: Consent of instructor. May be repeated. Maximum 4 hours.
240-250 Diction I, II (2,2) Sounds by phonetic symbols. Opera and art songs used for examples. Performance practice.

330 Opera Production (1-3) Supervised work on opera productions. Prereq: Consent of instructor. May be repeated. Maximum 12 hours.

410-420 Song Literature I, II (2,2) 410—German songs. 420—French, Italian, Russian, Scandinavian, Czechoslovakian, British, and American art songs. No graduate credit for students in the music concentration in vocal performance.

425 Functional Diction for Singers (3) Comprehensive one-semester survey of singing diction in six languages: English, French, German, Italian, Latin and Spanish. Basic instruction in the International Phonetic Alphabet; development of basic diction skills; overview of diction styles and traditions in each language; survey of diction resources and reference materials. Suitable for sacred music and music education majors with a concentration in voice and for graduate students in choral conducting. Does not fulfill deficiency requirements for graduate students in voice or accompanying.

450-460 Pedagogy I, II (2,1) 450—Concepts and approaches to teaching singing past and present for all ages of voices. 460—Vocal teaching materials: includes collateral teaching experiences. Prereq: Consent of instructor.

MUSICOLOGY (706)

110 Introduction to Music in Western Culture (3) The study of style periods of Western European art music and related issues of cultural and social history. Develops listening skills and ability to respond to music artfully. Writing-emphasis course. Students who receive a grade of C or better in Musicology 200 may not receive credit for Musicology 110. (AH)

115 Music in the United States (3) Explores musical traditions of the United States. Writing-emphasis course. For non-music majors. (AH)

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. (AH)

125 Jazz in American Culture (3) The historical study of jazz as part of American culture, including its styles, key performers, and musical practices. Writing-emphasis course. For non-music majors. (AH)

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

210 History of Music I (3) Historical study of musical styles, practices, theories, and contexts of Western European art music to 1750 through activities that include analytical listening, source readings and music score study. Develops skills in independent research, critical thinking, and expository writing. Writing-emphasis course. Prereq: 110 or 200, or consent of instructor. (AH)

220 History of Music II (3) Historical study of musical styles, practices, theories, and contexts of European art music from 1750 to present through activities that include analytical listening, source readings and music score study. Develops skills in independent research, critical thinking, and expository writing. Writing-emphasis course. Prereq: 210. (AH) (WC)

290 Introduction to World Musics (3) Survey of music of representative cultures from Africa, Asia, Oceania, and the Americas with a focus on music as sound and as part of the human condition. Also includes an emphasis on applying basic music terminology to developing listening skills. (AH)

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

340-341 Contemporary Trends in American Church Music I, II (2,2) Survey of sacred music in popular contemporary style, emphasizing analysis and evaluative criteria. Must be taken in sequence. 340 includes theory and keyboard harmony appropriate to the style. 341 includes composition and arranging within the style. Prereq: Music Theory 210-220.

350 History of Jazz (3) Origin, development, and styles of jazz music and its exponents. Cultivation of special listening techniques. Writing-emphasis course. Prereq: Consent of instructor.

380 Music in World Cultures (3) Examines music from an ethnomusicological perspective focusing on musical performance and the interrelationships of music, culture, and daily life. The course surveys music from a variety of cultures through a series of case studies. Prereq: 210-220, or permission of instructor. (WC)

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

410 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. (WC)

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.

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

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

NUCLEAR ENGINEERING (716)

200 Introduction to Nuclear and Radiological Engineering (1) Topics related to nuclear and radiological engineering. Satisfactory/No Credit grading only.


304 Nuclear and Radiological Engineering Laboratory I (3) Radiation detection and counting instrumentation, counting statistics, half-life and decay schemes, gamma spectrometry, heat transfer experiments. Prereq: 342. Coreq: 470. (WC)

342 Thermal Science (3) Fluid statics; conservation equations of mass, momentum, and energy; applications to fluid machinery; heat transfer processes, heat conduction, thermal radiation, free and forced convection. Prereq: 203 or Mechanical Engineering 331.


360 Reactor Systems and Safety (3) Safety and operating limits of nuclear steam supply system components; NRC regulations; accident analysis and mitigation. Prereq: 342.

400 Senior Seminar (1) Current topics related to nuclear and radiological engineering including ethics, contemporary issues, and commitment to life-long learning. Prereq: Senior standing. Satisfactory/No Credit grading only. (OC)

403 Nuclear and Radiological Engineering Laboratory II (3) Cross section measurements, diffusion properties of neutrons, shielding, dynamics and controls, alpha and beta spectroscopy, radiation fields and dosimetry. Prereq: 304. (WC)

404 Nuclear Fuel Cycle (3) Topics relative to nuclear fuel cycle including, mining, milling, fabrication, in-core management, reprocessing, waste disposal, regulatory and radiation health issues and requirements. Prereq: 470 or equivalent.

406 Radiation Shielding (3) Types of radiation sources, fundamentals of gamma ray and neutron attenuation, biological effects, approximate methods of shield design, discrete ordinates, and Monte Carlo. Prereq: Physics 232.
421 Introduction to Nuclear Criticality Safety (3) Fundamentals of nuclear criticality safety; criticality accidents; safety standards; overview of experiments, computational methods, and applications. Prereq: 301.

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

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

472 Nuclear System Design (4) First order design and analysis of a nuclear system, interface with nonnuclear aspects of system design including system reliability and economics, class project. Prereq: 470.

483 Introduction to Reliability Engineering (3) Probabilistic failure models, parameter estimation (maximum likelihood, Bayes techniques), Model identification and comparison, accelerated life tests, failure prediction, system reliability, preventive maintenance and warranties. Prereq: Senior standing or consent of instructor. (Same as Chemical Engineering 483; Industrial Engineering 483; Mechanical Engineering 483.)

484 Introduction to Maintainability Engineering (3) Principles of maintenance and reliability engineering, and maintenance management. Topics include information extraction from machinery measurements, rotating machinery diagnostics, nondestructive testing, life prediction, failure models, lubrication oil analysis, establishing a predictive maintenance program, and computerized maintenance management systems. Prereq: Senior standing in engineering and consent of instructor. (Same as Chemical Engineering 484; Industrial Engineering 484; Materials Science and Engineering 484; Mechanical Engineering 484.)

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

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

498 Research (1-3) Research related to recent developments in nuclear and radiological engineering. Prereq: Consent of department head. Satisfactory/No Credit grading only. May be repeated. Maximum 3 hours.

NUCLEAR MEDICINE TECHNOLOGY (718)
Courses open only to qualified students who have completed the first three years of the Nuclear Medical Technology Curriculum, described in the College of Arts and Sciences curricula section of this catalog, and who have been admitted to the Nuclear Medical Technology Program at UTMCK.

410 Physics for Nuclear Medicine I (3) Nuclear physics, mathematics, and statistics. Survey of historic and current concepts in atomic and nuclear structure, interrelationships between matter and energy, nuclear reactions, nuclear stability, production of radionuclides, radionuclide generators, decay schemes, and charts used in nuclear identification and behavior prediction. Mathematics and statistics topics include basic arithmetic theories, mathematical manipulations, and applied technical mathematics for use in radio active decay equations, dose calculations and concentration, volume and shielding determinations. Graphing, counting statistics and other physical and chemical applications of mathematics to nuclear medicine are included. May not be substituted for Physics 471 or 472.

411 Nuclear Instrumentation (3) Course concerns non-imaging, imaging, and instrument quality assurance. Non-imaging topics include basic radiation detectors, their applications, functions, and limitations with overview of basic electronics, gas-filled detectors, statistics and counting, solid and liquid scintillation detection systems, semiconductor and instrument stabilization, and quality control. Imaging topics are instrumentation of imaging devices, including basic function, application of principles and quality control. Quality assurance unit emphasizes function and maintenance requirements of nuclear instrumentation, radiation safety practices, and statistical analysis of quality control data.

412 Radiopharmacy (2) Emphasis on basic chemistry and radiochemistry in nuclear radiopharmacy. Topics include radiopharmaceutical preparation and quality assurance, radionuclide production, and basic photographic film chemistry. Kinetics, biodistribution, and mechanisms of localization are also included, plus guidelines and regulations governing radiopharmacy management and operation.

415 Physics for Nuclear Medicine II (3) Continuation of 410 with focus on radiobiology and radiation safety. Radiobiology topics include interactions of radiation and matter, cellular and systemic responses to radiation, early and late-teratogenic and genetic effects, biological effects of low level radiation, critical organ and dose calculations, and benefit versus risk factor. Radiation safety topics include exposure terminology, dose limit recommendations, ALARA philosophy, federal and state regulations, radiation monitoring equipment, and methods and techniques for safe practice of nuclear medicine.

420-430-440 Clinical Nuclear Medicine I, II, III (4,4,4) Theories and applications of nuclear medicine methodologies. I—Patient care, central nervous system, endocrine system, respiratory system and digestive system; II—cardiovascular and hepato-biliary system, genitourinary system, musculoskeletal system, non organ/tumor/inflammatory imaging, cardiovascular imaging, non-imaging nuclear medicine; III—single photon emission tomography, positron emission tomography, clinical quality assurance, pediatric nuclear medicine, radionuclide therapy, and management and administration of nuclear medicine programs.

425 Computer Applications in Nuclear Medicine (3) Computer systems, applications, and components in quantitation in nuclear medicine. Topics include acquisition modes and limitations, image processing modes and limitations, and image quantitation with some attention to machine and language architecture and numbering systems.

450-460-470 Clinical Practicum I, II, III (4,6,6) Clinical instruction in routine nuclear medicine procedures conducted at UTMCK and other clinical sites. Clinical instruction activities in imaging, instrumentation, radiotherapy, dose administration, radiation safety and protection, non-imaging procedures, patient care and preparation, computer applications, radiation oncology therapy, and basic administrative and management procedures.

475 Nuclear Medicine Registry Review (2) Preparation for National Registry Examination with special emphasis on film interpretation and reporting in technical critique sessions.

NURSING (720)
All upper-division nursing courses except 314, 351, 400, 402, 406, and 480 are restricted to students who have progressed into the major.

201 Introduction to Nursing (2) History, philosophy, and scope of nursing practice with emphasis on the holism of persons, standards for professional practice, and an overview of the nursing process and nursing theories. Prereq: Application for progression to nursing major.

202 Health and Culture (3) An exploration of the beliefs and practices of various cultural groups within the United States in relation to health, illness and the health care delivery system. Implications for the helping professions are examined. This course has no prerequisites and is open to all University of Tennessee undergraduate students.

305 Transitions to Professional Nursing (4) Builds on the knowledge base and experience of RNs in transition to professional nursing. Focuses on the conceptual foundations of nursing practice and issues in health care delivery. 2 lecture and 1 lab. Prereq: 201.

311 Foundations of Professional Nursing Practice (5) Emphasis on patient centered communication, therapeutic interventions, and critical thinking as key elements in the use of the nursing process. Clinical laboratory experiences provide opportunity for the application of these processes in the care of adults in selected health care settings. 2 lecture and 3 lab. Prereq: 201. Coreq: 319, 333, 341.

314 Wellness and Lifestyle (3) Models of wellness and holistic health within the framework of modern medicine, eastern philosophy, and recent discoveries about the interaction of mind and body. 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.

319 Pathophysiology of Health Deviations (4) Application of physiological concepts to health promotion, maintenance, deviations, and restoration. Introduction to psychoneuroimmunology. Emphasis on interactions of body systems, and impact of disease processes on the human body.

333 Health Assessment (3) Theory and laboratory practice in the systematic assessment of health status involving history taking and performance of physical assessment skills. For RNs, this course is prerequisite to any clinical course beyond 305 Transitions. 2 lecture and 1 lab.
341 Transcultural Nursing (2) Focus on cultural perspectives in health and illness. Discussion of diversity in and influence of culture on health promotion, maintenance, and restoration across the lifespan and in selected nursing specialties, ethnic populations, and religious denominations.

351 Pharmacology I (2) Biochemical and pharmacological effects of therapeutic drugs on the human body. Basic concepts of drug action and interactions. Major drug classifications. Prereq: Chemistry 100-110, and at least 6 semester hours of Anatomy and Physiology.

361 Health Maintenance and Restoration: Adult (5) Focus on health maintenance and restoration of adults experiencing commonly occurring acute or chronic illness. Presentation of illnesses and critical indicators of underlying conditions will be identified for the younger adult as compared to the older adult. 3 lecture and 2 lab. Prereq: 311, 319, 333.

381 Professional Development in Nursing (2) Emphasis on development of personal attributes necessary for professional practice such as: emotional intelligence, caring, critical thinking, decision making, problem solving, motivation and management of time, stress, and anger. The course content also includes theories and principles of interpersonal capacities and strategies used in any health care setting such as communication, delegation, and management of teams, conflicts, and changes. Prereq: 311, 341.

382 Health Promotion and Maintenance in the Community (5) Focus on nursing care of at-risk populations in the community and national health promotion objectives. Analysis of community health needs. Design and implementation of nursing interventions to promote and maintain health. 3 lecture and 2 lab. Prereq: 311, 319, 333. Coreq: 351, 361.

400 Aging and Society (3) An examination of the health and social effects of longevity and the aging process including societal and personal attitudes about old age. Resources, trends, issues, and potentials of aging are explored. Volunteer community service, a service learning component, is required. Open to undergraduate students in all colleges.

402 Gerontology Practicum (3) Off-campus supervised experience in gerontology. Offered as part of the gerontology minor. Open to students in all colleges. Prereq: Consent of instructor.

403 Health Promotion and Maintenance in Childbearing Families (5) Nursing practice for promotion, maintenance, and restoration of reproductive health. Emphasis on therapeutic relationships with childbearing families for long-term positive impact on health care and lifestyle. 3 lecture, 2 lab. Prereq: All required 300-level courses or RN status. (W/C)

404 Health Promotion, Maintenance, and Restoration in Children, Adolescents, and Their Families (5) A family-centered approach to the nursing care of children and adolescents. The nursing process is used as the basis for promoting, maintaining, and restoring health and facilitating adaptation in the child-rearing family. Clinical experiences in selected agencies provide experience with children and adolescents in both community and acute care facilities. 2 lecture and 3 lab.

406 Pharmacology II (2) Continuation of 351 with emphasis on nursing responsibilities in the safe and effective use of therapeutic drugs, recognition and reporting of side effects, and critical aspects of patient education. Prereq: 351.

409 Genetic Disorders, Vulnerable Families, and Health Advocacy (3) Examination of health and social implications of Human Genome Project, with emphasis on genetic disorders that result in chronic illness or dosability. Strategies for building collaborative partnerships to effect health advocacy for vulnerable populations. Prereq: Upper-division status.

415 Family/Community Health Nursing (6) Application of the nursing process to individuals, families, groups in the childbearing/rearing stages of development. Clinical experiences are provided in a variety of hospital and community settings. 3 lecture, 2 lab. Prereq: All required 300-level courses. For non-nurse MSN students only.

421 Mental Health Maintenance and Restoration (5) Nursing to support and care for persons with mental health needs. Emphasis on use of self as therapeutic agent with individuals, groups and families and developing nursing strategies for mental health maintenance and restoration. 3 lecture and 2 lab. Prereq: all required 300-level nursing courses or RN status.

432 Health Promotion, Maintenance, Restoration in the Community (3) Focus on nursing care of at risk individuals, communities, and populations. Assessment of sociocultural values, environmental factors, health education, and community resources. Design of interventions to promote, maintain, and restore health through the use of the epidemiological process.

442 Directed Clinical Practice in Community Health Nursing (1) Clinical practice in a community health setting. Prereq/Coreq: 432. For RN master’s entry students only.

451 Interpersonal Management Skills in Nursing (2) Focus on concepts and strategies for leadership as a professional nurse. Application of common workplace issues that affect nursing practice. Prereq: 381, senior.

452 Professional and Workplace Issues (1) Focus on nursing ethics and moral development, using scenarios from everyday practice. Prereq: 451.

454 Professional Leadership Issues (2) For Registered Nurses (RN) and Masters-Entry Students (MES). Survey of issues and trends that influence the practice of professional nursing. Focus on concepts and strategies for leadership as a professional nurse. Emphasis on personal development and interpersonal skills. (OC)


470 Special Topics (1-3) In-depth study of selected nursing topics, problems, or issues not covered in other courses. Topics determined by faculty and student interest. Prereq: Consent of instructor.

471 Nursing Research (3) Introduction to research, design, and methodologies. Critique of selected research studies for application to evidenced-based nursing practice. Prereq: All required 300-level courses, or consent of instructor, or RN status.

480 Nursing Informatics I (3) Provides opportunity for nursing students and/or registered nurses to develop beginning knowledge and skills in computer applications and the field of nursing informatics. Existing and future health information systems will be examined. Emphasis is placed on hands-on acquisition of basic computer competencies. Use of electronic communication, word processing, spreadsheet, database, presentation and computer-assisted-instruction programs. Students will also be exposed to nursing documentation, flowcharting, and authoring software. 2 lecture and 1 lab. Prereq: Upper-division or RN status or consent of instructor.

490 Specialty Preceptorship (4) In-depth practicum to develop knowledge and skill in a selected specialty area under direct guidance of clinical preceptor. Knowledge development in specialty area under guidance of faculty. 1 lecture and 3 lab. Prereq: 406, 451. Coreq: Graduation term.

491 International Studies (1-3) Participation in selected health and nursing care in foreign countries. Requires consent of instructor.

493 Independent Study (1-3) Nursing or health-related topic not covered in other nursing courses. Prereq: Senior standing or consent of instructor.

NUTRITION (726)

100 Introductory Nutrition (3) Nutritional concepts; current consumer issues in nutrition; nutritional needs through life cycle; international nutrition concerns and/or issues. A student who has received credit for Nutrition 300 may not receive credit for this course. (NS)

104 Sports Nutrition for Athletes (1) Nutritional concepts focusing on the optimal training diet; balancing energy with activity; positive fueling before, during, and after sports events; sorting out nutritional supplements.

201 Careers in Nutrition (1) Overview of nutrition-related careers. Routes to meeting academic, registration, and experience requirements.

300 Fundamentals of Nutrition (3) Nutrition in normal and altered health states during life cycle; nutritional analysis of diets. Prereq: Chemistry 110 or 130. Prereq/Coreq: Biochemistry and Cellular and Molecular Biology 230. A student who has received credit for 100 may not receive credit for this course.

302 Life Span Nutrition (3) Physiological development and psychosocial factors that influence nutrient needs and nutrition behaviors of individuals across the life span. Nutrition education strategies for various age groups. Prereq: 100 or 300, Biochemistry and Cellular and Molecular Biology 230.

303 Foodservice Systems Management (3) Assessment of managerial, organizational and operational structures in foodservice systems with focus on markets related to dietetic practice; human resource policies and strategies applied to foodservice systems management.

310 Physiological Chemistry (4) (See Biochemistry and Cellular and Molecular Biology 310.)

313 Vitamins and Minerals (3) Functional properties and interrelationships among vitamins and minerals as they apply to human nutrition. Prereq: 310; Chemistry 350.

314 Energy Metabolism and Metabolic Integration (3) Integration of carbohydrate, fat and protein metabolism as applied to nutrient utilization and requirements in humans. Prereq: 310; Chemistry 350.
410 Professional Issues in Dietetics (1) Dietetic registration, licensure; third party payments; dietetic practice; marketing dietetics; internship application preparation; public policy in dietetic practice. Prereq: Senior standing.

412 Food and Nutrition in the Community (3) Influence of health characteristics, geographic, social, economic, and cultural factors on food and nutrition programming; relationship of community food and nutrition problems to programs and services for families and communities with particular attention to disease prevention; public policy. Prereq: 302, 415. (WC)


420 Food and Nutritional Analysis (4) Principles, procedures, and instrumentation for analysis of food and body fluids. Interpretation of chemical, dietary, and anthropometric data analysis in nutrition research. Prereq: 100 or 300, 310.

450 Special Topics: Nutrition (1-3) Developments, issues and problems in Nutrition; topics variable. Prereq: Junior or Senior standing in Nutrition or consent of instructor. May be repeated. Maximum 3 hours.

490 Introduction to the Dietetic Internship (3) Applications of clinical, food service, and management theories to dietetic practice. Restricted to Dietetic Internship students.

492 Field Experience: Nutrition (1-3) Prereq: Junior or Senior standing, consent of instructor. Satisfactory/No Credit grading only.

493 Directed Study: Nutrition (1-3) Individual student: faculty experience. Letter grade only.

OPERATIONS AND MANAGEMENT SCIENCE (738)


410 Management Science (3) Introduction to quantitative decision models and their integration into microcomputer-based decision support systems. Topics include linear, dynamic and network programming, as well as decision analysis, Markov, inventory and queuing models. Prereq: Mathematics 123 and Statistics 201.

421 Total Quality Management (3) Successful quality improvements characterized by four main principles: customer focus, continuous improvement, leadership, and teamwork. This course focuses on the managerial perspective that is necessary to successfully implement and integrate quality improvements initiatives. The quality improvement tools are also presented. Prereq: Business Administration 341.

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

PERSIAN (744)

161-162 Elementary Persian I, II (4,4) (See Asian Studies 161-162.)

261-262 Intermediate Persian I, II (4,4) (See Asian Studies 261-262.) (CC)

PHILOSOPHY (745)

110 The Human Condition: Values and Reality (3) The meaning of life, the existence of God, freedom of the will, human nature and values. Writing-emphasis course. (AH)

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. (AH)

117 Honors: Introduction to Philosophy I (3) Honors version of Philosophy 110. Permission of the department is required. The course need not be taken before 118. (AH)

118 Honors: Introduction to Philosophy II (3) Honors version of Philosophy 111. Permission of the department is required. The course may be taken before 117. (AH)

130 Critical Thinking (3) An introduction to practical reasoning in natural language, designed to enhance skills in recognizing, analyzing, evaluating and constructing arguments.

135 Formal Logic (3) Introduction to formal deductive systems: propositional and predicate logic.

200 Special Topics (3) When content varies, may be repeated. Maximum 200 hours.

241 Engineering Ethics (3) Ethical issues in engineering at the intersection of science, business, and society. Such topics as international concerns; risk, safety, and the environment; employee loyalties and professional responsibility; professional organizations and codes of conduct. Writing-emphasis course. (AH) (WC)

242 Contemporary Moral Issues (3) Issues such as euthanasia, capital punishment, reproductive technologies, sexual ethics, diversity, war, world poverty, employment practices, and the environment, in light of philosophical analysis and ethical theory. Writing-emphasis course. (AH)

243 Business Ethics (3) The proper roles of ethics in business in general and such specific issues as the meaning and value of work; employee rights and responsibilities; marketing; finance; the environment; information technology; diversity and discrimination; international business; economic globalization; ethical business cultures. Readings will include philosophical essays and contemporary case studies. Writing-emphasis course. (AH) (WC)

244 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. Writing-emphasis course. (Same as Legal Studies 244; Religious Studies 244.) (AH) (OC)

245 Environmental Ethics (3) Issues concerning the nature of the environment and the place of humanity within it. Writing-emphasis course. (AH)

246 Bioethics (3) Ethical issues in health care such as abortion, euthanasia, human experimentation, fairness in health care delivery, and the doctor-patient relationship. Writing-emphasis course. (Same as Religious Studies 246.) (AH) (WC)

290 Social and Political Philosophy (3) Issues such as the obligation to obey the law, liberty, oppression, equality, rights, democracy, and the just society. Writing-emphasis course. (AH) (WC)

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

320 Ancient Western Philosophy (3) Writing-emphasis course. (WC)

322 Medieval Philosophy (3) Development of medieval thought from St. Augustine to William of Ockam. Secondary and primary sources. Writing-emphasis course. (Same as Judaic Studies 322; Medieval Studies 322.) (WC)

324 17th- and 18th-Century Philosophy (3) Writing-emphasis course. (WC)

326 19th- and 20th-Century Philosophy (3) Writing-emphasis course. (WC)

340 Ethics (3) Theories of ethical values. Writing-emphasis course. (WC)

350 Aesthetics (3) Philosophical discussion of art. Writing-emphasis course.

353 Philosophy and Literature (3) Nature of literature; philosophical assumptions in literary works. Writing-emphasis course.

360 Philosophy of Science (3) An introduction to major problems in the Philosophy of Science. Specific issues vary, but may include: the nature of causality; the relationship between experiments, theories, and scientific practice; how theories change and how scientific disputes get settled; the role played by social organization in science (e.g., gender and race issues); and others. Writing-emphasis course.

370 Philosophy of Religion (3) Analysis of basic issues in the philosophy of religion. (Same as Religious Studies 370.)

374 Philosophy and Religion of India (3) (See Religious Studies 374.)

376 Buddhist Philosophy and Religion (3) (See Religious Studies 376.)

379 Religion and Philosophy in China (3) (See Religious Studies 379.)

382 Philosophy of Feminism (3) Various feminist theories and their application to social issues of concern to women today. Writing-emphasis course. (Same as Women’s Studies 382.) (WC)

390 Philosophical Foundations of Democracy (3) Philosophical problems relating to the nature and justification of the central values, principles, and concepts of democratic society. Writing-emphasis course. (WC)
392 Philosophy of Law (3) A course in analytic and normative jurisprudence. Such topics as the nature of legal systems as normative social practices, the relationships between law and morality, theories of adjudication and legal reasoning, the justification of punishment, theories of legal responsibility, law and economics, and feminist and neo Marxist critiques of law. Writing-emphasis course. (Same as Legal Studies 392.)

393 Global Justice and Human Rights (3) Such issues as justice between distinct and diverse political communities; universal human rights; moral issues in environment, trade, and development. Writing-emphasis course. (Same as Global Studies 393; Legal Studies 393.)

395 Existentialism (3) Themes related to freedom and finitude in the tradition that begins with Kierkegaard and Nietzsche, and extends to Heidegger and Jaspers, Sartre and Merleau-Ponty.

400 Special Topics (3) When content varies, may be repeated. Maximum 6 hours.

411 Modern Religious Philosophies (3) (See Religious Studies 411.)

419 Science as Method (3) (See Ecology and Evolutionary Biology 419.)

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. When content varies, may be repeated. Maximum 9 hours.

435 Intermediate Formal Logic (3) Metatheory of formal logic and philosophy of logic. Prereq: 135 or consent of instructor.

440 Contemporary Ethical Theory (3) Topics in meta-ethics or ethics. Prereq: 6 hours of philosophy or consent of instructor.

443 Advanced Business Ethics (3) Advanced topics in business ethics. When content varies, may be repeated. Maximum 6 hours.

445 Advanced Environmental Ethics (3) Advanced topics in environmental ethics. When content varies, may be repeated. Maximum 6 hours.

446 Advanced Bioethics (3) Advanced topics in bioethics. When content varies, may be repeated. Maximum 6 hours.

462 Philosophy of Biology (3) An introduction to current issues in the Philosophy of Biology. Specific problems vary, but will likely include: the nature of natural selection, adaptation, and fitness; the level of selection debate; the nature of species; the interaction of environment and organism, and others. Prereq: upper-division coursework in philosophy or biology or permission of instructor.

472 Philosophy of Language (3) Problems of meaning, reference and truth. What is the relation between words and the world? How do sentences manage to be about the world? What is it for something to be true? Prereq: 3 philosophy courses 200-level or above.

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.

491 Foreign Study (1-15)

492 Off-Campus Study (1-15)

493 Independent Study (1-15)

PHYSICAL EDUCATION (764)

200 Special Topics (1-2) Selected topics in various activities not covered in the regular program. When content varies, may be repeated. Maximum 6 hours.

202 Badminton (1) Fundamental badminton technique, game strategy, and rules for singles and doubles play.

206 Bowling (1) Introduction to ball selection, approach, spot bowling, rules, scoring, etiquette, and basic terminology necessary for enjoyable recreational bowling.

211 Golf (1) Introduction to chipping, putting, full swing, rules, etiquette, and scoring necessary for enjoyable recreational play.

213 Ice Skating (1) Beginning skills and etiquette in ice skating. Satisfactory/No Credit grading only.

216 Martial Arts (Special Topics) (2) Special Topics. Selected topics in various forms of martial arts, including but not limited to jujitsu, judo, karate, and tai chi. When content varies, may be repeated. Maximum 6 hours.

224 Physical Fitness: Conditioning (1) Program of flexibility, strength, and cardiovascular endurance through exposure to various exercise forms.

225 Physical Fitness: Exercise to Music (1) Total body workout to music with lecture emphasis on basic fitness components of flexibility, strength, and cardiovascular fitness.

226 Exercise and Weight Control (1) Fitness activities and basic fundamentals of nutrition for students interested in losing weight: includes body composition assessment and instruction on achieving a goal weight.

229 Physical Fitness: Jogging (1) General factors on physical fitness with emphasis on the improvement of cardiovascular fitness through jogging.

230 Physical Fitness: Swimming (1) Introductory course outlining basic principles of fitness, evaluation, and workout design in the aquatic environment.

231 Physical Fitness: Walking (1) Course for those wishing to begin a fitness program: includes measurement and interpretation of fitness components, including body composition, cardiorespiratory fitness, low back function and nutrition.

232 Racquetball I (1) Pass, kill, ceiling shots, and basic serves. Singles and doubles strategy, necessary for recreational play.

234 Soccer (1) Introduction to individual and team fundamentals, rules, and strategy.

235 Social Dance (2) Popular ballroom dance forms such as the swing (shag), foxtrot, cha cha, tango and rumba.

236 Softball (1) Introduction to individual and team fundamentals, rules and strategy.

237 Stress Management (2) Class will deal with the stress process and its relationship to health and disease, lifestyle, and the socio-cultural environment. The psychological, sociological, and spiritual aspects of stress will also be discussed, as well as the concept of the integrative (i.e., mind-body-spirit) person. Finally, a portion of each class period will be devoted to the learning, practice, and implementation of a personal, broad-based coping strategy for stress management.

239 Beginning Swimming (1) Includes skills in the American Red Cross basic swimming course for the non-swimmer.

240 Intermediate Swimming (1) Crawl stroke, elementary back stroke, side stroke, back crawl, breast stroke, entries and turns.

244 Tennis I (2) Introduction to forehand, backhand, serve, volley, rules, scoring and simple strategy.

245 Tennis II (1) Development of accuracy and improved technique of ground strokes and serve; introduction to smash, spin serve, and advanced strategy.

251 Volleyball (1) Introduction to individual and team fundamentals, rules, and strategy.

252 Weight Training (1) Introduction to the principles of strength development for large muscle groups through the use of free weights and machines.

254 Yoga and Relaxation (1) Introduction to yoga and various forms of relaxation, with the majority of class time spent learning and refining the postures. Satisfactory/No Credit grading only.

255 Water Safety Instructor (2) Prepares individuals to teach American Red Cross basic swimming and personal safety courses. ARC certification.

256 Lifeguarding Training (2) American Red Cross lifeguarding and aquatic management techniques. ARC certification. Prereq: Swim test second day of class.

259 Snow Sking (1) Development of skills necessary to balance, walk and slide while on skis. Learn ski etiquette and Skier’s Responsibility Code. Satisfactory/No Credit grading only.

261 Scuba Diving (2) Introduction and developmental SCUBA diving skills as well as the theory, safety skills and practical application of skills to open water SCUBA diving.

262 Snowboarding (1) Develop skills necessary for proper balance and control in snowboarding. Learn and demonstrate rules and regulations of snow etiquette through group participation. Learn the snowboarding responsibility code. Satisfactory/No Credit grading only.
PHYSICS (773)

101-102 How Things Work (3,3) For students with majors outside science. Examines familiar objects of everyday experience and leads to an understanding of the physical principles that make them work. (NS)

135-136 Introduction to Physics for Physical Science and Mathematics Majors (4,4) A one-year course in Calculus based physics. Satisfies prerequisite for 200-level and beyond. Alternatives to honors physics 137-138 for physics majors. 3 hours lecture and 2 hours lab. Coreq: Mathematics 141-142. (NS)

137-138 Honors: Fundamentals of Physics for Physics Majors (5,5) For physics and engineering physics majors and qualified students from other majors. Coreq: Mathematics 141-142. (NS)

161 Elements of Physics for Architects and Interior Design Students (3) Chosen topics in physics for architecture and interior design students. Course emphasizes material development by logic and lecture demonstrations. Prereq: Intermediate Algebra and one year of geometry. (NS)

221-222 Elements of Physics (4,4) Basic physical principles and applications required in premedical, pre-dental, pre-pharmacy and pre-veterinary programs. 221—Mechanics, heat, wave motion, and optics. 222—Electricity and magnetism, modern physics. Must be taken in sequence. 3 hours lecture and 3 hours lab. Prereq: Mathematics 130 or Calculus. (NS)

231 Fundamentals of Physics: Electricity and Magnetism (3) For engineers and Arts and Sciences majors in mathematics and the physical sciences. Required of all engineering students. 2 hours lecture and 3 hours labs/recitation. Prereq: Engineering Fundamentals 102; Coreq: Mathematics 142. (NS)

232 Fundamentals of Physics: Wave Motion, Optics, and Modern Physics (4) Continuation of 231. Required of all engineering students. 3 hours lecture and 3 hours lab/recitation. 3 hours lecture and 3 hours lab/recitation. Prereq: 231. Coreq: Mathematics 241. (NS)

240 Fundamentals of Physics: Modern Physics (3) Special relativity, fundamental concepts of modern physics and their applications to atomic, nuclear, particle and condensed matter physics. Prereq: 136 or 138 or consent of instructor.


321 Thermal Physics (3) Concepts of temperature and heat; laws of thermodynamics; elementary statistical mechanics; applications to physical and chemical problems. Prereq: 311, or 136, or 138, or 231.

341 Introduction to Nuclear Physics (3) Introductory theoretical nuclear physics with emphasis on applied aspects. Primarily for Nuclear Engineering majors. Prereq: 240 or 232.

342 Structure of Matter (3) Physics of molecules and condensed matter. Prereq: 240 or 232

361-362 Electronics Laboratory (3,3) Electronic devices and instrumentation topics in the physics laboratory. 361—Basic analog and digital electronics, including elementary building blocks of relevance to data acquisition systems, operation amplifiers, digital-to-analog and analog-to-digital conversion, use of standard laboratory instruments, and applications of microcomputers. 362—Advanced instrumentation techniques applied to the study of electronic circuits as dynamic physical systems, feedback and stability, noise, discrete sampling, Fourier analysis and synthesis, non-linear circuit dynamics. 6 hours lab per week. Prereq: 136 or 138 or 232.

401 A Survey of Physics (3) A survey of physics from earliest times to the present, emphasizing the unifying philosophical and mathematical principles. Classical theories of gravitation, electromagnetism, and relativity; various forms of quantum mechanics, quantum electrodynamics, and recent theories of particles, fields, and their interactions. Consideration of the effects of physics on modern society and the practice of physics from a value-oriented perspective. Written reports on important original papers, thought-provoking problems combining different fields of classical physics; and a final oral and written report on some independent study. Prereq: Senior standing in Physics or consent of instructor.

411-412 Introduction to Quantum Mechanics (3,3) Fundamental principles of quantum mechanics and methods of calculation. Solution of the Schrödinger equation for simple systems. Application to atomic, molecular, nuclear, and condensed matter physics. Must be taken in sequence. Prereq: 240 or equivalent, Mathematics 435.
280 Fundamentals of Landscape Design (3) History of landscape design as it relates to contemporary applications. Awareness and sensitivity to the landscape; basic graphic skills and design theory with an emphasis on residential landscape planning. Introduction to landform, landscape materials, and planting design. 1 hour and 2 labs.

290 Fall Herbaceous Ornamental Plants (3) Identification, culture, and landscape use of late fall and early winter herbaceous ornamental plants including annuals, perennials, herbs, and ornamental grasses. Basic gardening practices and design elements using such herbaceous ornamental plants. Prereq: 120.

291 Spring Herbaceous Ornamental Plants (3) Identification, culture, and landscape use of spring and early summer herbaceous ornamental plants including annuals, perennials, herbs, bulbs, and wildflowers. Basic gardening practices and design elements using such herbaceous ornamental plants. Prereq: 120.


329 Horticultural Interpretation: Educational Programming for Adults and Children (1) Strategic planning, programming and budgeting for adult and youth education within a public garden. Prereq: 226.

330 Plant Propagation (2) Physiology, methodology, and environmental requirements for propagation. 2 hours and 1 lab. Prereq: Biology 111 and 112.

331 Interpreting Research Findings (1) Basic statistical concepts required for understanding and evaluating research findings. Prereq: Two mathematics courses.

335 World Food and Fiber Plant Production (3) Introduction to important world crops and production systems. Emphasis on plant terminology, origin and development, world agro-ecosystems, environmental and economic sustainability, current technology in crop production. Prereq: Biology 111-112 or 101-102 or 130-140.

341 Integrated Turfgrass Management and Environmental Benefits (2) Utilization of resources available to the turfgrass manager (e.g., extension, research, professional associations). Benefits of turfgrass in the environment, including bioremediation, urban greening, carbon sequestration. Prereq: 240.

343 Turfgrass Entomology (1) Biological study and collection of arthropods that challenge maintenance of healthy grasses, turf, and sod. Review and discussion of sampling/monitoring strategies and decision-making guidelines to help manage turfgrass pests. Prereq: 240.

348 Landscape Plant Physiology (2) Physiological principles as they relate to landscape design and construction, turfgrass management, and public horticulture: photosynthesis and transpiration, respiration, water and hormonal relations, mineral nutrition, plant development, and response to the environment. Prereq: Biology 111 and 112.

350 Basic Landscape Construction (3) Basic materials and detailing. Introduction to the landscape construction and contracting industry; application of landscape materials, wood, concrete and masonry construction, site drainage, and landscape grading. 2 hours and 1 lab. Prereq: 280.

353 Plant Genetics, Breeding, and Biotechnology (3) Genetic principles and techniques used in plant modification. Principles of molecular, transmission, and quantitative genetics as applied to plant breeding. Prereq: Biology 111 and 112.

360 Practicum in Landscape Construction (3) Practical experience in implementation of landscape design development projects. Directed lab and field instruction in planting operations and basic landscape construction including interpreting and implementing landscape design drawings and specifications. Two 3-hour labs. Prereq: 350.

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. 2 hours and 1 lab.

450 Specialty Landscape Construction (3) Methods of design, materials, and construction techniques for specialized components of the landscape industry. Irrigation systems, outdoor lighting, garden ponds and water features.

451 Plant Tissue Culture (3) (See Entomology and Plant Pathology 451.)

454 Plant Biotechniques (3) Lectures will discuss recombinant DNA technology, molecular assisted breeding of economically important crops, gene cloning and transformation technologies. Examples will be given of food and ornamental crops, pharmaceuticals, and renewable energy sources produced using biotechnology as well as potential risks of this technology. Labs will include electrophoresis, tissue culture, plasmid preps, genomic DNA preps, PCR, plant transformation, genomic techniques. 1 hour and one 3-hour lab. Prereq: 353 or Biology 240.

457 Weed Management (2) Principles of weed interference, integrated management, herbicide selectivity and behavior, specific recommendations for various crop and non-crop situations. Prereq: Environmental and Soil Sciences 210.


460 Professional Practices in Landscape Construction and Management (2) Professionalism, salesmanship, proposals, bidding, estimating, specifications, and contract management in landscape services industry. Computer technology applicable to landscape construction and contracting industry. Includes presentations by industry representatives. 2 hours. Prereq: 350.

461 Statistics for Biological Research (3) Application of statistics to interpretation of biological research. Notation, descriptive statistics, probability, distributions, confidence intervals, t- and chi-square tests, analysis of variance, mean separation procedures, linear regression and correlation. Students may not receive credit for both 461 and 561. Prereq: Mathematics 125 or 152.

470 Professional Practices for the Green Industry (3) Professionalism, sales, sales proposals, budgeting, managerial skills, estimating, specifications, and contract management in the turf, public horticulture and landscape contracting professions. Prereq: Two 300-level or 400-level Plant Sciences courses.

480 Advanced Landscape Design (3) Comprehensive application of landscape design skills to a variety of project experiences with an emphasis on landscape planning and analysis, planting design, and materials estimating. Two 3-hour labs. Prereq: 280, 380.

485 Computer Aided Landscape Design (3) Overview of Computer Aided Design (CAD) as it relates to landscape design and construction. Emphasis on development of landscape design drawings through utilization of LANDCAD software. Prereq: 280, 380, and Agriculture and Natural Resources 290 or Computer Science 100 or equivalent.

492 Internship in Horticultural and Plant Sciences (1-3) Supervised work experience with a departmentally-approved employer within the ornamental horticulture, turfgrass, production horticulture, or field crop science industry. May be repeated. Maximum of 6 hours. Satisfactory/No Credit grading only.

493 Problems in Horticultural and Plant Sciences (1-3) Supervised individual problems relating to the plant sciences or landscape design. May be repeated. Maximum of 6 hours.

494 Professional Horticultural Communications (3) Communication for public horticulturists through written, oral, and visual media. Emphasis on communication skills using proper writing techniques and grammar for print media, brochure design using desktop publishing, slide show development, oral presentations, and video use for educational and informational presentations in ornamental horticulture. Prereq: Agriculture and Natural Resources 290, Computer Science 100 or equivalent, and senior standing.

497 Undergraduate Research Participation (1-3) Experiences in active research projects under supervision of staff members. Student should make arrangements for research project with instructor prior to enrollment. Prereq: Junior or senior standing, minimum grade point average 3.00 and consent of instructor. May be repeated. Maximum 6 hours.

POLITICAL SCIENCE (801)

101 United States Government and Politics (3) Introduction to fundamental institutions and processes of American National Politics including the Constitution, voting, the Presidency, the Congress and the courts.

102 Introduction to Political Science (3) Introduction to politics and political systems emphasizing government in a cross-national and global perspective. Focus on the knowledge and principal concerns of political science as a social science. (SS)

107 Honors: United States Government and Politics (3) Analysis and exploration of the American political system for students with superior ability. In order to enroll: (1) current students must have a cumulative GPA of 3.25 or higher; (2) incoming students must have either a 29 ACT composite or 1250 SAT composite.

300 Introduction to Political Philosophy (3) An introduction to the concepts, enduring questions and significant thinkers associated with political philosophy with specific attention to differing conceptions of human nature, politics, the state, civic obligation and rights, freedom justice and democracy.

311 Contemporary Issues in American Public Policy (3) Selected public policy issues confronting the nation, including the background, nature, and effects of present policies, and options for the future. Writing-emphasis course.

312 Popular Culture and American Politics (3) Popular culture related to American politics and government focusing on the role of film, television, fiction, music, drama, art and sports. Writing-emphasis course. (Same as American Studies 312; Cinema Studies 312.)

315 Tennessean Government and Politics (3) Major elements in Tennessean 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 intergovernmental relations.

321 Urban Politics and Process (3) Development of politics and policy-making in the modern American city. (Same as Urban Studies 321.)

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. (Same as Legal Studies 330.)

340 Introduction to Public Administration and Public Policy (3) Public agencies, their organization, personnel, and financial management and administrative responsibility; the policy-making process, political environment.

341 Judicial Process (3) Courts as components of political systems, and public policy making through judicial decision making. (Same as Legal Studies 341.)

350 Political Change in Developing Areas (3) Characteristics and problems of political changes with primary focus on developing areas. Writing-emphasis course.

361 Politics in Western Democracies (3) Political culture patterns, and institutions of Western democratic systems. Writing-emphasis course.

365 Introduction to International Relations (3) Resource availability, international economics, international security and peace (imperialism, war, diplomacy, the balance of power, international law and international organization.) Writing-emphasis course.

366 United States Foreign Policy Process (3) Processes whereby United States foreign policies are made and implemented, focusing on interaction within federal bureaucracy and roles of the President, Congress, the press, and public opinion.

370 Contemporary International Problems (3) Analysis of current international events.

374 American Political Thought (3) Major themes and ideas in American political thought related to the development of American political institutions, values, and practices. Writing-emphasis course.

387-388 Junior Honors Seminar (3,3) Required of honors majors; admission with consent of department.

401 Political Analysis (3) Nature, character, and functions of research design, data collection, and statistical techniques used in the study of politics. (Same as Legal Studies 401.)

402 The City in the United States (3) Development and character of U.S. cities. Contemporary issues and selected case studies (Same as Urban Studies 411.)
403 Survey of Planning (3) History of city development and of planning. U.S. experience in urban and other levels of planning. State of the art process, comprehensive plan, implementation devices. Planning issues in society. Not for credit for MSP degree. (Same as Urban Studies 412.)

410 Special Topics in Political Science (3) May be repeated with consent of department. Maximum 6 hours.


420 Political Attitudes and Behavior (3) Systematic examination of political attitudes, public opinion and political behavior. (Same as American Studies 420.)

421 Political Parties and Interest Groups (3) Analysis of political parties, interest groups, campaigns and elections.

425 Media and Politics (3) Examines the interrelationship between the political system and the media from a political science perspective.

430 United States Constitutional Law: Sources of Power and Restraint (3) Judicial review, constitutional powers of the President and Congress, federalism, sources of regulatory authority, and constitutional protection of political and economic rights. (Same as Legal Studies 430.)

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. (Same as Legal Studies 431.)

435 Criminal Law and Procedure (3) An overview of substantive and procedural law in the criminal justice field with emphasis on constitutional questions and public policy issues. (Same as Legal Studies 435.)

440 Public Management and Human Resources (3) Semester long simulation of a public organization in which student groups plan, organize, direct, teach and evaluate within a tightly structured framework.

441 Public Budgeting (3) The process, participants, and politics of government budgeting, with emphasis on federal government budgeting. Includes an overview of budget reform measures and their effectiveness.

442 Administrative Law (3) Legal dimensions of administrative power and procedures, and constitutional controls over administrators. (Same as Legal Studies 433.)

445 Administration of Justice (3) Administration and processes of justice system, including judicial administration and decision making in trial and appellate courts. (Same as Legal Studies 445.)

446 Housing (3) Nature and demand for housing in the U.S. and abroad. U.S. experience. Private market processes and public influences. Problems of change in housing supply, impact of new technology, and governmental programs to increase supply and quality of housing. (Same as Urban Studies 446.)

451 Ethnic Conflict in Foreign Countries (3) Examines political and violent conflict among ethnic and national groups and the challenges these conflicts pose for democratic and democratizing states.

452 Black African Politics (3) Recent evolution and current political environment of black African nations. Writing emphasis course. (Same as African and African-American Studies 452.)

454 Government and Politics of China and Japan (3) Political setting, structure and political processes in China and Japan. Writing-emphasis course.

456 Latin American Government and Politics (3) Introduction to the political development of Latin America with an emphasis on contemporary politics. Writing-emphasis course. (Same as Latin American Studies 456.)

459 Government and Politics of Russia and Eastern Europe (3) System transformation, political processes and governmental structure in Russia and Eastern European countries. Writing-emphasis course.

461 Policy Making in Democracies (3) Comparative approach to theory and process of making public policies.

463 Contemporary Middle East Politics (3) Governments and movements in the Middle East, their characteristics, bases, and interrelationships.

470 International Law (3) Nature and development of international law and compliance with it. Particular attention to function of international law in the context of international conflict. (Same as Legal Studies 470.)

471 International Political Economy (3) The politics of international economics. Topics include globalization, development, trade, crime, the IMF, the WTO, the environment and challenges to the status quo.

473 Negotiation, Bargaining, and Diplomacy (3) Diplomacy, negotiation, and foreign policy decision-making. Theories of diplomacy and negotiation are applied in a simulation focusing on issues from international crime and global economic stability to world health and the environment.

474 International Organization (3) Constitutional framework and key functions of the United Nations. Topics include collective security, peacekeeping, human rights, development, regional organizations, and the role of the secretary-general.

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 (3,3) Required of honors majors; admission with consent of department.

491 Foreign Study (1-15) Prereq: Consent of department. May be repeated. Maximum 15 hours.

492 Off-Campus Study (1-15) Prereq: Consent of department. May be repeated. Maximum 15 hours.

493 Independent Study (1-15) Prereq: Consent of instructor. May be repeated. Maximum 15 hours.

494 Internship (1-6) Prereq: Consent of department. May not be counted toward requirements for the political science major. May be repeated. Maximum 6 hours. Satisfactory/No Credit grading only.

PORTUGUESE (811)

111-112 Elementary Portuguese (3,3) Introduction to Portuguese. Must be taken in sequence. Language laboratory required.

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

211-212 Intermediate Portuguese (3,3) Stresses reading, writing, listening, and speaking of Portuguese to prepare for upper-division courses in the language. Must be taken in sequence. Language laboratory required. Prereq: 112 or equivalent. (CC)

301-302 Literature, Culture, and Civilization of the Portuguese-Speaking World (3,3) A course for students who have completed the intermediate sequence of Portuguese and wish to enhance their knowledge of language and culture through the medium of literature. Taught in Portuguese. Prereq: 212, 400, or the equivalent.

309 Intermediate Conversation and Composition (3) Designed to improve proficiency in oral and written communication in Portuguese. Prereq: 212, 400, or the equivalent.

315 Aspects of Luso-Brazilian Literature (3) Selected writers, trends, and artistic movements set against a broad background of cultural, socio-political and historical developments. Prereq: 212 or consent of instructor. Writing-emphasis course. May be repeated if topic differs. Maximum 6 hours. (Same as Latin American Studies 315.)

316 Luso-Brazilian Cinema and Literature (3) A study of original feature films as well as literary works translated into English and adapted into film. The objectives of the course are to achieve a better understanding of contemporary Luso-Brazilian culture and issues through the medium of literature and cinema. Available for both majors and non-majors. Films will be shown in Portuguese with English subtitles. Writing-emphasis course. (Same as Cinema Studies 316; Latin American Studies 316.)

400 Portuguese for Speakers of Another Romance Language (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: Three hours at 300-level in another Romance language or equivalent.

409 Advanced Conversation and Composition (3) Informal and structured conversation on contemporary topics (business, politics, economics, religion, an culture) and formal writing practice at an advanced level. Prereq: 309 or equivalent.
431 Topics in the Literature and Language of the Portuguese-speaking World (3) Outstanding works of literature and culture from the countries where Portuguese is spoken. Topics may vary. Prereq: At least one course at the 300-level or the equivalent. May be repeated. Maximum 12 hours. (Same as Latin American Studies 431-432.)

490 Internship (1-15) Career-related experiences in the United States or abroad with permission of the Language and World Business director. For language and world business majors only. Satisfactory/No Credit grading only.

491 Foreign Study (1-15)

493 Independent Study (1-15)

PSYCHOLOGY (830)

110 General Psychology (3) Introduction to primary approaches to the study of human behavior and experience. (SS)

117 Honors: General Psychology (3) Open to University Honors Students and to students with ACTs of 29 or higher (or SAT equivalent). Prereq: Consent of instructor. (SS)

210 Biological Basis of Behavior (3) Survey of theories and research concerning the role of genetic factors, nervous and endocrine systems, and other biological influences on behavior. Prereq: 110.


295 Research Analysis in Psychology (3) An introduction to the research methods and data analyses used in psychological research. This course should be taken as soon as possible after declaring psychology a major. Prerequisite: 110.

300 Child Psychology (3) The normal child from conception through infancy, childhood, and adolescence. Physical, cognitive, social, and emotional development. Prereq: 110.

310 Learning and Thinking (3) Survey of theory and findings of research concerning both humans and nonhumans. Prereq: 110.

320 Motivation (3) Survey of theories and related research; discussion of applications. Prereq: 110.


347 Honors Seminar (1) Classic works in psychology; professional and ethical issues in psychology; presentations of faculty scholarship and honors students’ projects. Meets weekly. Prereq: Consent of instructor. May be repeated. Maximum 8 hours.

360 Social Psychology (3) Theories, methods, and findings of research concerning individual behavior in a social context. Prereq: 110.

367 Psychology Honors Project (3) Independent studies course which leads to the Honors thesis. Students must have plans of study approved by their mentor prior to enrollment. Prereq: Consent of instructor. May be repeated. Maximum 15 hours. Satisfactory/No Credit grading only.

370 Ethology and Sociobiology (3) (See Ecology and Evolutionary Biology 370.)

382 Contemporary Topics in Psychology (3) Current issue or problem, such as architectural psychology, impact of technology, artificial intelligence, or stereotypes. Different topic each semester. Prereq: 110 and upper-division standing (30 or more semester hours). Maximum of 6 hours may be applied toward major. May be repeated. Maximum 9 hours.

385 Statistics in Psychology (3) Descriptive statistics; logic of hypothesis-testing and statistical inference. Basic parametric and nonparametric tests.

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, 385 or Mathematics 115 or Statistics 201, and junior standing (60 semester hours).

399 Supervised Research and Field Work (1-3) Field experience in community-based research and service settings. Prereq: Consent of instructor. Note: Any combination of 6 hours of 399, 489, 491, 492, 493 may be used in major. An additional 6 hours may be used as elective. May be repeated.

400 Cognitive Psychology: Language and Symbolic Processes (3) Psychology of knowing, explaining, and understanding. Directed and associative thinking, memory, problem-solving, and concept-formation. Nature, use, and development of language. Prereq: 110 and junior standing (60 semester hours) or consent of instructor.

409 Group Facilitation (3) Study of theory and technique through supervised experience in small groups. Prereq: 110 and Junior standing (60 semester hours) or consent of instructor. May be repeated. Maximum 6 hours.

410 Sensory Processes and Perception (3) Physiological and psychological theories of perception. Emphasis on audition and vision. Prereq: 110 and junior standing (60 semester hours) or consent of instructor, 385 or Mathematics 115 or Statistics 201 or graduate standing.

415 Psychology of Religion (3) History of the psychology of religion with an examination of various philosophical and empirical orientations. Exploration of the psychological function of religion for individuals and society. Prereq: 110, junior standing (60 semester hours) or consent of instructor. (Same as Religious Studies 415.)

420 History and Systems of Psychology (3) History of psychological thought. Classical approaches and recent developments. Prereq: 110, junior standing (60 semester hours), or consent of instructor, or graduate standing.

424 Psychology and the Law (3) Psychological aspects of legal systems. Prereq: 110, junior standing (60 semester hours) or consent of instructor, or graduate standing.

430 Health Psychology (3) Psychological factors related to health and illness, including stress, personality, and environment. Applications of psychological treatments to physical illness. Prereq: 110, junior standing (60 semester hours) or consent of instructor.


434 Psychology of Gender (3) Biological, psychological, and social factors in gender. Importance of gender roles and stereotypes for behavior and experience. Prereq: 110 and junior standing (60 semester hours) or consent of instructor. (Same as Women's Studies 434.)

440 Organizational Psychology (3) Social-psychological analysis of organizations, emphasizing role-theory and systems theory. Prereq: 110, 360, junior standing (60 semester hours) or consent of instructor. (Same as Management 440.)

445 Measurement and Testing (3) Theory of test construction and psychological measurement. Statistical methods in measurement. Survey of existing tests. Prereq: 110, Psychology 385 or Mathematics 115 or Statistics 201 and junior standing (60 semester hours) or consent of instructor.


450 Comparative Animal Behavior (3) (See Ecology and Evolutionary Biology 450.)

459 Comparative Animal Behavior Laboratory (3) (See Ecology and Evolutionary Biology 459.)

461 Physiological Psychology (3) Nervous system and physiological correlates of behavior. Biological basis of emotion, learning, memory and stress. Prereq: 110 and Junior standing (60 semester hours) or consent of instructor. One of the following 3 sequences: Biology 101 and 102, Biology 130 and 140, Anthropology 110 and 210.

467 Psychology Honors Thesis (3) Independent study for writing and oral defense of Honors thesis. Prereq: Consent of instructor. Satisfactory/No Credit grading only.

470 Theories of Personality (3) Major theories of human personality and their development. Prereq: 110 and junior standing (60 semester hours) or consent of instructor.

475 Adolescent Development (3) Theoretical perspectives and empirical research findings pertinent to adolescent development. Prereq: 110 and Junior standing (60 semester hours) or consent of instructor.

480 Theories of Learning (3) Classical and current approaches to learning and cognition. Prereq: 110 and junior standing (60 semester hours) or consent of instructor.
480 Topics in Psychology (3) Intensive analysis of special topics, such as African-American Psychology or evaluation of programs in the community. Prereq: 110 and junior standing (60 semester hours) or consent of instructor. No more than 6 hours of Psychology 382, 482 may count towards the major. An additional 6 hours of Psychology 382, 482 may count as electives. May be repeated.

489 Supervised Research (1-9) Prereq: Junior standing (60 semester hours) and consent of instructor. Any combination of 6 hours of 399, 489, 491, 492, or 493 may be used in the major. An additional 6 hours may be used as electives. May be repeated.

491 Foreign Study (1-15) Prereq: Junior standing (60 semester hours) and consent of instructor. Any combination of 6 hours of 399, 489, 491, 492, or 493 may be applied toward the major. An additional 6 hours may be used as electives. May be repeated.

492 Off-Campus Study (1-15) Prereq: Junior standing (60 semester hours) and consent of instructor. Maximum 12 hours in 399, 489, 492, and 493 may be applied toward major. Any combination of 6 hours of 399, 489, 491, 492, or 493 may be applied toward the major. An additional 6 hours may be used as electives. May be repeated.

493 Independent Study (1-15) Prereq: Junior standing (60 semester hours) and consent of instructor. Any combination of 6 hours of 399, 489, 491, 492, or 493 may be applied toward the major. An additional 6 hours may be used as electives. May be repeated.

496 Senior Seminar: Great Ideas in Psychology (3) Key ideas that have shaped conceptions of humankind. Exploration of historical development, scientific evolution, and larger social context. Writing-emphasis course. Prereq: Senior standing.

PUBLIC HEALTH (839)

300 Introduction to Public Health (3) Aspects of public health including discussion of contemporary and controversial health issues.

305 Disease Epidemiology, Prevention, and Control (3) Foundations of epidemiology applied to infectious, acute, and chronic diseases. Emphasis on the applications of public health prevention and control initiatives throughout the disease cycle. Prereq: Ecology and Evolutionary Biology 230.

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.

400 Consumer Health (3) (See Health 400.)

410 Worksite Health Promotion (3) Foundations of health promotion programs delivered in the worksite that revolve around issues relative to employees and management. Emphasis on theory, program design, implementation, and evaluation from the perspective of health promotion specialist. Prereq: 300.

493 Directed Independent Study (1-3) Individual study of selected issues. Prereq: Consent of instructor. May be repeated. Maximum 6 hours.

PUBLIC RELATIONS (841)

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

320 Public Relations Communication (3) Mechanics of effective writing for various media to achieve organizational goals. Overview of governing communication and persuasion theories. Focus on implementation of research-based, planned and managed techniques in a lab setting. Prereq: 270, Advertising 310, Journalism and Electronic Media 200.

370 Public Relations Cases (3) Oral and written analysis of current and classic case studies in public relations. Ethics, professional organizations, publications, research and forms of public relations. Methods of communication and persuasion. Prereq: 270, Advertising 310, 340.

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

470 Public Relations Campaigns (3) Research, planning and communication and evaluation of major public relations campaigns. Oral and written presentation of a public relations project from inception to completion. Extensive out-of-class work. Prereq: 320, 370.

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

491 Foreign Study (1-15) Advance approval of hours and topics by advisor required for registration. May be repeated. Maximum 15 hours.

492 Field Experience (1-2) Approved internships and other supervised practice in public relations. Prereq: 320, senior standing, and consent of instructor. May be repeated. Maximum 4 hours. Satisfactory/No Credit grading only.

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

READING EDUCATION (847)

329 Teaching Developmental Reading in the Elementary and Middle Schools (3) Methods and background on how to teach word recognitions skills, comprehension, study skills, and how to use materials. Includes units on phonics, evaluation, and basal readers. For BS Education students only. Prereq: Admission to Teacher Education Program.

430 Elementary and Middle School Developmental Reading Instruction (2) Word recognition (including phonics), comprehension, evaluation, and materials. Not open to students who have had recent course in reading methods. Prereq: Admission to Teacher Education Program.

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

440 Literacy Instruction in the Middle Grades (2) Problems and issues particular to teaching reading in the middle grades including teaching reading in an integrated curriculum, dealing with students reading below grade level, and teaching concept vocabulary.

461 Developing Reading Skills in Content Fields (3) Teaching reading and study skills in content areas of the school program. Extensive assessment of textbooks. Emphasis on middle school and high school.

RECREATION AND LEISURE STUDIES (853)

201 Foundations of Recreation and Leisure and Principles of Leadership (4) Introduction to the recreation and leisure profession focusing on understanding concepts, philosophy, career opportunities and professional practices in leisure service industries. The required lab focuses on the application and practice of theories of leadership.

290 Practicum in Recreation and Leisure Studies (2) Supervised practice in approved agencies offering programs in recreation and leisure services. Each hour of credit requires 50 clock hours of work. For majors only. Prereq: Minimum 2.3 GPA. Satisfactory/No Credit grading only.

310 Development and Evaluation of Recreation and Leisure Programs (3) Essential elements and principles in the organization, administration, marketing, and evaluation of various types of recreation programs. Emphasis on development of program objectives. Practical and comprehensive program designs and evaluation for population and facility within student’s area of interest. Prereq: 201, junior standing, GPA required for admission to major.

320 Therapeutic Recreation and Special Populations (3) Principles, concepts, historical development of recreation, therapeutic recreation, and leisure services to special populations. Explanation of legislation, attitudes, barriers to participants, mainstreaming, advocacy, as related to leisure fulfillment. Prereq: Consent of instructor.

325 Therapeutic Recreation and Lifestyle Planning (3) Emphasis on how therapeutic recreation specialists can use the application of healthy lifestyle principles as a treatment modality. Importance and role of recreation/leisure participation (humor, stress-management, self-responsibility, fitness) in the planning and delivery of therapeutic recreation service for individuals with disabilities. Prereq: Consent of instructor.

390 Practicum in Recreation and Leisure Studies (2) Supervised practice in approved agencies offering programs in recreation and leisure services. Each hour of credit requires 50 clock hours of work. Prereq: Minimum 2.3 GPA. For majors only. Satisfactory/No Credit grading only.
410 Management Concepts of Recreation, Leisure, and Sport Programs (3) Principles for operationalizing recreation, leisure and sport related programs. Units address utilizing research as a management tool, assessing program costs, facility utilization and evaluation and contemporary management concepts. Prereq: 201, 310, or Sport Management 350.

415 Development and Maintenance of Recreation, Leisure, and Athletic Facilities (3) Principles of designing, planning, equipping, operating and maintaining various facilities. Elements of risk management and safety are incorporated into the design process. Prereq: 310, Sport Management 350, or consent of instructor.

420 Principles of Therapeutic Recreation (3) Principles and practices in therapeutic recreation, including activity analysis, activity and program selection, individual and program assessment, treatment plans, documentation, and professional issues. Prereq: 320 or consent of instructor.

425 Therapeutic Recreation Programming (3) Principles and practices of therapeutic recreation programming for individuals with various, and multiple disabilities. Focus is on the social, interpersonal, and behavioral aspects of working with individuals in inclusive therapeutic recreation environments. Includes lab. Prereq: 320 and/or consent of instructor.

430 Organization and Administration of Leisure Services (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 Sport Management 250.

440 Dimensions of Commercial Recreation and Leisure Enterprises (3) Organizational structures, delivery systems, financing private enterprises and operating selected profit centers in a variety of settings. Special attention is given to market performance and economic impact. Prereq: 201, junior standing, or consent of instructor.

450 Special Topics in Leisure Education (1-6) Development of special topics in Recreation/Therapeutic Recreation and Leisure. May be repeated.

470 Tourism and Leisure Industries (3) An examination of the symbiotic relationship between tourism and various sectors of the leisure industry. Use of resources, both natural and developed, and the economic impacts of these ventures. Sociocultural impacts upon the venue and how the venue impacts the local population.

490 Internship in Recreation and Leisure Studies (12) Required of all majors. Application of previous theoretical and applied knowledge and skills in an appropriate recreation/leisure setting. The internship is intended to simulate a full time (40 hours/week) professional level work experience during the entire semester. Therapeutic Recreation Internship must meet NCTRC national guidelines. Prereq: Completed of all core courses, senior standing/2.3 GPA and/or permission of instructor. Satisfactory/No Credit grading only.

493 Directed Independent Studies in Recreation and Leisure Studies (1-3) May be repeated.

RELIIGIOUS STUDIES (863)

101 World Religions in History (3) Introduction to religion in culture and society, including examination of religious traditions from China, India, and the Mediterranean world. Writing-emphasis course. (CC)

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. (CC)

232 Varieties of Religious Community (3) How different forms of religious communities (sects, tribes, sects, monastic orders, denominations, familial, etc.) have sought to reject, reinforce, transform, ignore, or dominate their culture and society. (Same as Sociology 232.)

244 Professional Responsibility (3) (See Philosophy 244.) (AH) (OC)

246 Bioethics (3) (See Philosophy 246.) (AH) (WC)

300 Ways of Understanding Religion (3) Sources and methods used in the study of religion and religions; analysis of approaches to the study of religion. Writing-emphasis course.

301 Religious Myth, Symbol, and Ritual (3) Distinctive modes of religious expression and analysis of theoretical approaches appropriate to their particular social and cultural functions in religions.

302 Anthropology of Religion (3) Religions of selected non-literate peoples. Role of religion in their social and cultural systems. (Same as Anthropology 302.)

305 Modern Religious Thought (3) Major themes, issues, and thinkers of 19th and/or 20th century religion. Variable content. May be repeated. Maximum 6 hours.

309-310 Elementary Classical Hebrew (3,3) Basic elements of Hebrew phonology, script, morphology and syntax. Introduction to basic elements of text, form, and literary criticism.

311 Ancient Hebraic Religious Traditions (3) Development of ancient Israelite and early Jewish traditions with emphasis on those concerning the Exodus, Davidic kingship, and Zion in historical, prophetic and apocalyptic material. Writing-emphasis course. (Same as Judaic Studies 311.)

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. (Same as Judaic Studies 312.)

313 Religious Aspects of Modern Literature (3) Issues raised for religious inquiry in contemporary literature. Relation of religious and moral considerations to problems of literary analysis; relation between religious language and forms of human expression (symbol, metaphor, myth, image) identified in study of literature. Writing-emphasis course.

315 Reformation Europe, 1500-1650 (3) (See History 315.)

320 Women and Religion (3) Concepts of gender in religious traditions, religious, social and psychological dimensions of gender-related symbols (e.g., the Goddess, God the Father) that shape women’s and men’s experiences; contemporary feminist discussions of ways in which religions have liberate and oppressed women. (Same as Judaic Studies 320; Women’s Studies 320.)


322 Christian Thought in Late Antiquity (3) Major themes, events, texts, and figures of Christianity in the Roman and Byzantine Empires (after the New Testament period). Includes the study of early Christian controversies over topics such as gender and sexuality, Christianity and politics, interpreting scripture, and defining Christian orthodoxy. Writing-emphasis course. (Same as History 322.)

326 Images of Jesus (3) Major portrayals of Jesus Christ from the first century to the twentieth within the context of the cultural milieu which gave birth to each. Extensive use of slides, video material, recordings, and literature.

329-330 Intermediate Classical Hebrew (3,3) 329—Readings in narrative material from the Hebrew Bible. 330—Readings in poetic and prophetic material from the Hebrew Bible. Prereq: 329 or consent of instructor.

332 Classical Islam (3) Content limited to events prior to 1773 CE, focussing on the Qur’an, the Prophetic Tradition, Islamic law, Sunni, Shi’ism, and Sufism. Writing-emphasis course. (Same as Asian Studies 332.)

333 Islam in the Modern World (3) Beginning with the Wahhabi revolution (ca. 1773 CE), this course examines movements of revival and reform in modern Islam, as well as worldwide missionary activity and the growth of the Islamic community in the United States. Writing-emphasis course. Prereq: Religious Studies 332 or consent of instructor. (Same as Asian Studies 333.)

342 Religious Ethics (3) Selected ethical theories and moral teachings of religious communities and thinkers, their action-guides for individuals and institutions, their application to persons and social problems.

351 Introduction to Religion in the United States (3) A representative panorama of religion in the United States, organized around selected focal themes or problems. Writing-emphasis course.

352 African-American Religion in United States (3) Historical and critical examination of formation and development of African-American religious thought and institutions in America. Writing-emphasis course. (Same as African and African-American Studies 352.)

353 Topics in African-American Religion (3) Selected figures, themes, movements, or problems in the African-American religious tradition. Variable content. May be repeated. Maximum 6 hours. (Same as African and African-American Studies 353.)
355 Religion and Culture in the United States (3) Selected figures, movements, and problems in American religious life, thought, and culture from pre-colonial period to present. Writing-emphasis course. Prereq: 351 or consent of instructor. May be repeated. Maximum 6 hours. (Same as American Studies 355.)

370 Philosophy of Religion (3) (See Philosophy 370.)

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. Writing-emphasis course. (Same as African and African-American Studies 373; Anthropology 373.)

374 Philosophy and Religion in India (3) Survey of the development of the major non-Buddhist themes of philosophical and religious thought in India. Writing-emphasis course. (Same as Philosophy 374.)

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. Writing-emphasis course. (Same as Philosophy 376.)

378 Theravada Buddhism (3) Historical study of the Theravada Buddhist tradition in South and Southeast Asia. Focus will be on the cult of the Buddha in Theravada Buddhism, the Theravada interpretation of key Buddhist concepts as found in the Pali canon, and the reciprocal relationship between renouncers and lay persons in the tradition.

379 Religion and Philosophy in China (3) Traditional thought and religion of China in its cultural setting as basis for understanding modern China. Writing-emphasis course. (Same as Philosophy 379.)

380 East Asian Buddhism in Asia and North America (3) An overview of the distinctive forms of Buddhism that arose in China, Japan, and Korea, as well as an introduction to their offshoots in North America.

381 Introduction to Judaism (3) History, traditions, philosophy and religion of the Jewish people grounded in the ancient period, but includes diaspora, emancipation and haskalah. Writing-emphasis course. (Same as Judaic Studies 381.)

382 Religion and Culture in Southeast Asia (3) Historical study of the major religions in Southeast Asia, including indigenous traditions, Hinduism, Buddhism, Islam and Christianity. Focus will be on the historical interplay between religion, culture, and society and the expression of these traditions.

383 Religion in Japan (3) Traditional religious heritage and contemporary expressions of religion in Japan with attention to relationships of persons to nature, self-mastery and spontaneity, individual and community and secular to sacred. Writing-emphasis course.

384 Zen Buddhism (3) Historical, philosophical, and meditational aspects of Zen. Special emphasis on motifs of emptiness, no-mind, and enlightenment and on practices of meditation and the use of the koan. Recommended prereq: One or more of the following: 376, 379, 383.

385 Contemporary Jewish Thinkers (3) Renewal trends in Nineteenth and Twentieth-Century Judaism. Writing-emphasis course. May be repeated. Maximum 6 credit hours. (Same as Judaic Studies 385.)

386 Voices of the Holocaust (3) Historical underpinnings of Nazi genocides such as that of the Jewish people, Gypsies, and homosexuals. The economic, religious, social, and philosophical trends supporting massive genocide. (Same as Judaic Studies 386.)

389 Literature of the English Bible (3) (See English 389.)

401 Texts and the Study of Texts (3) Systematic introduction to the nature and function of (primarily, but not exclusively, oral and written) texts and textual traditions in the study of religion. How texts are made and used historically, how they are recovered and created by scholars, how they are interpreted by religious communities and scholars.

405 Modern Jewish Thought (3) History, culture, and geography of the now Israeli portion of the Levant from 1850 to present. The founding of the modern state of Israel in 1948 and the political complexities of the Middle East. Israeli culture and literature. Writing- emphasis course. (Same as Judaic Studies 405.)

411 Modern Religious Philosophies (3) Religious implications of major Western thinkers and movements from Nicolas of Cusa to the nineteenth-century German Idealists. (Same as Philosophy 411.)

415 Psychology of Religion (3) (See Psychology 415.)

425 Seminar in Western Religions (3) Selected figures, themes, movements, and problems. Prereq: Consent of instructor. Variable content. May be repeated. Maximum 6 hours.

430 Seminar in American Religion (3) Selected figures, themes, movements, and problems. Prereq: Consent of instructor. Variable content. May be repeated. Maximum 6 hours.

440 Seminar in Comparative Religion (3) Selected figures, themes, movements, and problems. Prereq: Consent of instructor. Variable content. May be repeated. Maximum 6 hours.

474 Modern and Contemporary South Asian Religion (3) Religion in India during the Islamic and European colonial periods and in independent India. May include such topics as the development of vernacular forms of Hinduism; Hindu interactions with other religions; the Indian Freedom Movement and Gandhi; women and tradition; religion, secularism, and politics in independent India; and religion and caste in the new India. Writing-emphasis course. Prereq: Religious Studies 374 or Philosophy 374.

490 Readings and Research in Religious Studies (3) Prereq: Consent of instructor. May be repeated. Maximum 6 hours.

491 Foreign Study (1-15)

492 Off-Campus Study (1-15)

493 Independent Study (1-15)

499 Proseminar in Religious Studies (3) For advanced students in Religious Studies; required for majors. Selected topics, e.g., nature and function of myth in religion, problem of evil, transcendence, theories of religion, hermeneutics, integrating various disciplines involved in study of religion. Prereq: Consent of instructor. May be repeated. Maximum 6 hours.

**RETAIL AND CONSUMER SCIENCES (865)**

102 Microcomputer Applications (1) Introduction to microcomputer use and applications such as spreadsheets, databases, presentation graphics, and word processing. Emphasis on Excel and Powerpoint via in-class exercises and assignments. Satisfactory/No Credit grading. (Same as Hotel, Restaurant, and Tourism 102.)

210 Introduction to Retail Management (3) Development and overview of retailing, related businesses and industries, and the activities involved in the delivery of goods and services to the consumer.

310 Retail Buying (4) Analysis of the merchandise buying function within different types of retail organizations and structures. Application of principles associated with retail buying. Computer simulations. 3 hours and 1 discussion/lab. Prereq: 102 or equivalent, 210, Mathematics 125, Accounting 200.

311 Developing the Service Workforce (3) (See Hotel, Restaurant, and Tourism 311.)

320 Apparel Product Development (3) Concepts of apparel product development from the retailer’s perspective. Understanding of basic textile and design principles, specification writing, line building, and brand management to develop apparel products for target markets.

341 Family and Consumer Behavior (3) Understanding of behavior of individual and family, demographics, family life cycle, family dynamics and roles, cultural and ethnic influences, and individual and family decision making.

346 Retail Operations Management (3) Analysis of retail operations in terms of organizational structure, logistics and distribution, growth opportunities and productivity. Prereq: 210, Accounting 200.

360 Issues and Trends in Consumer Service (3) Building competencies in providing outstanding customer service in retail organizations. This course will create a unified approach to customer service, recognizing the importance of store environment planning, organizational policies and internal marketing that will lead to increased business by attracting and retaining desired customers. Prereq: 210. (Same as Hotel, Restaurant, and Tourism 360.)

376 Strategies for Growth (3) Issues concerning achievement of business growth with focus upon the consumer, operational, and financial dimensions of the service industry. Prereq: 341; Statistics 201; Marketing 300. Coreq: 310.

390 Professional Development (3) (See Hotel, Restaurant, and Tourism 390.) (WC)

410 Strategic Retail Planning (3) Retail Management from a strategic planning perspective; development and implementation of retail strategy from financial, operational, and customer orientation. Prereq: 376, 422.

411 Entrepreneurship and Small Business Management (3) Concepts of entrepreneurship within single ownership and other business organizations; development of a business plan; management of a small business; current issues and problems. Prereq: 210, 341, Marketing 300, Accounting 200.
412 Direct Retail Methods (3) Issues concerning the use of direct selling methods to sell goods and services. Emphasizes analysis of consumers and product/service types for integrated direct retail methods. The direct retailing methods in this course include direct mail, catalogs, telemarketing, infomercials, and electronic commerce (internet). Prereq: 210, 341, Marketing 300.

415 Retail Promotion (3) In-store promotional activities; development of retail promotion strategies; evaluation of retail promotions; supplementary focus on advertising and other methods to communicate in-store promotions. Prereq: 210, 341, Marketing 300.

421 International Retail Environments (3) The study and analysis of retailing in an international and global setting. Retail processes, practices and issues within international environments—cultural, economic, social, political, legal and business. Prereq: 210, 341, Marketing 300.

422 Professional Experience in Retail and Consumer Sciences (3) Supervised educational experiences in selected retail and consumer sciences service operations. Prereq: Progression into the program and 310, 390.

480 Retail Market Planning and Execution (1-3) Expose students to the process of planning and executing a market trip; involves off-campus experience at a major market center. Prereq: 310, consent of instructor. May be repeated. Maximum 6 hours.

482 Professional Experience in Retailing II (6) Supervised professional experience in selected retail operations that build upon first professional experience. Prereq: 410, 422.

484 International Retail Industry Study Tour (3) Group study abroad involving academic research and field investigation. Prereq: 210 and consent of instructor. May be repeated. Maximum 6 hours.

493 Directed Study (1-3) Individual problems for junior and senior students with special interests in retail and consumer sciences. Prereq: Junior or senior standing and consent of the instructor. May be repeated. Maximum 9 hours.

495 Special Topics (3) Topics in retail and consumer sciences. Prereq: Junior or senior standing and consent of the instructor. May be repeated. Maximum 9 hours.

497-498 Honors: Retail and Consumer Sciences (1-3) Individual problems for junior and senior students showing special ability and interest in retail and consumer sciences. Prereq: Recommendation of department head.

RURAL SOCIOLOGY (880)

380 Rural Sociology (3) Topics include the analysis of U. S. land tenure systems, agricultural regions, rural minorities, Amish, farmer organizations, rural institutions, community decision making, local government, rural policy issues, rural industrialization, food policy, and cross-cultural analysis. Prereq: Sophomore standing.

RUSSIAN (886)

101-102 Elementary Russian (4,4) Must be taken in sequence.

103-198 Russian Language and World Business (2) This course will examine the importance of foreign trade at the local, state, and national levels. An interdisciplinary team of faculty from the colleges of Business and Arts and Sciences will provide an overview of the value of language study and international cultural awareness in world business. Restricted to students in the language and world business program. See the director for further information.

201-202 Intermediate Russian (4,4) Must be taken in sequence. (CC)

221 Rebels, Dreamers, and Fools: The Outcast in 19th Century Russian Literature (3) Texts in English translation. No foreign language credit. Writing-emphasis course. (AH) (WC)

222 Heaven or Hell: Utopias and Dystopias in 20th Century Russian Literature (3) Texts in English translation. No foreign language credit. Writing-emphasis course. (AH)

311-312 Russian Composition and Conversation (3,3) Practice in writing and speaking; grammar review and vocabulary building. Prereq: Completion of 202.

325 Russian Film (3) A study of Russian cinema from the earliest days to the present. Writing-emphasis course. (Same as Cinema Studies 325.)

371 Martyrs, Mobs, and Madmen in Russian Culture: 988-1861 (3) Explores various aspects of Russian music, art, and literature, emphasizing violent cultural clashes that produced extreme artistic reactions. Texts in English translation. Writing-emphasis course.


314 Human Behavior and the Social Environment (3) Interrelatedness of biological, social, cultural, environmental and psychological factors in human behavior. Person-in-environment over the life span with special attention to diversity, impact of racism, sexism, and other sociocultural factors. Integration of knowledge into a social work practice perspective. Prereq: Initial progression, English 101-102. Coreq: 312. (WC)

316 Culturally Responsive Social Work Practice (3) Social work practice with diverse populations. Variables including race, ethnicity, gender, class and sexual orientations as they relate to generalist social work practice. Students develop self-awareness of their own culture and the culture of others, acquire knowledge and understanding of the impact of oppression on diverse groups. Prereq: Initial progression. Coreq: 310, 313, 380.

380 Field Practice in Social Work I (3) Eight-hour-per-week, supervised field experience with practice situations for developing professional skills, values and attitudes. Concurrent seminar focuses on integration of knowledge with practice experiences. Prereq: Initial progression. Coreq: 310, 313, 316.

412 Social Work Practice III (3) Generalist practice with emphasis on groups and communities, including treatment theories, techniques, and issues. Prereq: Full progression. Coreq: 416 and 480.


460 Integrative Seminar (3) Social work content for entry-level professional practice and current issues influencing the profession. Includes development of a portfolio reflecting BSW competencies and research development and presentation. Prereq: Full progression. Coreq: 481.

461 Child Welfare Management I: History, Programs, and Policies (3) Study of the child welfare system examining history, policies and programs, both state and federal, pertinent to child maltreatment and juvenile justice. Prereq: 200 and 250 or permission of instructor.

462 Child Welfare II: Skills and Practice Methods (3) Emphasis on the special challenges, needed skills, and different strategies and interventions in the provision of culturally responsive child welfare services. Prereq: 461 or permission of instructor.

480-481 Field Practice in Social Work II, III (6,6) Sixteen-hour-per-week supervised agency field practicum for integration of theory and practice and critical examination of oneself as a professional helping person. Concurrent field seminar on integration of knowledge with practice experiences. Prereq: Full progression.

491 Foreign Study (1-15) Prereq: Consent of instructor.

492 Off-Campus Study (1-15) Prereq: Consent of instructor.

493 Independent Study (1-15) Prereq: Consent of instructor.

SOCIIOLOGY (915)

110 Social Justice and Social Change (3) Problems of deviance, crime, and victimization, inequalities in exposure to environmental risks, and inequalities in power and participatory democracy within the context of social change. Assessment of control strategies and redress of injustices. (SS)

117 Honors: Social Justice and Social Change (3) Open to University Honors students and by departmental permission to first year students with 28 or higher ACT or 1200 SAT and other students with a minimum of a 3.0 average. (SS)

120 General Sociology (3) Major concepts and theoretical approaches of sociology with emphasis on culture, socialization, social organization, and social stratification. (SS)

127 Honors: General Sociology (3) Open to University Honors students and by departmental permission to first year students with 28 or higher ACT or 1200 SAT and other students with a minimum of a 3.0 average. (SS)

232 Varieties of Religious Community (3) (See Religious Studies 232.)

250 Introduction to Global Studies (3) Exploration of how globalization is fostering change in culture, politics, economics, philosophy, and the environment. Uses interdisciplinary perspectives to understand the relationship between historic processes and the contemporary world, and the reciprocal influences of local dynamics and global change. (Same as Global Studies 250.) (CC)

310 American Society (3) Institutional organization of contemporary American society with particular attention to major social values. Writing-emphasis course.

311 Family (3) Theoretical frameworks and methodological approaches; their application in the sociological study of past and present family forms.

321 Sociological Theory (3) Survey of contemporary issues and problems in sociological theory with an emphasis on their historical development and their importance for the field. Students are required to form critical appraisals of the topics addressed. Prereq: C+ or better in Sociology 110 or 120 or consent of instructor.

331 Sociological Research (3) Selected issues in philosophy of social science, research design, sampling, methods of data collection, and interpretation. Requires written research report. Prereq: C+ or better in 110 or 120 or consent of instructor. (Same as Legal Studies 331.)


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. Writing-emphasis course. (Same as African and African-American Studies 343; American Studies 343.)

344 Power and Society (3) Sociological analysis of the formation and application of nation-state policies. Examination of who gets what, why, and how. Emphasis on contrasting explanations of the control of the state and the relative autonomy of the state.

345 Collective Behavior and Social Movements (3) Collective phenomena leading to social change. Response to disaster, popular crazes, and social protests and development, organization, and function of social movements. Emphasis on American cases. (Same as American Studies 345.)

350 Criminology (3) Systematic inquiry into how crime is defined, measured and explained. Implications for criminal justice policy.

351 Juvenile Delinquency and Social Policy (3) This course examines the historical and contemporary nature and social contexts of juvenile delinquency, as well as theoretical explanations of and social reactions to delinquency in American society.

352 Deviance and Social Control (3) Deviants, their lifestyles, social organization, and social control.

360 Environment and Resources (3) Relationship between scarcity of natural resources and changes in societal beliefs and social structure. Topics include social and physical limits to growth and collective action problems. Writing-emphasis course.

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.)

400 Special Topics (3) Variable topics. Scope of subject matter determined by students and instructor with consent of department. Prereq: Determined by department. May be repeated. Maximum 6 hours.

442 Comparative Poverty and Development (3) A critical examination of patterns of poverty and inequality in developing areas of the world, along with a review of major sociological theories which attempt to explain differences in patterns of development. Writing-emphasis course. (Same as African and African-American Studies 442.)

446 The Modern World System (3) Critical examination of the capitalist 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.
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 impact. Prior completion of 350 is recommended. (Same as Legal Studies 451.)

452 Minorities, Crime, and Criminal Justice (3) Examines racial/ethnic disparities in criminal offending and victimization, as well as different experiences with law enforcement, judicial and correctional agencies. Emphasis on social justice.

453 Gender and Crime (3) Probes the gendered nature of offending, victimization and criminal justice. Examines the different experiences of males and females, and theories that attempt to explain these differences.

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. (Same as Legal Studies 455.)

459 White-Collar Crime (3) The distinctive nature and dynamics of white-collar crime, victims and costs of white-collar crime, organizations as white-collar offenders, causal theories, and the dynamics of responses to white-collar crime by private and public parties.

462 Population (3) Demographic factors and social structure; trends in fertility, mortality, population growth, migration, 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.)

465 Social Values and the Environment (3) Human dimensions of ecosystem management and public policy. An applied focus on how social values are activated within specific biophysical and social settings. Prereq: 110 or 120 or consent of instructor. Writing-emphasis course.

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.

495 Social Justice and Community Service (3) Examines social stratification, inequalities, and social justice. Service Learning component offers supervised internships in the community with service agencies and non-profit organizations. For sociology majors with senior standing. Instructor’s permission required.

SPANISH (924)

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

150 Intermediate Spanish Transition (3) This course is designed to prepare students for enrollment in Spanish 211. Prereq: Two years of high school Spanish and a placement score below the level required for admittance to Spanish 211. For elective credit only. This class will not count toward the College of Arts and Sciences intermediate-level foreign language requirement. Since 150 is a review of elementary Spanish, students who receive credit in this course may not also receive credit for any other 100-level Spanish course and therefore also forfeit the six hours of elementary language credit awarded through placement examination.

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

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

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. Prereq: 111-112 or equivalent. Students who earn an A or B in 218 receive credit for 300. (CC)

300 Transition: Composition and Grammar through Reading (3) Provides preparation in writing skills and exercise in key elements of grammar through the development of reading comprehension, vocabulary acquisition, and compositions on assigned topics. Prereq: 212 or equivalent or appropriate score on Spanish placement test. Available to non-native or non-bilingual students of Spanish only.

305 Conversation and Aural Comprehension (3) Develops speaking and listening comprehension skills through a variety of in-class and extra-class activities. Prereq: 212 or 218 or permission of department. Not available for credit for students whose level of proficiency in Spanish is superior as defined by the ACTFL Proficiency Guidelines.

323 Upper-level Grammar and Composition (3) Study of the more challenging grammatical issues in Spanish with practical application in composition assignments. Any review of basics covered in previous courses is to introduce finer points. Writing-emphasis course. Prereq: 218 or 300 or permission of department. Not available for credit for students whose level of proficiency in Spanish is superior as defined by the ACTFL Proficiency Guidelines.

330 Textual Analysis (3) Introduction to the art of reading and interpreting literary texts and the writing of critical essays, with attention to language structures, literary terminology, theory and concepts such as romance, tragedy, comedy, irony, narrative voice, symbol, metaphor, etc, with application to works such as short stories, one-act plays, essays, and letters. Writing-emphasis course. Prereq: 323.

331 Introduction to Hispanic Culture (3) Introduction to the fundamental historical, political and demographic developments that led to the creation, geographic distribution and distinctive character of Hispanic cultures, with attention to those qualities that distinguish Hispanic culture from other cultures, as well as to ethnic and linguistic components of the Hispanic world in the present day. Writing-emphasis course. Prereq: 323. (Same as Latin American Studies 331.)

332 Survey of Spanish Literature: 1700-Present (3) Main writers, trends, stylistic periods and artistic movements in Spain since 1700 set against a broad background of cultural, socio-political and historical developments. Emphasis on Neo-classicism, the Romantics, the realists of the 19th century, the Generation of ‘98, the avant-garde of the 1920’s and 1930’s, social realism, women writers, and contemporary developments. Writing-emphasis course. Prereq: 323, 330.

333 Survey of Spanish-American Literature: 1700-Present (3) Main writers, trends, stylistic periods and artistic movements in Spanish America since 1700 set against a broad background of cultural, socio-political and historical developments. Emphasis on Neo-classicism, the Romantics, modernismo, the avant-garde of the 1920s and 1930s, social realism, magical realism, the Latin American boom, women writers, and contemporary developments. Writing-emphasis course. Prereq: 323 and 330. (Same as Latin American Studies 333.)

334 Survey of Hispanic Literatures: Beginnings-1700 (3) Main writers, trends, stylistic periods and artistic movements in Spain and Spanish America up to 1700 set against a broad background of cultural, socio-political and historical developments. Writing-emphasis course. Prereq: 323, 330. (Same as Latin American Studies 334.)

345-346 Language and Culture of the Hispanic Business World (3,3) Commercial vocabulary, business letters, import-export, marketing, Hispanic social management culture, and the global significance of economic and political developments in Spanish-speaking countries. Prereq: 323 or permission of department if a student’s level of proficiency in Spanish is both superior and native as per the ACTFL Proficiency Guidelines.

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

402 Latin American Studies Seminar (3) Selected topics in Latin American Studies. Writing-emphasis course. Prereq: 6 hours of 300- or 400-level Latin American Studies courses or consent of the instructor. May be repeated. Maximum 6 hours. (Same as Latin American Studies 402.)

421 Phonetics (3) Prereq: 323 or permission of instructor.

422 Advanced Grammar and Translation (3) Structure of the grammatical system of Spanish. In-depth analysis of selected syntactic phenomena with practical illustration/application and exercise in Spanish-English and English-Spanish translation. Emphasis on finer points of grammatical structures. Writing-emphasis course. Prereq: 323. Not available to native or bilingual students of Spanish without permission of department.
423 Advanced Composition and Conversation (3) Develops writing and speaking skills to the advanced level, covering a wide range of topics and situations and including a variety of in-class and extra-class activities. Writing-emphasis course. Prereq: 323 or permission of department. Not available for credit for students whose level of proficiency in Spanish is superior as defined by the ACTFL Proficiency Guidelines.

425 Introduction to Descriptive Linguistics (3) (See French 425.)

426 Methods of Historical Linguistics (3) (See German 426.)

429 Romance Linguistics (3) (See French 429.)

430 Topics in Hispanic Linguistics (3) Introduction to the study of the Spanish language through selected areas of linguistics such as phonology, morphology, syntax, semantics, sociolinguistics, dialectology and second language acquisition. Writing-emphasis course. Prereq: 323. May be repeated. Maximum 6 hours with permission of department. (Same as Linguistics 431.)

433 Images of Woman in Hispanic Literature (3) Examines major Hispanic texts (and/or women authors) in the light of the relation of female individuality to a particular social context, the role of women in society, patriarchal tradition, woman as cultural and as aesthetic value (the feminine symbolic), and feminist theoretical issues. Writing-emphasis course. Prereq: 323, 330, completion of major or minor requirements in 332, 333, 334.

434 Hispanic Culture through Film (3) Analysis of selected films on subjects concerning life, culture, and artistic traditions in the Hispanic world; exploration of ideological, philosophical, social, and political implications of films and a comparison of them with treatments of related subjects in other types of artistic production. Writing-emphasis course. Prereq: 323, 330, completion of major or minor requirements in 332, 333, 334. Taught in Spanish. May be repeated. Maximum 6 hours with permission of department. (Same as Cinema Studies 434.)

461 Special Topics (3) Focus on some aspect of Hispanic literature, culture, linguistics, or foreign language pedagogy. Topics vary. May be repeated with consent of department. Maximum 6 hours.

465 Latin American Film and Culture (3) Explores Latin American and Latino/a films and videos from 1900s to present as works of art and in light of political, cultural, and social contexts. Taught in English. 1 hour lecture, 2 hours screening, and 1 hour discussion. Not available for Spanish major or Spanish graduate credit. Graduate credit available for Latin American Studies and Cinema Studies. Writing-emphasis course. (Same as Cinema Studies 465; Latin American Studies 465.)

479 Disenchanted Texts in Hispanic Literature (3) Texts representing trends and periods of renewal in Spain and Latin American countries. Selected topics on traditions in crisis. Content will vary. Writing-emphasis course. Prereq: 323, 330, 331, completion of major or minor requirements in 332, 333, 334. May be repeated. Maximum 6 hours with permission of department. (Same as Latin American Studies 479.)

480 Social Forces in Hispanic Literary Expression (3) Analysis of major Hispanic texts that have been influenced and/or continue to influence the social and cultural evolution of the Hispanic world, including literature itself. Writing-emphasis course. Prereq: 323, 330 and completion of major or minor requirements in 332, 333, 334. May be repeated. Maximum 6 hours with permission of department.

482 Trends in Hispanic Thought (3) Intellectual/philosophical currents represented in literary works, selected thinkers, or movements from historical periods of Spain and Latin American countries. Writing-emphasis course. Prereq: 323, 330, completion of major or minor requirements in 332, 333, 334. May be repeated. Maximum 6 hours with permission of department.

484 Race, Ethnicity, and Nation in Hispanic Literature (3) Close reading and analysis of literary texts that deal with issues of race and ethnicity in the Hispanic world, especially with regard to identity and concepts of nationhood. Among possible course topics: mestizaje; conceptual distinctions between race and ethnicity in Latin America; indigenismo; afrocentrism; issues of monarchy and empire; relationship between Jews, Christians, and Moors in Spain. Writing-emphasis course. Prereq: Spanish 323, 330 and completion of major or minor requirements in 332, 333, 334. May be repeated. Maximum 6 hours with permission of department.

486 Literary and Artistic Movements in the Hispanic World (3) Examination of relationships (thematic, cultural, socio-political, aesthetic, philosophical, etc.) between specific trends in literature and other artistic media, in the light of the historical contexts in which those relationships emerged. Writing-emphasis course. Prereq: 323, 330 and completion of major or minor requirements in 332, 333, 334. May be repeated. Maximum 6 hours with permission of department.

489 Topics in Hispanic Civilization (3) Analysis of major trends, issues and/or movements in the civilizations of Spain and Spanish America. Political, literary, and cultural perspectives dealing with topics from the Middle Ages to the present day may be explored. Writing-emphasis course. Prereq: 323, 330, completion of major or minor requirements in 332, 333, 334. May be repeated. Maximum 6 hours with permission of department.

490 Internship (1-15) Career-related experiences in the United States or abroad with permission of the Language and World Business director. For language and world business majors only. Satisfactory/No Credit grading only.

491 Foreign Study (1-15)

493 Independent Study (1-15)

494 Spanish Community Service Practicum (1) Supervised community service with local agencies that assist Hispanic community or supervised activities with local cultural organizations that promote awareness of Hispanic culture among the general public. Each credit hour requires 40 semester hours of off-campus supervised work and a weekly one-hour tutorial with a faculty member. Prereq: Completion of 18 hours of upper-division Spanish and consent of instructor. Not available for credit in the major. Maximum of one hour credit per semester. May be repeated. Maximum 3 hours. Satisfactory/No Credit grading only.

SPECIAL EDUCATION (932)

310 Special Education Principles (3) Introduction to the field of special education, including the nature and causes of disabling conditions, family systems, a history of the field, and current policies. Prereq: Admission to Teacher Education Program.

320 Special Education Strategies (3) Introduction to basic special education procedures, including formal and informal assessment, planning, development of individual education plans, applied behavioral analysis, appropriate medical procedures, and effective instructional strategies. Prereq: 310, Admission to Teacher Education Program.

402 Professional Studies: Special Education and Diverse Learners (2) Characteristics and needs of students with disabilities and diverse learners with emphases on educational implications. Techniques, strategies and resources for teaching students with special learning, behavioral or medical needs, and the requirements of special education laws. Prereq: Educational Psychology 210, Admission to Teacher Education.

410 Early Childhood Special Education Foundations (3) Introduction to the field of early childhood special education including the nature of disabling conditions; theoretical perspectives in the field; legislation; policies and procedures used in the field. Prereq: Admission to Teacher Education Program.

419 Psychology and Education of Students with Mild Disabilities (6) Nature and characteristics of persons with mild handicaps and the educational strategies appropriate for these persons. Prereq: 402, Admission to Teacher Education Program. Coreq: 420.

420 Field Experience in Special Education Programs (3) Practicum in teaching special education programs: planning, developing, implementing and evaluating instruction. Prereq: 402, admission to Teacher Education Program. Coreq: 419 and/or 471. Satisfactory/No Credit grading only.

431 Field Experience in Comprehensive Programs (3) On-site teaching experience with moderately and severely handicapped children and youth. Prereq: 402, Admission to Teacher Education Program. Coreq: 432. Satisfactory/No Credit grading only.

432 Psychology and Education of Students with Moderate/Severe Disabilities (6) Nature and characteristics of persons with moderate/severe disabilities and the educational strategies appropriate for these persons. Prereq: 402, Admission to Teacher Education Program. Coreq: 431.

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.

456 Speech and Language Basis of Learning Disabilities in the Classroom (3) Normal communication development; understanding of speech and language impairments in school-age students; integration of oral/written communication skills into existing curriculum, especially for high incidence special education students.

470 Psychology of the Exceptional Child (3) General characteristics and educational needs of exceptional children. Implications of developmental variations for functioning as adults. Enrollment limited to non-education majors.
471 Early Childhood Special Education (6) Assessment, curriculum planning and development and teaching approaches used in early childhood special education. Prereq: Admission to Teacher Education Program.

472 Field Experience in Early Childhood Special Education (2-5) Placement in educational settings serving young children with special needs. Provides experience in assessment, curriculum planning and teaching. Prereq: Admission to Teacher Education Program. May be repeated. Maximum 5 hours. Satisfactory/No Credit grading only.

SPORT MANAGEMENT (957)

100 Orientation to Sport Management (1) Overview of the sports industry and sport management major. Taken the first semester as pre-major.

250 Foundations of Sport Management (3) An introduction to the scope of the sport industry, including why business is involved in sport and an overall evaluation of sport management as a profession. Prereq: 100.

290 Practicum I (3) Supervised part-time field experience at an approved site for the purpose of clarifying career goals. Requires a minimum of 120 clock hours. Prereq: Progression to sport management. Satisfactory/No Credit grading only.

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. Prereq: Consent of instructor.

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

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

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


321 Introduction to Sport Psychology (3) Introduction to the psychology of sport and exercise. Includes the scientific study of people and their behaviors in these contexts and the practical application of that knowledge. Topics include: personality, motivation, anxiety, competition and cooperation, group and team dynamics, leadership, goal-setting, self-confidence, injury, moral and ethical considerations, and unhealthy behaviors.

323 Sport Management: Theory to Practice (3) Overview of the sociological, historical, and philosophical foundations of sport and leisure in American society. Various forms of sport and leisure are explored within a social justice framework based on a cultural studies perspective. Students explore sport and leisure as global phenomena in social, historical and philosophical contexts.

324 Social Issues in Sport (3) An exploration of power relations and cultural ideologies as they impact participation opportunities in sport. Students use in-depth critical thinking analysis to identify and explore social justice issues linked to the major spheres of social life. In addition, moral decision-making and ethical dilemmas in sport, leisure and exercise are addressed.

350 Sport Management: Theory to Practice (3) Overview of managerial theories and applications including responsibilities and practices associated with broad perspectives of sport enterprise. Prereq: Progression to sport management.

360 Sport Governance (3) The primary focus is the organizational structure, authority and functions of governing bodies. Special emphasis is given to the role of the National Collegiate Athletic Association in collegiate athletics.

370 Event Management (3) Study of the various principles involved in the organization, promotion, and management of special events. Students will combine theory and practice through experience with assigned special events. Prereq: Progression to sport management or consent of instructor.

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

390 Practicum II (3) Supervised part-time experience at an approved site offering sport management opportunities. Requires a minimum of 120 clock hours. Prereq: 290 and progression to sport management. Satisfactory/No Credit grading only.

440 Sport Marketing (3) Application of fundamental marketing concepts to the sport industry. Marketing research, promotions, fund raising, advertising, and assessment of marketing programs specific to sport will be covered. The historical development of sport marketing will be included. Prereq: Marketing 300 and progression to sport management.

450 Legal Aspects of Sport (3) Identification and application of various areas of law to sport industry. Includes how constitutional law, contract law, anti-trust law, and tort law impact sport management decisions. Special emphasis placed on discrimination in sport (e.g., race, gender, ethnicity, and disability). Prereq: Progression to sport management.

460 Development and Revenue Generation in Sport (3) Designed to provide overview of theories, strategies, and techniques used in the production of revenue for sport organizations and through sporting events. Emphasis on developing balanced, multifaceted programs that target a variety of constituencies in the sport industry.

490 Sport Management Internship (6-12) Supervised work experience at an approved site offering sport management opportunities. Emphasis on managerial tasks and administrative procedures. Requires a minimum of 480 clock hours. Prereq: Progression to sport management, overall 2.5 GPA (transfer work included), completion of all 300-level requirements, and senior standing. Enrollment for two semesters (6 hours each) or one semester (12 hours). Total 12 hours required. Satisfactory/No Credit grading only.

493 Directed Independent Studies (1-3) Independent study in a specialized area of sport management. Prereq: Progression to sport management. May be repeated. Maximum of 9 hours.

SPORT STUDIES (959)

231 Introduction to Sport Psychology (3) Introduction to the psychology of sport and exercise. Includes the scientific study of people and their behaviors in these contexts and the practical application of that knowledge. Topics include: personality, motivation, anxiety, competition and cooperation, group and team dynamics, leadership, goal-setting, self-confidence, injury, moral and ethical considerations, and unhealthy behaviors.

235 Socio-cultural Foundations of Sport and Leisure (3) An overview of the sociological, historical, and philosophical foundations of sport and leisure in American society. Various forms of sport and leisure are explored within a social justice framework based on a cultural studies perspective. Students explore sport and leisure as global phenomena in social, historical and philosophical contexts.

336 Social Issues in Sport (3) An exploration of power relations and cultural ideologies as they impact participation opportunities in sport. Students use in-depth critical thinking analysis to identify and explore social justice issues linked to the major spheres of social life. In addition, moral decision-making and ethical dilemmas in sport, leisure and exercise are addressed.

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

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

493 Directed Independent Studies (1-3) Independent study in a specialized area with physical education. Prereq: Consent of advisor and progression to the major. May be repeated. Maximum 9 hours.

STATISTICS (962)


207 Honors: Introduction to Statistics (3) Intended as an alternative to 201 for higher GPA students. Involves both lecture and labs, prerequisite: Mathematics 125, 141, or 147, two 50-minute lectures, and one 110-minute lab per week. (QR)


320 Regression and Correlation Methods (3) Simple linear regression and correlation analysis, time series analysis, multiple regression, variable selection, regression diagnostics, partial correlation, and categorical data analysis techniques. Use of statistical computing software. Applied course appropriate for a general audience. Prereq: 201 or 251.
330 Experimental Methods (3) Strategies of experimentation, factorial and fractional factorial experiments, sequential experimentation, blocking and run order restrictions, Taguchi’s strategies to reduce variation. Use of statistical computing software. Applied course for a general audience. Prereq: 201 or 251.


471 Statistical Methods (3) Numeric and graphic description of data; probability and probability distributions, simulation; sampling distributions; estimation and hypothesis testing for one and two samples, parametric and nonparametric approaches, bootstrapping; tests for count data; simple and multiple linear regression, diagnostics and validation; analysis of variance. Uses SAS and other statistical software. Prereq. 320 or consent of instructor.


474 Introduction to Data Mining (3) Understanding and application of data mining methods. Data preparation; exploratory data analysis and visualization; cluster analysis; logistic regression; decision trees; neural networks; association rules; model assessment; and other topics. Applications to real world data. Use of standard computer packages. Prereq: 471 or consent of instructor.


483 Special Topics in Statistics (1-3) Topics vary. Prereq: Consent of instructor. May be repeated. Maximum 6 hours.


492 Internship (1-6) Supervised off-campus experience in application of statistical principles and methods in business, industry, or government, culminating in a written and oral report. Prereq: Permission of the chairperson of the Statistics Department Undergraduate Affairs Committee. May be repeated. Maximum 6 hours. Satisfactory/No Credit grading only.

493 Independent Study (2-6) Faculty directed reading and investigation of specified topic in probability or statistics culminating in a written report. Prereq: Two courses in statistics and permission of the chairperson of the Statistics Department Undergraduate Affairs Committee. May be repeated. Maximum 6 hours.

THEATRE (976)

100 Introduction to Theatre (3) Understanding theatre: thought, philosophy, aesthetics, and production practices. Writing-emphasis course. (AH)

220 Acting I (3) Basic Acting Techniques.

221 Acting II (3) Further exploration and development of acting techniques through exercises and beginning scene work. Prereq: 220.

242 Fundamentals of Costume Design and Technology (2) Introduce the elements of costume design, technology and the design process. Hands on and lab intensive.

252 Fundamentals of Scene Design and Technology (2) Introduce the elements of scene design, basic scenic technology and the design process. Hands on and lab intensive.

262 Fundamentals of Lighting Design and Technology (2) Introduce the elements of theater lighting design, basic technology and the design process. Hands on and lab intensive. Writing-emphasis course.

300 Play Analysis (3) Study of methods and tools used in script analysis for the purpose of play production. Prereq: 100 or consent of instructor. (WC)


323 Stage Movement (3) Introduction to movement/kinesthetic awareness techniques and their application to performance. Prereq: 220, 221 or consent of instructor.

326 Advanced Voice and Speech (3) Breath-centered voice production; exploration and control of shaping sound; IPA; text work; geared toward acting for the stage. Prereq: 220, 221 or consent of instructor.

340 Costume Design I (3) Development of research, rendering, and conceptualization skills.

345 Costume Construction (3) Techniques in the construction of costumes for the theatre. Prereq: 242 or consent of instructor.

352 Entertainment Technology I (3) Techniques in live entertainment production, including scenery techniques, structures, special effects and rigging. Prereq: 252 or consent of instructor.

355 Scenic Design I (3) Designing a set by combining the elements and principles of design composition with dramaturgical research.

362 Lighting Design I (3) In depth lighting design practice and principals. Project and lab intensive. Writing-emphasis course. Prereq: 262 or consent of instructor.

410 Special Studies in History, Literature, and Criticism (3) Content varies. Concentrated study in a given period or area of theatre history, literature or criticism. May be repeated.

411 Theatre History I (3) Antiquity to 1700. Major historical periods and diverse cultural traditions in world theatre history. Prereq: 300 or consent of instructor.

412 Theatre History II (3) 1700 to contemporary theatre. Major historical periods and diverse cultural traditions in world theatre history. Prereq: 300 or consent of instructor.

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 and consent of instructor. May be repeated. Maximum 9 hours.

421 Theatre Projects in International Theatre (3-5) Study and performance of foreign works. Content varies. Language skills required. Prereq: 320 and consent of instructor(s). May be repeated Maximum 9 hours.

425 Selected Musical Theatre Techniques (3) Study and practice of musical theatre material including both dance and vocal work. May be repeated. Maximum 6 hours.


446 Costume Patterning (3) Draping patterns for period costumes. Includes corsetry and the study of historic patterns 1500-1900.

450 Special Studies in Entertainment Technology (1-3) Content varies. May be repeated. Maximum 9 hours. Prereq: consent of instructor.

452 Entertainment Technology II (3) Automation systems in live entertainment, including advanced rigging and flying for stage and film Prereq: 352 or consent of instructor.

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.

456 Scenic Design II (3) Advanced studies in set design. Prereq: 355 or consent of instructor.

462 Lighting Design II (3) Advanced lighting design theory and practice. Lab and project intensive. Prereq: 362 or consent of instructor.

464 Computer Aided Drafting for the Theatre (3) Introduction to entertainment drafting. Emphasis on 2D graphical standards, drafting techniques, drawing layout and presentation.

470 Playwriting (3) Advanced instruction in the writing of plays. Prereq: Consent of instructor.
481 Applied Theatre (1-2) Laboratory in applied theatre techniques for departmental productions. Prereq: Consent of instructor. May be repeated. Maximum 6 hours.

491 Foreign Study (1-15)

492 Off-Campus Study (1-15)

493 Independent Study (1-15)

THEORY AND PRACTICE IN TEACHER EDUCATION (978)

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.

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

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

355 Introduction to Secondary Schools (3) Aspects of teaching in grades 7-12, including curricular program and roles and responsibilities of secondary school teachers and administrators. Prereq: Admission to Teacher Education Program.

492 Directed Independent Study (1-3) Tutorial and specialized area. Prereq: Consent of instructor. May be repeated. Maximum 6 hours.

493 Independent Study (1-3) Topics to be assigned. May be repeated. Maximum 12 hours.

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

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

UNIVERSITY HONORS (983)

See University Honors Program for Honors by Contract information.

100 Introduction to University Honors (1) Required of and limited to freshmen students in the University Honors Program. Computer skills, service learning, study abroad options, professional development, and research skills. Satisfactory/No Credit grading only.

157 Arts and Humanities Honors Seminar (3) Interdisciplinary examination of selected issues in the arts or humanities. Topics vary. May be repeated if topic differs. Maximum 6 hours. (AH)

167 Social Science Honors Seminar (3) Interdisciplinary examination of selected issues in the social sciences. Topics vary. May be repeated if topic differs. Maximum 6 hours. (SS)

177 Cultures and Civilizations Honors Seminar (3) Interdisciplinary examination of selected global and cultural issues. Topics vary. May be repeated if topic differs. Maximum 6 hours. (CC)

187 Quantitative Reasoning Honors Seminar (3) Interdisciplinary applications of quantitative reasoning methods. Topics vary. May be repeated if topic differs. Maximum 6 hours. (QR)

257 Special Topics in the Arts and Humanities (3) Examination of a selected issue in the arts and/or humanities from a multi-disciplinary perspective. Topics vary. Prereq: English 118 or 102 or consent of University Honors. May be repeated if topic differs. Maximum 6 hours. (AH) (WC)

267 Special Topics in the Social Sciences (3) Examination of a selected issue in the social sciences from a multi-disciplinary perspective. Topics vary. Prereq: English 118 or 102, or consent of University Honors. May be repeated if topic differs. Maximum 6 hours. (SS) (WC)

277 Special Topics in Cultures and Civilizations (3) Examination of a selected global or cultural issue from a multi-disciplinary perspective. Topics vary. Prereq: English 118 or 102, or consent of University Honors. May be repeated if topic differs. Maximum 6 hours. (CC) (WC)

287 Special Topics in the Natural Sciences (3) Examination of a selected issue in the natural sciences from a multi-disciplinary perspective. Topics vary. May be repeated if topic differs. Maximum 6 hours.

337 Honors: Concentration in the Humanities (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 if topic differs. Maximum 6 hours.

347 Honors: Concentration in the Social Sciences (3) Small group studies of selected topics, issues or problems with a concentration in the social sciences. Open to all students with a GPA of 3.25 or greater. Topics vary. May be repeated if topic differs. Maximum 6 hours.

357 Honors: Concentration in the Natural and Applied Sciences (3) Small group studies of selected topics, issues or problems with a concentration in the natural and applied sciences. Open to all students with a GPA of 3.25 or greater. Topics vary. May be repeated if topic differs. Maximum 6 hours.

458 Senior Honors Seminar (1) Required of all University Honors students. Development and oral presentations of Senior Honors Projects. Should be taken one semester prior to the semester of graduation. Satisfactory/No Credit grading only.

491 Honors: Foreign Study (1-15) 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 (1-15) 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 (1-9) Open to any undergraduate honors student. Proposals must be approved in advance by University Honors. May be repeated. Maximum 9 hours. Letter grade only.

499 Senior Honors Project (3) Required of all University Honors students not completing an equivalent senior project for an academic department or program. Substantial scholarly, scientific, or artistic endeavor representing the capstone of a student’s undergraduate education.

UNIVERSITY STUDIES (984)

101 Lives and Times (3) Study of biography, autobiography, and biographical theory including factors that shape individual lives. Writing-intensive. Intended for entering students.

210-220 Special Topics in University Studies (1-9, 1-9) Interdisciplinary approaches to selected topics for lower division students. Small group discussion of varying topics that transcend the boundaries of a single discipline. Writing-intensive and team-taught. Permission of instructor required. Variable credit. May be repeated. Maximum 9 hours.

227 Honors: Topics in University Studies (3) Interdisciplinary approach to a significant scholarly or social issue for lower division students. Small group discussion of varying topics that transcend the boundaries of a single discipline. Writing-intensive. Permission of instructor required. May be repeated. Maximum 9 hours.

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). Discussion-based and writing-intensive. May be repeated. Maximum 9 hours.

311 AIDS and Society (3) Speakers from across the state speak about scientific, social, medical, emotional and financial aspects of acquired immunodeficiency syndrome. Students are required to participate in some AIDS related community activity and to describe that activity in writing.

317 Honors: Special Topics in University Studies (3) Honors course utilizing an interdisciplinary approach to a significant scholarly or social issue. Topics change every semester. Consult timetable for current offering. Discussion-based and writing-intensive. Permission of instructor required. May be repeated. Maximum 9 hours.

322 Technology, Society, and the Common Good (3) Explores philosophical and religious systems with a commitment to stewardship of the planet and those with an antagonistic or neutral perception of the natural world. Systems are presented in conjunction with cultural and species extinctions caused by or related to their beliefs and values.
410-420 Advanced Topics in University Studies (1-9, 1-9) 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). Discussion-based and writing-intensive. May be repeated. Maximum 9 hours.

411 Art and Organism (3) Interdisciplinary investigations of the relationship between art and biology. Readings and discussions focus on the idea that, while art is one of the most wholly human cultural endeavors, it is undeniably linked to, if not emergent from, our basic biology.

412 Normandy Scholars Seminar: War and Remembrance (9) Enrollment is limited to honors students selected for the Normandy Scholars Program. Students take coursework and travel as a learning community during their time in the program. The course has three coordinated components: Values and Politics; 20th Century French Literature, Culture, and Language; and World War II. The course is team-taught by members of various departments, and prepares students for the culminating integrative four weeks of study in France during the summer term. Coordinator’s permission required. Writing-intensive.

417 Honors: Advanced Topics in University Studies (3) Honors course utilizing an in-depth interdisciplinary research approach to a significant scholarly or social issue. Topics change every semester. Consult timetable for current offering. Discussion-based and writing-intensive. Permission of instructor required. May be repeated. Maximum 9 hours.

491 Foreign Study (1-15)
492 Off-Campus Study (1-15)
493 Independent Study (1-15)

URBAN STUDIES (985)

200 Human-Environment Systems (3) (See Interior Design 200.)
250 Introduction to Urban Studies (3) Introductory survey of urban studies. Includes a lecture series with urban scholars discussing urban issues as seen by their disciplines.
321 Urban Politics and Process (3) (See Political Science 321.)
350 Practicum in Urban Studies (3) Introductory seminars, written assignments, and hands-on experience in an organization which is working for urban change.
411 The City in the United States (3) (See Political Science 402.)
412 Survey of Planning (3) (See Political Science 403.)
441 Urban Geography of the United States (3) (See Geography 441.)
442 Urban Social Geography (3) (See Geography 442.)
446 Housing (3) (See Political Science 446.)
450 Directed Field Work (3) Participant observation and faculty-directed research. May be combined with 350 in a unified project, subject to faculty approval. Open to Urban Studies concentration majors only. Prereq: Approval of department. Satisfactory/No Credit grading only.
454 Cities and Urban American History (3) (See History 454.)
460 Seminar (3) A capstone seminar taught by an interdisciplinary team of urban studies faculty in a problem-solving context. Writing-emphasis course. Prereq: 250, 350, and senior standing.
464 Urban Ecology (3) (See Sociology 464.)
485 Real Estate and Investment Analysis (3) (See Finance 485.)
493 Independent Study (3-6) May be repeated. Maximum 6 hours.

WILDLIFE AND FISHERIES SCIENCE (993)

101 Current Topics in Wildlife Health (1) All aspects of wildlife health including current topics, emerging diseases, impact of diseases on wildlife populations, general disease mechanisms, and career opportunities in the wildlife profession.
201 Seminar in Wildlife Health (1) All aspects of wildlife health with an emphasis on current events and research. Prereq: 101.
301 Introduction to Wildlife Diseases (3) Fundamentals of wildlife health and disease emphasizing relevant current information on the biology of physiological diseases, infectious agents, pathogenesis, epidemiology, wildlife management, interrelationships among diseases of wild animals, humans and domestic animals, and molecular techniques. Prereq: 201, Microbiology 310, 319.
305 Prescribed Fire Management (2) Prescribed fire ecology, use, and management in forest stands. Prereq: Forestry, Wildlife and Fisheries 312.
323 Human Dimensions of Wildlife and Fisheries (1) Examination of the linkages between people, institutions, and society at large to natural resource management practices. Case studies and application of basic skills of group communication and collaborative problem solving and planning will be emphasized. Overnight field trips required.
340 Wetlands Ecology and Management (2) Ecology, restoration, and management of wetland ecosystems including biotic and abiotic processes, functions, and wildlife considerations. Prereq: Forestry, Wildlife and Fisheries 317, or consent of instructor.
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. Prereq: English 102 and Communication Studies 210 or 240 or consent of instructor.
350 Wildlife Damage Management (2) Principles and methods for wildlife damage management including biological, regulatory, practical, and social considerations. Weekend field trips (2) required. 2 hours and 1 lab or field. Prereq: Forestry, Wildlife and Fisheries 317 or consent of instructor.
440 Wildlife Techniques (3) Methods in wildlife damage control, forest, farmland, wetland wildlife habitat management, identification of wildlife field sign, wildlife capturing techniques and management plan preparation. Weekend field trips (2) required. 1 hour and 1 lab or field. Prereq: Forestry, Wildlife and Fisheries 317 or consent of instructor.
442 Fisheries Techniques (3) Active and passive sampling techniques for fish and aquatic organisms; population estimation methods; fish handling and transport; food habits analysis; marking and tagging techniques; age determination and incremental growth analysis; stream assessment; equipment and instrumentation usage and maintenance; safety in sampling methods. Weekend field trip may be required. 1 hour and 1 lab or field. Prereq: Forestry, Wildlife and Fisheries 317 or consent of instructor.
443 Fisheries Science (3) Quantification and management of freshwater fisheries including population estimation, age and growth, biological assessment, and stocking. 2 hours and 1 lab. Prereq: Forestry, Wildlife, and Fisheries 317 or consent of instructor.
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. 2 hours and 1 lab. One weekend field trip required. Prereq: Forestry, Wildlife, and Fisheries 317 or consent of instructor.
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. 2 hours and 1 lab. One weekend field trip required. Prereq: Forestry, Wildlife and Fisheries 317 or consent of instructor.
446 Fish Culture (3) Principles, concepts, and techniques of cultivating economically important fish and shellfish species. 2 hours and 1 lab. Prereq: Senior standing. Students cannot receive credit for both 455 and 555.
456 Recirculating Aquaculture (3) Growing fish in intensive, indoor systems with reconditioned water. Techniques of solids removal, nitrification, and gas balance. Practical experience with operating system. Prereq: Senior standing. Students cannot receive credit for both 456 and 556.
493 Independent Study in Wildlife and Fisheries Science (1-15) Special research or individual problem in wildlife and fisheries science.
496 Internship in Wildlife and Fisheries Science (1-6) Supervised experience at department-approved employment location arranged by the student. Internship learning objectives must be pre-approved by the advisor/instructor and the field supervisor. Daily log, supervisor evaluations, and final report required. One credit per two weeks of full-time supervised field experience maximum. Up to 3 credits may be used for science elective. Prereq: Junior standing, consent of instructor. May be repeated. Maximum 6 hours.
**WOMEN’S STUDIES (994)**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Description</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>210</td>
<td>Images of Women in Literature: Biography and Autobiography (3)</td>
<td>Introduction to women’s journals, diaries, biographies and autobiographies. Writing-emphasis course.</td>
<td></td>
</tr>
<tr>
<td>215</td>
<td>Images of Women in Literature: Fiction, Poetry, Drama (3)</td>
<td>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.</td>
<td></td>
</tr>
<tr>
<td>220</td>
<td>Women in Society (3)</td>
<td>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.</td>
<td></td>
</tr>
<tr>
<td>230</td>
<td>Marriage and Family: Roles and Relationships (3) (See Child and Family Studies 220.) (SS)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>310</td>
<td>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.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>320</td>
<td>Women and Religion (3) (See Religious Studies 320.)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>330</td>
<td>Women in Music (3) (See Musicology.) (WC)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>332</td>
<td>Women in American Literature (3) (See English 332.)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>340</td>
<td>Women, Politics, and the Law (3) An examination of recent changes in the laws affecting women and a study of the role of women in contemporary American politics. Writing-emphasis course. (Same as Legal Studies 340.)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>360</td>
<td>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. Writing-emphasis course.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>375</td>
<td>Gender in Society (3) (See Sociology 375.)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>382</td>
<td>Philosophy of Feminism (3) (See Philosophy 382.) (WC)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>383</td>
<td>Women in the Greek and Roman World (3) (See Classics 383.)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>400</td>
<td>Topics in Women’s Studies (3) Content varies. May be repeated.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>410</td>
<td>Sex Role Development: Implications for Education and Counseling (3) (See Counselor Education 410.)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>422</td>
<td>Women Writers in Britain (3) (See English 422.)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>425</td>
<td>Women’s Health (3) (See Health 425.)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>432</td>
<td>Women in European History (3) (See History 432.)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>433</td>
<td>French and Francophone Women Writers (3) (See French 433.)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>434</td>
<td>Psychology of Gender (3) (See Psychology 434.)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>453</td>
<td>Women in American History (3) (See History 453.)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>465</td>
<td>Media and Diversity (3) (See Journalism and Electronic Media 465.)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>466</td>
<td>Rhetoric of the Woman’s Rights Movement to 1930 (3) (See Communication Studies 466.)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>469</td>
<td>Sexuality and Cinema (3) Explores issues surrounding sexuality, gender and cinema from points of view of feminist film criticism. Writing-emphasis course. (Same as Cinema Studies 469.)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>476</td>
<td>Rhetoric of the Contemporary Feminist Movement (3) (See Communication Studies 476.)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>483</td>
<td>African-American Women in American Society (3) (See African and African-American Studies 483.)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>491</td>
<td>Foreign Study (1-15)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>492</td>
<td>Off-Campus Study (1-15)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>493</td>
<td>Independent Study (1-15) Registration by consent of chair of Women’s Studies.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>