Courses of Instruction

Courses fulfilling the University General Education Requirement are designated as

(AH) Arts and Humanities
(CC) Cultures and Civilizations
(OC) Communicating Orally
(NS) Natural Sciences
(QR) Quantitative Reasoning
(SS) Social Sciences
(WC) Communicating through Writing

REGISTRATION NOTES
(RE) Prerequisite(s) and Corequisite(s) will be enforced by the Registration System in the future. They are currently enforced by the department.
(DE) Prerequisite(s) and Corequisite(s) are enforced by the department.
Registration Restrictions are enforced by the Registration System.

Accounting (009)

200 Foundations of Accounting (3) Introduction to financial and managerial accounting theory and practice with emphasis on the role of accounting information in business decisions.

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.

Recommended Background: 28 ACT composite or 1250 composite SAT required.


(PE) Corequisite(s): Finance 301 and Business Administration 342.
Registration Restriction(s): Majors in the College of Business Administration.

311 Financial Reporting and Analysis (3) Theory and practice that underlies the preparation, analysis, and use of financial statements.

(PE) Prerequisite(s): 301.
Comment(s): Grade of C or better in 301 is required.
Registration Restriction(s): Majors in the College of Business Administration.

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.

(PE) Prerequisite(s): 301.
Registration Restriction(s): Majors in the College of Business Administration.

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.

(PE) Prerequisite(s): 301.
Comment(s): Grade of C or better in 301 is required.
Registration Restriction(s): Majors in the College of Business Administration.

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.

(PE) Prerequisite(s): 311.
Comment(s): Grade of C or better in 311 is required.
Registration Restriction(s): Majors in the College of Business Administration.

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.

(PE) Prerequisite(s): 301.
Comment(s): Grade of C or better in 301 is required.
Registration Restriction(s): Majors in the College of Business Administration.

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)
Grading Restriction: Satisfactory/No Credit grading only.
Repeatability: May be repeated. Maximum 6 hours.
Registration Restriction(s): Accounting major.
Registration Permission: Consent of instructor.

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.

(PE) Prerequisite(s): 250.
Registration Restriction(s): Advertising major or public relations major.

340 Advertising Research Methods (3) Secondary data and primary research techniques for advertising decisions.

(PE) Prerequisite(s): 250 and Statistics 201.
Registration Restriction(s): Advertising major or public relations major.

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.

(PE) Prerequisite(s): 250 and 310.
Registration Restriction(s): Advertising major or public relations major.

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

(PE) Prerequisite(s): 250 and 340.
Registration Restriction(s): Advertising major or public relations major.
380 Advertising Professional Seminar (1) Exploration of career choices in mass communications. Resume and letter writing, interviewing, and portfolio preparation. (RE) Prerequisite(s): 340. Registration Restriction(s): Advertising major or public relations major.

450 Advertising Management (3) Case-study approach to advertising decisions. Data analysis and interpretation, generating alternative strategies, oral and written presentation of recommendations. (RE) Prerequisite(s): 350 and 360. Registration Restriction(s): Advertising major or public relations major.

470 Advertising Campaigns (3) Group-based development, execution and evaluation of an advertising campaign for a regional or national client. (RE) Prerequisite(s): 450 and Public Relations 270. Registration Restriction(s): Advertising major or public relations major.

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. (RE) Prerequisite(s): 360. Registration Restriction(s): Advertising major or public relations major.

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. (RE) Prerequisite(s): 360. Registration Restriction(s): Advertising major or public relations major.

492 Advertising Practicum (1) Experience in a functional area of advertising. Contact Hour Distribution: 10 hours laboratory each week. Grading Restriction: Satisfactory/No Credit grading only. Repeatability: May be repeated. Maximum 2 hours. Registration Restriction(s): Advertising major or public relations major.

493 Independent Study (1-3) Individual study in a specialized area under the supervision of a faculty member. Registration Restriction(s): Advertising major or public relations major.

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. Grading Restriction: Satisfactory/No Credit grading only. Registration Permission: Consent of instructor.

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. (RE) Prerequisite(s): Mechanical Engineering 231 and 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. (RE) Prerequisite(s): 341 and Electrical and Computer Engineering 301. (RE) Corequisite(s): Mechanical Engineering 363.

351 Compressible Flow (3) One-dimensional internal flow with shocks, friction and nonadiabatic conditions. Two-dimensional external flows. (RE) Prerequisite(s): 341 and Mechanical Engineering 331.

363 Structural Analysis of Aerospace Vehicles (3) Fundamentals of structural analysis applied to configurations common to aerospace vehicles. (RE) Prerequisite(s): Mechanical Engineering 321.

370 Airplane Performance (4) Airplane aerodynamics, characteristics of propulsion systems, prediction of airplane performance, static and dynamic stability and control of aircraft. (RE) Corequisite(s): 341.

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. (OC) (RE) Prerequisite(s): English 102. Registration Restriction(s): Minimum student level – senior.

422 Aerodynamics (3) Theory and design of aerodynamic bodies for desired characteristics. Potential flow theory, viscous effects, and compressibility effects. Subsonic, transonic, and supersonic airflows. (RE) Prerequisite(s): 351 and 370. (RE) Corequisite(s): 351. (RE) Corequisite(s): Mechanical Engineering 344.

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. (RE) Prerequisite(s): 351.


426 Introduction to Aerospace Design (2) Design process, synthesis, design studies. Individual design reports required. (RE) Prerequisite(s): 360 and 370. (DE) Prerequisite(s): 363. (RE) Corequisite(s): Mechanical Engineering 344.

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

449 Aerospace Engineering Laboratory (3) Designing, conducting, and reporting results of experimental exercises. Test standards and specifications. Analysis of data and formation of conclusions. Contact Hour Distribution: 3 hours lab per week. (RE) Prerequisite(s): 345 and 351. (DE) Prerequisite(s): 425.

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

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

Africana Studies (023)

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 War through the Civil Rights era which focuses on such topics as African-American rural and urban societies, the African-American church and education and African-American intellectual and protest movements. (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, pre-colonial democracies, and states from the first through the 16th century. Writing-emphasis course. (CC)

236 Introduction to African Studies (3) 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 Musicology 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) (See English 331.)

333 Black American Literature and Aesthetics (3) (See English 333.)

343 Race and Ethnicity (3) (See 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 African History (3) (See History 371.)

372 African History (3) (See History 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.
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. (RE) Prerequisite(s): 201 and 202.

432 Comparative Poverty and Development (3) (See Sociology 442.)

433 Topics in Black Literature (3) (See English 443.)

435 The African-American Experience from the Colonial Period to the Civil War (3) (See History 445.)

436 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.

451 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 484.)

452 Black African Politics (3) (See Political Science 452.)

453 Art of Southern and Eastern Africa (3) (See Art History 461.)

454 Art and Archaeology of Ancient Africa (3) (See Art History 462.)

455 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 masculinity, violence, concepts of masculinity, the family, white males, white females, heterosexuality, nationalism, and athletics on African-American males in America.

480 African-American Communities in Urban America (3) Evaluates the behavioral 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.

484 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 484.)

491 Foreign Study (1-6)

492 Off-Campus Study (1-6)

493 Independent Study (1-6)

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. Requirements include daily journal, formal written report, completion of required hours, and seminar.

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.

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. Includes a lab component. (RE) Prerequisite(s): 211.

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.

421 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. To be taken in the fall prior to student teaching. Includes a lab component. (RE) Prerequisite(s): 345.

435 Student Teaching in Agricultural and Extension Education (6) Full-time teaching practicum in an approved high school program. Applied practices needed by agricultural education teachers.

436 Student Teaching in Agricultural and Extension Education (6) Full-time teaching practicum in an approved high school program. Applied practices needed by agricultural education teachers.

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. (WC) (RE) Prerequisite(s): English 101 and English 102.

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.

451 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.

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, break-even 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. Registration Restriction(s): Minimum student level – junior.

320 Agricultural Microeconomics (3) Application of microeconomics to agriculture. Production, consumption, farm behavior, and efficiency in the food and fiber industries. (RE) Prerequisite(s): 212 and 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. (RE) Prerequisite(s): Economics 201.

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337 Honors: Economics of Agricultural Biotechnology (3) Meets at same time as 330 but requires additional work in the form of article reviews and a research paper.  
(RE) Prerequisite(s): Economics 201.  
Registration Restriction(s): Minimum student level – junior.

342 Farm Business Management I (3) Principles and procedures for determining the business organization's systems and structures; 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.  
(RE) Prerequisite(s): 212 and Accounting 200.  
Recommended Background: Introductory economics and microcomputer competence.

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.  
(RE) Prerequisite(s): 212 and 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.  
(RE) Prerequisite(s): 212 and 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.  
Repeatability: May be repeated. Maximum 6 hours.  
Registration Permission: Consent of instructor.

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, current, and future information, students will explore the implications of efficiency and equity as driving forces behind public sector and private sector initiatives to induce, manage and forecast development.  
(RE) Prerequisite(s): Economics 201.

410 Seminar in Agricultural Economics and Business (1) 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.  
Registration Restriction(s): Agricultural economics and business major; minimum student level – senior.

412 Agricultural Finance (3) Macro-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.  
(RE) Prerequisite(s): 212 and Accounting 200.  
Recommended Background: Introductory economics and microcomputer competence.

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

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.  
(RE) Prerequisite(s): 320.

442 Agribusiness Management (3) Advanced concepts in developing business and marketing plans and in applied management principles such as inventory control and pricing techniques. Discussion of management issues including going international, employee supervision, management succession and guerrilla marketing. Teamwork emphasized in managing an agribusiness firm through game simulation. Written and oral presentation required.  
(RE) Prerequisite(s): 212 and Accounting 200.  
Recommended Background: Intermediate microeconomics.

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.  
(RE) Prerequisite(s): Economics 201 and 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.  
(RE) Prerequisite(s): 320 and Statistics 201.

470 Natural Resource Economics (3) Nature of natural resources; economic analysis of resource use; externalities in natural resource use; factors influencing environmental quality; alternative public policy tools for influencing natural resource use or improving environmental quality.  
(RE) Prerequisite(s): Economics 201.

492 Off-Campus Internship (1-3) Pre-approved supervised experience with firm or organization in the field.  
Grading Restriction: Satisfactory/No Credit grading.  
Repeatability: May be repeated. Maximum 6 hours.  
(RE) Registration Restriction(s): Minimum student level – junior.  
Registration Permission: Consent of instructor.

493 Independent Study (1-3) Directed individual or team research and report writing. Special courses in specific topics.  
Repeatability: May be repeated. Maximum 6 hours.  
Registration Restriction(s): Minimum student level – junior.  
Registration Permission: Consent of instructor.

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 College of Agricultural Sciences and Natural Resources experience.  
Grading Restriction: A, B, C. No Credit grading.  
Registration Restriction(s): Freshmen and sophomores 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.  
Contact Hour Distribution: 2 hours and 1 lab.

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

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

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.  
Credit Restriction: May not be applied toward directed elective requirements.

491 International Experience in Agriculture and Natural Resources (1-12) 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 advisors 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.  
Repeatability: May be repeated. Maximum 12 hours.  
Registration Permission: Consent of instructor.

497 Honors: Independent Project (1-6) For students participating in the College of Agricultural Sciences and Natural Resources Honors Research and Creative Achievements Program. Consists of independent work with a faculty member.  
Repeatability: May be repeated. Maximum 6 hours.  
Registration Permission: Consent of instructor.

498 Honors Presentation (1) For students participating in the College of Agricultural Sciences and Natural Resources Honors Research and Creative Achievements Program. Final written report and oral presentation of the honors project.  
Registration Permission: Consent of instructor.
Air Force Aerospace Studies (094)

101 The Air Force Today (1) Survey that focuses on the organizational structure and missions of the Air Force; officership 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.

(Re) Corequisite(s): 103.

102 The Air Force Today (1) Survey that focuses on the organizational structure and missions of the Air Force; officership 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.

(Re) Corequisite(s): 104.

103 Leadership Laboratory (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.

Grading Restriction: Satisfactory/No Credit grading only.

104 Leadership Laboratory (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.

Grading Restriction: Satisfactory/No Credit grading only.

201 The Development of Air Power (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 an 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.

(Re) Corequisite(s): 203.

202 The Development of Air Power (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 an 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.

(Re) Corequisite(s): 204.

203 Leadership Laboratory (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.

Grading Restriction: Satisfactory/No Credit grading only.

204 Leadership Laboratory (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.

Grading Restriction: Satisfactory/No Credit grading only.

205 Field Training (Academic Program) (1-4) Open only to 2-year program applicants. 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.

Repeatability: Not repeatable for credit. May be taken once for 1-4 hours.

Registration Permission: Consent of department head.

301 Air Force Leadership and Management (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.

(Re) Corequisite(s): 303.

302 Air Force Leadership and Management (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.

(Re) Corequisite(s): 304.

303 Leadership Laboratory (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.

304 Leadership Laboratory (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 Political Science 312.)

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

334 Film and American Culture (3) (See 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. 

Repeatability: May be repeated. Maximum 6 hours.

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.)
Animal Science (113)

160 Introduction to Animal Science (3) Preparation of academic plans and career discussion. 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.

Contact Hour Distribution: 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.

Contact Hour Distribution: 2 hours and 1 lab.
(RE) Prerequisite(s): Biology 130 or Biology 102.
Registration Restriction(s): Minimum student level – sophomore.

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. (WC)

Contact Hour Distribution: 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, halter training, grooming, loading and trailering, stall maintenance, internal and external parasite control, exercising, identification techniques, routine vaccinations and first aid. Safety for both horse and handler will be emphasized.

Contact Hour Distribution: 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 genetics 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. (Same as Biochemistry and Cellular and Molecular Biology 320.)

Contact Hour Distribution: 2 hours and 1 lab.
(RE) Prerequisite(s): Biology 130 or Biology 102.

330 Comparative Animal Nutrition (3) Nomenclature, structures, functions, utilization, and deficiency symptoms of essential nutrients in carnivores, omnivores and herbivores.

(RE) Prerequisite(s): Chemistry 130 or Chemistry 110.
(DE) Prerequisite(s): 220.

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.

Contact Hour Distribution: 2 hours and 1 lab.
(RE) Prerequisite(s): 220.


Registration Restriction(s): Minimum student level – sophomore.

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.

Contact Hour Distribution: 2 hours and 1 lab.
(RE) Prerequisite(s): 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.

Contact Hour Distribution: 2 hours and 1 lab.
Registration Restriction(s): Not open to animal science 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.

Contact Hour Distribution: 1 hour and 2 labs.
(RE) Prerequisite(s): 320.
Registration Restriction(s): Minimum student level – junior.

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.

Contact Hour Distribution: 1 hour and 2 labs.
(REA) Prerequisite(s): 330.

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.

Contact Hour Distribution: 2 labs.
Grading Restriction: Satisfactory/No Credit grading only.
Registration Permission: Consent of department head.

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.

Contact Hour Distribution: 2 hours and 1 lab.
(REA) Prerequisite(s): 330 and 380.

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 herd improvement programs. Alternatives evaluated in terms of production responses and economic returns.

Credit Hour Distribution: 2 hours and 1 lab.
(REA) Prerequisite(s): 330 and 380.

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.

Contact Hour Distribution: 2 hours and 1 lab.
(REA) Prerequisite(s): 330 and 380.

493 Independent Study (1-9)

Registration Restriction(s): Minimum student level – junior.
Repeatability: May be repeated. Maximum 9 hours.

495 Independent Study (1-9)

Registration Restriction(s): Minimum student level – senior.
Repeatability: May be repeated. Maximum 9 hours.

496 Independent Study (1-9)

Registration Restriction(s): Minimum student level – senior.
Repeatability: May be repeated. Maximum 9 hours.

498 Independent Study (1-9)

Registration Restriction(s): Minimum student level – senior.
Repeatability: May be repeated. Maximum 9 hours.

499 Independent Study (1-9)

Registration Restriction(s): Minimum student level – senior.
Repeatability: May be repeated. Maximum 9 hours.

499 Independent Study (1-9)

Registration Restriction(s): Minimum student level – senior.
Repeatability: May be repeated. Maximum 9 hours.

499 Independent Study (1-9)

Registration Restriction(s): Minimum student level – senior.
Repeatability: May be repeated. Maximum 9 hours.

499 Independent Study (1-9)

Registration Restriction(s): Minimum student level – senior.
Repeatability: May be repeated. Maximum 9 hours.

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Registration Restriction(s): Minimum student level – senior.
Repeatability: May be repeated. Maximum 9 hours.

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Registration Restriction(s): Minimum student level – senior.
Repeatability: May be repeated. Maximum 9 hours.

499 Independent Study (1-9)

Registration Restriction(s): Minimum student level – senior.
Repeatability: May be repeated. Maximum 9 hours.

499 Independent Study (1-9)

Registration Restriction(s): Minimum student level – senior.
Repeatability: May be repeated. Maximum 9 hours.

499 Independent Study (1-9)

Registration Restriction(s): Minimum student level – senior.
Repeatability: May be repeated. Maximum 9 hours.

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Registration Restriction(s): Minimum student level – senior.
Repeatability: May be repeated. Maximum 9 hours.

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Repeatability: May be repeated. Maximum 9 hours.

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Repeatability: May be repeated. Maximum 9 hours.

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Registration Restriction(s): Minimum student level – senior.
Repeatability: May be repeated. Maximum 9 hours.

499 Independent Study (1-9)

Registration Restriction(s): Minimum student level – senior.
Repeatability: May be repeated. Maximum 9 hours.

499 Independent Study (1-9)

Registration Restriction(s): Minimum student level – senior.
Repeatability: May be repeated. Maximum 9 hours.
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 metabolites commonly used to monitor health and nutritional status.

Contact Hour Distribution: 2 hours and 1 lab.
(RE) Prerequisite(s): 330 and 380.
(RE) Corequisite(s): 320 and 340.

492 Animal Science Field Study (1-6) Off-campus work experience approved by the department. Objective is to compliment traditional classroom activities and give the student an opportunity to gain experience in industry. Students must submit official approval form prior to registration. The student will be evaluated on knowledge and skills and must submit a written summary after program completion.

Repeatability: May be repeated. Maximum 6 hours.
Registration Restriction(s): Minimum student level – sophomore.
Registration Permission: Consent of department head.

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.

Repeatability: May be repeated. Maximum 6 hours.
Registration Restriction(s): Minimum student level – sophomore.
Registration Permission: Consent of department head.

494 Animal Science Teaching Assistant (1) Assist the primary instructor in laboratory instruction and demonstrations.

Grading Restriction: Satisfactory/No Credit grading only.
Registration Restriction(s): Minimum student level – senior.
Registration Permission: Consent of department head.

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

Registration Restriction(s): Minimum student level – senior.

Anthropology (122)

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

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

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

304 Genetics and Society (3) (See Biochemistry and Cellular and Molecular Biology 206.)

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. (RE) Prerequisite(s): 130.

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.

(Re) Prerequisite(s): 130.

312 Appalachian Culture (3) Traditional Southern Appalachian subsis-tence patterns and economy, social organization, beliefs and values, folklore and customs; socio-cultural impacts of industrialization and modernization.

Writing-emphasis course. (RE) Prerequisite(s): 130.

313 Peoples and Cultures of Mesoamerica (3) Pre-Columbian and Hispanic cultures of Mexico, Guatemala, Belice, El Salvador and Honduras. Patterns of cultural continuity and cultural change throughout Mesoamerica's history.

Writing-emphasis course. (Same as Latin American Studies 313.)

(Re) Prerequisite(s): 130.

315 The African Diaspora (3) An overview of anthropological perspec-tives on people of African descent and the impact of an African presence on societies in the Americas. The sociocultural experiences of U.S. African-Americans and their counterparts elsewhere in the hemisphere are situated in the context of a broader diaspora. Writing-emphasis course. (Same as Africana Studies 315.)

(Re) Prerequisite(s): 130.

316 Peoples and Cultures of South America (3) An introduction to con-temporary 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 forma-tions. Writing-emphasis course. (Same as Latin American Studies 314.)

(Re) Prerequisite(s): 130.

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. (Same as Africana Studies 318.)

(Re) Prerequisite(s): 130.

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.)

(Re) Prerequisite(s): 130.

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.

(Re) Prerequisite(s): 130.

322 Topics in Ethnography (3) Overview of culture patterns and ethno-graphic research on selected social groups or culture areas.

Repeatability: May be repeated. Maximum 6 hours.

(Re) Prerequisite(s): 130.

357 Junior Honors in Anthropology (3) Analytical, integrative review of current directions of research and theory in anthropology. Registration Restriction(s): Anthropology major; 3.2 GPA.

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

(Re) Prerequisite(s): 120.

361 Historical Archaeology (3) Historical archaeology of Euro-American, African-American, and Asian American cultures in the United States from 15th to 20th centuries.

(Re) Prerequisite(s): 120.

362 Principles of Archaeology (3) Research strategies used in develop-ing method and theory, constructing cultural histories, identifying site function and settlement-subistence patterns, and evaluating explana-tions of cultural change.

(Re) Prerequisite(s): 120.

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.

(Re) Prerequisite(s): 120. Recommended Background: 360.

369 Topics in Archaeology (3) Examination of selected frameworks and techniques for retrieval and analysis of archaeological materials.

Repeatability: May be repeated. Maximum 6 hours.

(Re) Prerequisite(s): 120.

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

400 Readings in Anthropology (1-6) Problem-oriented directed read-ings in anthropology.

Repeatability: May be repeated. Maximum 6 hours.
Registration Restriction: Consent of instructor.

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.

(Re) Prerequisite(s): 130.

411 Linguistic Anthropology (3) Basic linguistic concepts applied to research in cultural anthropology, particularly investigation of relation-ships between language and culture. (Same as Linguistics 411.)

(Re) Prerequisite(s): 130 or Linguistics 200.

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

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

414 Political Anthropology (3) Examination of the organization and dynamics of power and politics in both stateless and state-level societies. The role of symbols, rituals, 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. (RE) Prerequisite(s): 130.

415 Environmental Anthropology (3) Overview of theoretical and methodological approaches to the study of human / environmental interactions. Impacts of environmental change on society and culture; human impacts on environmental change. (RE) Prerequisite(s): 130.

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. (RE) Prerequisite(s): 130.

430 Fieldwork in Archaeology (3-9) Practicum work in archaeological data recovery and analytical techniques. Repeatability: May be repeated. Maximum 9 hours. (RE) Prerequisite(s): 120.

431 Ethnographic Research (3) Conceptual and practical exploration of methods and techniques cultural anthropologists use in fieldwork. (RE) Prerequisite(s): 130.

432 Anthropology of Warfare and Violence (3) Origins and tactics of warfare; overview of cultural foundations of warfare and structural violence; and effects on communities, social institutions, environments, and social organization. (RE) Prerequisite(s): 130.

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. (RE) Prerequisite(s): 120. Recommended Background: 361.

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. Repeatability: May be repeated. Maximum 6 hours.

457 Senior Honors in Anthropology (3) Research and writing of the senior honors thesis. (RE) Prerequisite(s): 357. Comment(s): B or better in 357 and 3.5 in anthropology courses required.

459 Selected Topics in Anthropology (3) Theoretical issues in anthropology for undergraduate students. Topics may include practical experience or laboratory study of anthropological materials. Repeatability: May be repeated. Maximum 6 hours. Registration Restriction: Anthropology major. Registration Permission: Consent of instructor.

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. (RE) Prerequisite(s): 120.

463 Rise of Complex Civilizations (3) Development of complex societies in Old World from origins of agricultural economies to rise of States. Focus on Mesolithic, Neolithic, and Metal Age lifeways in Africa, Europe, and Asia. Writing-emphasis course. (RE) Prerequisite(s): 120.

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. (RE) Prerequisite(s): 120.

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 laboratory research on urban sites in East Tennessee. (RE) Prerequisite(s): 120. Recommended Background: 361.

480 Human Osteology (4) Intensive examination of the human skeleton. Contact Hour Distribution: 3 hours and 1 lab. (RE) Prerequisite(s): 110.

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. (RE) Prerequisite(s): 480.

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. Registration Restriction(s): Anthropology major. Registration Permission: Consent of instructor.

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

492 Off-Campus Study (1-15) Repeatability: May be repeated. Maximum 15 hours. Registration Permission: Consent of instructor.

493 Independent Study (1-15) Repeatability: May be repeated. Maximum 15 hours. Registration Permission: Consent of instructor.

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. Registration Restriction(s): Anthropology major.

495 Human Paleontology (4) Intensive survey of the human fossil record from the earliest hominid remains to the earliest origins of modern human form. Registration Restriction(s): Anthropology major.

496 Biology of Human Variability (3) Introduction to human populations; human adaptation, biological features of major human races, relationships of major groups to one another. (Same as Africana Studies 496.) Registration Restriction(s): Anthropology major.

Arabic (127)

121 Elementary Modern Standard Arabic I (5) (See Asian Studies 121.)

122 Elementary Modern Standard Arabic II (5) (See Asian Studies 122.)

221 Intermediate Modern Standard Arabic I (5) (See Asian Studies 221.) (CC)

222 Intermediate Modern Standard Arabic II (5) (See Asian Studies 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. (RE) Corequisite(s): 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. (AH)

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, and depth cues. Compositional principles will be introduced. Drawings based on observation, including figure drawing and campus visits. (RE) Corequisite(s): 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. (RE) Corequisite(s): 172.


172 Design Fundamentals II (4) Fundamentals of architectural design, conception, form and space. Elements of form and space including lines, planes, volumes, void, and mass. Spatial sequence and scale. Development of architectural representation. (RE) Prerequisite(s): 171. (RE) Corequisite(s): 102 and 122. Registration Restriction(s): Architecture major or interior design major.

180 Introduction to Architecture (2) Introduction to architecture as an intellectual discipline. Design as a creative endeavor central to the discipline and its profession. Registration Restriction(s): Master of Architecture admission.

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-20th century. (AH) (RE) Prerequisite(s): 211.

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. (WC) (RE) Prerequisite(s): 212.

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. (RE) Prerequisite(s): 172. Registration Restriction(s): Architecture major or interior design major.

232 Introduction to Architectural Technology (3) Place of building technology in architectural design. Introduces concepts and theory of structures; building materials and construction; and environmental controls. (RE) Prerequisite(s): Physics 161. Registration Restriction(s): Architecture major.

271 Architectural Design I (6) Introduction to contextual determinants in architectural design. Role of the city and the landscape in architectural design. Methods of analyzing place and form in determining design strategies. Representational skills developed including drawing, diagramming and modeling techniques. (RE) Prerequisite(s): 172 and 211. (DE) Prerequisite(s): Mathematics 125. Registration Restriction(s): Architecture major; 2.3 GPA.

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. (RE) Prerequisite(s): 271 and 212.

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. Contact Hour Distribution: 1-hour seminar and 5 hours studio. (RE) Prerequisite(s): 172. Registration Restriction(s): Master of Architecture admission.

282 Principles of Architectural Design (6) Principles of architectural design emphasizing site, function, circulation, structure, technology, context and expression of building. Contact Hour Distribution: 1-hour seminar and 5 hours studio. (RE) Prerequisite(s): 281.

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


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. (RE) Prerequisite(s): 331.

335 Structures in Architecture I (3) Introduction to the structural properties of materials, foundations and simple statically determinate assemblies of buildings. Registration Restriction(s): Master of Architecture admission.

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. (RE) Prerequisite(s): 335. Registration Restriction(s): Master of Architecture admission.

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


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

371 Architectural Design III (6) Design synthesis. Integration of design determinants and development of building concepts. (RE) Prerequisite(s): 272 and 213. Comment(s): A minimum 2.3 GPA in all design courses is required.

372 Architectural Design IV (6) Design synthesis. Integration of design determinants, structure, environmental controls, materials and construction. (RE) Prerequisite(s): 371. Comment(s): A minimum 2.3 GPA in all design courses is required.

401 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. Registration Restriction(s): Master of Architecture admission.

402 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. (RE) Prerequisite(s): 401. Registration Restriction(s): Master of Architecture admission.

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.

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

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-20th century. (RE) Prerequisite(s): 212 or 402.
425 Special Topics in Architecture (1-6) Faculty-initiated courses. Topics vary. Repeatability: May be repeated. Maximum 12 hours.
Registration Restriction(s): Architecture major or interior design major.

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.
(RE) Prerequisite(s): 332 and 342.
(RE) Corequisite(s): 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.
(RE) Prerequisite(s): 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.
(RE) Prerequisite(s): 231.

445 Advanced Lighting (3) In-depth analysis and innovative concepts in design of lighting.
(RE) Prerequisite(s): 342 or 346.

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.
(RE) Prerequisite(s): 471.

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.

471 Architectural Design V (6) Design project from conceptual through design development phase. Specification of component building systems including structure, mechanical, lighting and construction details.
(RE) Prerequisite(s): 372.
(RE) Corequisite(s): 431.
Comment(s): Minimum 2.3 GPA in all design courses is required.

472 Architectural Design VI (6) Order and form in complex buildings developed to address programmatic, structural, energy and environmental issues.
(RE) Prerequisite(s): 471.
Comment(s): Minimum 2.3 GPA in all design courses is required.

473 Architectural Photography (3) Photography as a design, research, and presentation medium. Application of photographic techniques, printing and processing. Color, black and white.
Registration Restriction(s): Architecture major or interior design major.

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 prior to 482.
(RE) Prerequisite(s): 471.

481 Advanced Architectural Design Topics (6) Faculty-initiated design projects. Advanced architectural topics not covered under 483, 484, 485, 486, or 489.
(RE) Prerequisite(s): 471.
Comment(s): Minimum 2.3 GPA in all design courses is required.

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.
(RE) Prerequisite(s): 480.
Comment(s): Minimum 2.3 GPA in all design courses is required.

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.
(RE) Prerequisite(s): 471.
Comment(s): Minimum 2.3 GPA in all design courses is required.

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.
(RE) Prerequisite(s): 471 and 463.
Comment(s): Minimum 2.3 GPA in all design courses is required.

486 Design of Sustainable Architecture (6) Architectural design studio emphasizing concern for the environment, consideration of energy conservation techniques, and use of renewable resources.
(RE) Prerequisite(s): 471.
Comment(s): Minimum 2.3 GPA in all design courses is required.

489 Structural Innovations (6) Building design with innovative structural configuration and technology. Exploration of new materials, detailing, and methods in building construction.
(RE) Prerequisite(s): 471.
Comment(s): Minimum 2.3 GPA in all design courses is required.

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.
Credit Restriction: 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.
Repeatability: May be repeated once.
Registration Permission: 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.

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.

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.

200 Special Topics (3) Student- or instructor-initiated course offered at convenience of department.
Repeatability: May be repeated. Maximum 6 hours.

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

299 Special Topics (3) Student- or instructor-initiated course offered at convenience of department.
Repeatability: 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, matting and framing, shipping and storage. (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. (Same as Anthropology 484.)
Repeatability: May be repeated. Maximum 12 hours.

491 Foreign Study (1-6) Repeatability: May be repeated. Maximum 12 hours.

492 Off-Campus Study (1-6) Repeatability: May be repeated. Maximum 12 hours.

493 Independent Study (1-3) Repeatability: May be repeated. Maximum 15 hours.

494 Individual Problems (3) Repeatability: 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.
Repeatability: May be repeated. Maximum 8 hours.
Credit Restriction: May not be applied toward the art history requirement.

499 Special Topics (3) Student- or instructor-initiated course offered at convenience of department.
Repeatability: May be repeated. Maximum 12 hours.
Art Ceramics (135)
191 Introduction to Studio Art: Various Media (3) Individual sections for various artistic disciplines.
  Repeatability: Course may be repeated. Medium may not be repeated. Maximum 12 hours.
  Registration Restriction(s): Non-majors only (not for BA and BFA – studio art majors and BFA – graphic design majors).
221 Ceramics: Handbuilding I (3) Introduction to handbuilding, glazing, clay preparation and firing.
  Repeatability: May be repeated. Maximum 12 hours.
  Registration Restriction(s): Studio art majors only. Registration Permission: Consent of department.
226 Portfolio Practicum – Throwing (3) Intense postIntroductory studio experience to develop work for application to 320 (Ceramics: Portfolio Review).
  Repeatability: May be repeated. Maximum 12 hours.
  Registration Restriction(s): Studio art majors only. Registration Permission: Consent of department.
229 Ceramics: Special Topics (3) Student or instructor initiated courses to be offered at convenience of department.
  Repeatability: May be repeated. Maximum 12 hours.
  Registration Restriction(s): Consent of instructor.
320 Ceramics: Portfolio Review (0) Review of prior work in ceramics.
  Grading Restriction: Satisfactory/No Credit grading only.
  Repeatability: May be repeated once.
  (RE) Prerequisite(s): 221 and 222.
  Comment(s): Successful completion required prior to registration for junior and senior courses.
321 Ceramics: Handbuilding II (4) Continued investigation of handbuilding with an emphasis on the development of individual ideas and expression.
  (RE) Prerequisite(s): 320.
322 Ceramics: Throwing II (4) Continued investigation of throwing with an emphasis on the development of individual ideas and expression.
  (RE) Prerequisite(s): 320.
421 Ceramics: Advanced Handbuilding (6) Continued investigation of ceramic form with an emphasis on the development of individual direction.
  Repeatability: May be repeated. Maximum 12 hours.
  (RE) Prerequisite(s): 321 and 322.
422 Ceramics: Advanced Throwing (6) Continued, in depth investigation of ceramic form with an emphasis on the development of individual direction.
  Repeatability: May be repeated. Maximum 12 hours.
  (RE) Prerequisite(s): 321 and 322.
424 Ceramics: Clays and Glazes (3) Clay chemistry, clay bodies, glaze theory, and calculation. Formulating, mixing and testing of clay bodies and glaze formulas.
  (RE) Prerequisite(s): 320.
429 Ceramics: Special Topics (3) Student- or instructor-initiated courses to be offered at convenience of department.
  Repeatability: May be repeated. Maximum 12 hours.
  (RE) Prerequisite(s): 321 and 322.
493 Independent Study (1-4)
  Repeatability: May be repeated. Maximum 15 hours.
  Registration Permission: Consent of instructor.
494 Individual Problems (3)
  Repeatability: May be repeated. Maximum 12 hours.
  Registration Restriction: Consent of instructor.
495 Visiting Artist Seminar (2) Study and discussion of contemporary art issues conducted by different visiting artists each semester.
  Repeatability: May be repeated. Maximum 8 hours.
  Credit Restriction: May not be applied toward the art history requirement.

Art Design/Graphic (136)
191 Introduction to Studio Art: Various Media (3) Individual sections for various artistic disciplines.
  Repeatability: Course may be repeated. Medium may not be repeated. Maximum 12 hours.
  Registration Restriction(s): Non-majors only (not for BA and BFA – studio art majors and BFA – graphic design majors).
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.
  Repeatability: May be repeated. Maximum 6 hours.
  (RE) Prerequisite(s): Art 101 and Art 103.
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.
  Repeatability: May be repeated. Maximum 6 hours.
  (RE) Prerequisite(s): 251.
256 Individual Projects in Graphic Design (3)
  Repeatability: May be repeated. Maximum 6 hours.
  Registration Permission: Consent of instructor.
259 Special Topics: Graphic Design (3) Student or instructor initiated course offered at discretion of department.
  Repeatability: May be repeated. Maximum 6 hours.
  Comment(s): Prerequisite(s) determined by department for individual topics.
350 Graphic Design Portfolio Review (6) Review of prior work in graphic design.
  Grading Restriction: Satisfactory/No Credit grading only.
  Repeatability: May be repeated once.
  (RE) Prerequisite(s): 251.
  Comment(s): Successful completion required prior to registration for junior and senior courses.
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.
  (RE) Prerequisite(s): 350.
352 Intermediate Graphic Design II (3) Investigation of sign, symbols, marks and identity systems.
  (RE) Prerequisite(s): 351.
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.
  (DE) Corequisite(s): 351.
400 Typography (3) Principles of typography as well as classical and contemporary type forms as vehicles for communication. An intensive introduction to the fundamentals of type, from individual letterforms to large bodies of textual information. Attention to formal, technological, rhetorical and historical issues.
  (DE) Prerequisite(s): Art 295 and Art Design/Graphic 251.
405 Computer Enhanced Graphic Design (3) Exploration of new technologies and their significance to graphic design.
  Repeatability: May be repeated. Maximum 12 hours.
  (DE) Corequisite(s): 351 and 356.
410 Advanced Typographic Investigation (3) Expands on principles introduced in Typography (Art Design/Graphic 400). Projects will include work in reflective as well as electronic environments with an emphasis on personal exploration.
  (RE) Prerequisite(s): 400.
425 Illustration (3) Develops skills and critical analysis for effective visual communication. Projects will explore the relationship between image and meaning. Students will explore a variety of media as they develop a personal visual vocabulary.
  Repeatability: May be repeated. Maximum 6 hours.
  (DE) Prerequisite(s): Art 295 and Art Design/Graphic 251.
444 Graphic Design Center Practicum (3) Practical work experience in a student-managed, on-site studio.
  Repeatability: May be repeated. Maximum 6 hours.
  Registration Permission: Consent of instructor.
450 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. Student assessment will come from writing, projects, presentations and contributions to class discussion.
  (RE) Prerequisite(s): 251.
451 Advanced Graphic Design (3) Theory and techniques of visual problem-solving as applied to advanced applications of graphic design.
  (RE) Prerequisite(s): 352.
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.
  (RE) Prerequisite(s): 451.
455 Graphic Design Professional Seminar (3) Professional practices including client relationships, design management and business practices. Assembly, organization and editing of the professional portfolio.
  (RE) Corequisite(s): 452.
456 Graphic Design Practicum (1-12) Practical work experience in the graphic design field. Must be prearranged with the department.
  Repeatability: May be repeated. Maximum 12 hours.
  (RE) Prerequisite(s): 351 and 356.
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 Africana 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. (AH)
Contact Hour Distribution: 2-hour lecture and 1-hour discussion each week.

173 Western Art II (3) Major monuments in the history of European and American art from the Renaissance to the present. (AH)
Contact Hour Distribution: 2-hour lecture and 1-hour discussion each week.

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 Asia, 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 instructor. Repeatability: 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. Writing-emphasis course. Repeatability: May be repeated with consent of instructor. Recommended Background: 12 hours of art history courses. Registration Restriction(s): Minimum student level – junior.

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) 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 19th century through the present. Hong Kong, Taiwanese, and expatriate artists are also considered. 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 Dürer; 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, 1250-1500 (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 Velázquez. 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. (RE) Prerequisite(s): 172 and 173.

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 Africana 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 BC for some of the early terracotta sculptures and rock paintings, the 11th through 19th centuries AD for the later ancient kingdoms. Writing-emphasis course. (Same as Africana 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 Africana 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.


476 History of 20th-Century Painting and Sculpture in Europe (3) Development of the Modern and Post-Modern movements in Europe. Investigation of the progress 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. Repeatability: 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. Repeatability: May be repeated. Maximum 6 hours. Registration Permission: Consent of instructor.

493 Independent Study (1-3) Repeatability: May be repeated. Maximum 9 hours. Registration Permission: Consent of instructor.

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

Art Media Arts (134)

191 Introduction to Studio Art: Various Media (3) Individual sections for various artistic disciplines. Repeatability: Course may be repeated. Medium may not be repeated. Maximum 12 hours. Registration Restriction(s): Non-majors only (not for BA and BFA – studio art majors and BFA – graphic design majors).

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. (Same as Cinema Studies 235.) (RE) Prerequisite(s): 231.

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. Repeatability: May be repeated. Maximum 12 hours.

330 Media Arts Portfolio Review (0) Review of prior work in media arts. Grading Restriction: Satisfactory/No Credit grading only. Repeatability: May be repeated once. (RE) Prerequisite(s): Art History 172 and Art History 173. Comment(s): Successful completion required prior to registration for junior and senior courses.

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

341 Digital Photography I (4) Studio course introducing theory and techniques of use of computers in photography. (RE) Prerequisite(s): 231 and 331.

342 Large Format Photography I (4) Studio course introducing theory and practice of photography using large format view camera. (RE) Prerequisite(s): 231.

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

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. (Same as Cinema Studies 433.) Comment(s): Available for art history credit.

435 Cinematography as Art (4) Continued development of concepts and techniques for the creation of film as an art form with emphasis on individual projects. (Same as Cinema Studies 435.) Repeatability: May be repeated. Maximum 12 hours. (RE) Prerequisite(s): 235 and 330.

436 Video Art (4) Continued development of concepts and techniques for the creation of video works as an art form with emphasis on individual projects. (Same as Cinema Studies 436.) Repeatability: May be repeated. Maximum 12 hours. (RE) Prerequisite(s): 236 and 330.

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

441 Digital Photography II (4) Continuation of exploration and implications of use of computer in photography. (DE) Prerequisite(s): 341.

442 Large Format Photography II (4) Studio course that continues the exploration of the use of the large format camera in photography. (DE) Prerequisite(s): 342. Registration Permission: Consent of instructor.
450 Senior Project (4) Students will engage in self-initiated productions to demonstrate proficiency in media art.
Registration Restriction(s): Minimum student level – senior.

493 Independent Study (1-4)
Repeatability: May be repeated. Maximum 15 hours.
Registration Permission: Consent of instructor.

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

495 Visiting Artist Seminar (3) Study and discussion of contemporary art issues conducted by different visiting artists each semester.
Repeatability: May be repeated. Maximum 12 hours.
Credit Restriction: May not be applied toward the art history requirement.
Registration Permission: Consent of instructor.

Art Printmaking (132)

191 Introduction to Studio Art: Various Media (3) Individual sections for various artistic disciplines.
Repeatability: Course may be repeated. Medium may not be repeated.
Maximum 12 hours.
Registration Restriction(s): Non-majors only (not for BA and BFA – studio art majors and BFA – graphic design majors).

213 Painting I: Introduction (3) Capacities of oil and acrylic painting on canvas.
(RE) Prerequisite(s): Art 101 and Art 103.

214 Painting II (3) Techniques of expression in oil and/or acrylic.
(RE) Prerequisite(s): 213.

(RE) Prerequisite(s): Art 101 and Art 103.

216 Watercolor II (3) Capacities of transparent watercolor, with attention to individual exploration of surface, space, and concept.
Repeatability: May be repeated. Maximum 6 hours.
(RE) Prerequisite(s): 215.

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.
Repeatability: May be repeated. Maximum 12 hours.

313 Painting III (4) Individual expression with varied media on canvas.
Repeatability: May be repeated. Maximum 8 hours.
(RE) Prerequisite(s): 214 and 314.
Comment(s): Total of 8 hours required for students in the painting concentration.

314 Painting Portfolio Review (0) Review of prior work in painting.
Grading Restriction: Satisfactory/No Credit grading only.
(RE) Prerequisite(s): Art History 172 and Art History 173.
Comment(s): Successful completion required prior to registration for junior and senior courses.

315 Watercolor III (4) Individual expression with varied water-based media on paper.
Repeatability: May be repeated. Maximum 8 hours.
(RE) Prerequisite(s): 216 and 316.
Comment(s): Total of 8 hours required for students in the watercolor concentra-

316 Watercolor Portfolio Review (0) Review of prior work in watercolor.
Grading Restriction: Satisfactory/No Credit grading only.
Repeatability: May be repeated once.
(RE) Prerequisite(s): Art History 172 and Art History 173.
Comment(s): Successful completion required prior to registration for junior and senior courses.

413 Painting IV (6) Advanced painting stressing individual concepts and personal expression with varied media.
Repeatability: May be repeated. Maximum 12 hours.
(RE) Prerequisite(s): 313.
Comment(s): Total of 12 hours required for students in the painting concentra-

415 Watercolor IV (6) Advanced painting with water-based media on paper stressing individual concepts and personal approaches.
Repeatability: May be repeated. Maximum 12 hours.
(RE) Prerequisite(s): 315.
Comment(s): Total of 12 hours required for students in the watercolor concentra-

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.
Repeatability: May be repeated. Maximum 12 hours.
Registration Permission: Consent of instructor.

493 Independent Study (1-6)
Repeatability: May be repeated. Maximum 15 hours.
Registration Permission: Consent of instructor.

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

495 Visiting Artist Seminar (2) Study and discussion of contemporary art issues conducted by different visiting artists each semester.
Repeatability: May be repeated. Maximum 8 hours.
Credit Restriction: May not be applied toward the art history requirement.
Registration Permission: Consent of instructor.

Art Printmaking (132)

191 Introduction to Studio Art: Various Media (3) Individual sections for various artistic disciplines.
Repeatability: Course may be repeated. Medium may not be repeated.
Maximum 12 hours.
Registration Restriction(s): Non-majors only (not for BA and BFA – studio art majors and BFA – graphic design majors).

262 Intaglio I (3) Metal plate intaglio printing in traditional and contemporary techniques of etching, softground, drypoint, aquatint, and color methods.
(DE) Prerequisite(s): Art 101 and Art 103.

263 Lithography I (3) Stone and aluminum plate lithography applying traditional and contemporary techniques of crayon, tusche, transfer methods, state proofs and photolithography.
(DE) Prerequisite(s): Art 101 and Art 103.

264 Screen Printing I (3) Screen printing as a fine art medium including development and application of various basic stencils in compositional printing.
Repeatability: May be repeated. Maximum 6 hours.
(DE) Prerequisite(s): Art 101 and Art 103.

265 Relief (3) Relief printing in traditional and contemporary techniques from wood, linoleum and plastics.
(DE) Prerequisite(s): Art 101 and Art 103.

266 Monoprint and Monotype (3) Investigation of traditional and contemporary techniques.
(DE) Prerequisite(s): Art 101 and Art 103.

269 Special Topics in Printmaking (3) Student or instructor-initiated course offered at convenience of department.
Repeatability: May be repeated. Maximum 12 hours.
(DE) Prerequisite(s): Art 101 and Art 103.

(DE) Prerequisite(s): Art 101 and Art 103.

360 Printmaking Portfolio Review (0) Review of prior work in printmaking.
Grading Restriction: Satisfactory/No Credit grading only.
Repeatability: May be repeated once.
(RE) Prerequisite(s): Art 101 and Art 103.
(RO) Corequisite(s): Art History 172 or Art History 173.
Comment(s): Successful completion required prior to registration for junior and senior courses.

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 photo-print processes.
Repeatability: May be repeated. Maximum 12 hours.
(RE) Prerequisite(s): 262 or 263.

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 photo-print processes.
Repeatability: May be repeated. Maximum 12 hours.
(RE) Prerequisite(s): 361.

469 Special Topics in Printmaking (3-6) Student- or instructor-initiated course offered at convenience of department.
Repeatability: May be repeated. Maximum 12 hours.
Registration Permission: Consent of instructor.

493 Independent Study (1-4)
Repeatability: May be repeated. Maximum 15 hours.
Registration Permission: Consent of instructor.

494 Individual Problems (3)
Repeatability: May be repeated. Maximum 12 hours.
Registration Permission: Consent of instructor.
Art issues conducted by different visiting artists each semester. 
Registration Permission: Consent of instructor.

Art Sculpture (143)

191 Introduction to Studio Art: Various Media (3) Individual sections for various artistic disciplines. 
Repeatable: Course may be repeated. Medium may not be repeated. 
Maximum 12 hours. 
Registration Restriction(s): Non-majors only (not for BA and BFA – studio art majors and BFA – graphic design majors).

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. 
(RE) Prerequisite(s): 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. 
(RE) Prerequisite(s): Art 103.

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. 
(RE) Prerequisite(s): 241. 
(RE) Corequisite(s): 240.

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. 
(RE) Prerequisite(s): 241. 
(RE) Corequisite(s): 240.

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. 
(RE) Prerequisite(s): Art 103.

249 Special Topics in Sculpture (3) Instructor-initiated course offered at convenience of department. 
Repeatable: May be repeated. Maximum 12 hours. 
(RE) Prerequisite(s): Art 101 and Art 103.

340 Sculpture Portfolio Review (0) Review of prior work in sculpture and development of new work. 
Grading Restriction: Satisfactory/No Credit grading only. 
Repeatable: May be repeated once. 
(RE) Prerequisite(s): 240 and 241. 
(DE) Prerequisite(s): Art History 172, 173, 162, 183 (choice of two). 
Comment(s): Successful completion required prior to registration for junior and senior courses.

341 Intermediate Sculpture (3) Students begin defining and developing their visual vocabulary relative to contemporary sculptural issues. Emphasis on studio projects, research, and discussion. 
Repeatable: May be repeated. Maximum 6 hours. 
(RE) Prerequisite(s): 240 and 241. 
(DE) Prerequisite(s): 245, 246, and 340.

343 Advanced Mold-Making and Casting (3) Further exploration of casting methods with an emphasis on metals including bronze and aluminum. 
(RE) Prerequisite(s): 340.

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. 
(RE) Prerequisite(s): 240 and 243. 
(DE) Prerequisite(s): 340.

346 Advanced Mixed Media Sculpture (3) Advanced investigation into the sculptural possibilities of installation art, performance, and multi-media. Contemporary issues are examined through research and studio projects. 
(RE) Prerequisite(s): 241 and 246. 
(DE) Prerequisite(s): 340.

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

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.

449 Special Topics in Sculpture (3) Student- or instructor-initiated course offered at convenience of department. 
Repeatable: May be repeated. Maximum 12 hours. 
Comment(s): Successful completion of any portfolio review required.

493 Independent Study (1-4) 
Repeatable: May be repeated. Maximum 15 hours. 
Registration Permission: Consent of instructor.

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

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

Asian Languages (144)

131 Elementary Chinese I (5) (Same as Chinese 131.) 
132 Elementary Chinese I (5) (Same as Chinese 132.) 
(Re) Prerequisite(s): 131.

151 Elementary Japanese I (5) (Same as Japanese 151.) 
152 Elementary Japanese II (5) (Same as Japanese 152.) 
(Re) Prerequisite(s): 151.

231 Intermediate Chinese I (5) (Same as Chinese 231.) (CC) 
(Re) Prerequisite(s): 132. 

232 Intermediate Chinese II (5) (Same as Chinese 232.) (CC) 
(Re) Prerequisite(s): 231.

251 Intermediate Japanese I (5) (Same as Chinese 251.) (CC) 
(Re) Prerequisite(s): 152.

252 Intermediate Japanese II (5) (Same as Chinese 252.) (CC) 
(Re) Prerequisite(s): 251.

311 Chinese Literature in English Translation (3) Classical literature. Writing-emphasis course. (Same as Chinese 311.)

312 Chinese Literature in English Translation (3) Vernacular and modern literature. Writing-emphasis course. (Same as Chinese 312.)

313 Japanese Literature in English Translation (3) Classical (tradition- 
al: masterpieces of poetry, fiction, and drama to 1668. Writing-emphasis course. (Same as Chinese 313.)

314 Japanese Literature in English Translation (3) Modern: masterpieces of fiction since 1668. Writing-emphasis course. (Same as Chinese 314.)

315 Asian Film (3) An examination of Asian national cinemas in historical and cultural context. Taught in English. Writing-emphasis course. (Same as Cinema Studies 315.)

331 Advanced Chinese I (4) (Same as Chinese 331.) 
(Re) Prerequisite(s): 232.

332 Advanced Chinese II (4) (Same as Chinese 332.) 
(Re) Prerequisite(s): 331.

351 Advanced Japanese I (4) Includes conversation, drill, and composition practice with native speaker, as well as reading and translation. (Same as Japanese 351.) 
(Re) Prerequisite(s): 252.

352 Advanced Japanese II (4) Includes conversation, drill, and composition practice with native speaker, as well as reading and translation. (Same as Japanese 352.) 
(Re) Prerequisite(s): 351.

413 Topics in Japanese Literature (3) When content varies, may be repeated for credit. In English with readings in Japanese for minors. Writing-emphasis course. (Same as Japanese 413.)

431 Readings in Chinese Literature (3) (Same as Chinese 431.) 
Repeatable: May be repeated. Maximum 9 hours. 
(Re) Prerequisite(s): 252.

451 Readings in Pre-Modern Japanese Literature (3) (Same as Japanese 451.) 
(Re) Prerequisite(s): 252.

452 Readings in Modern Japanese Literature (3) (Same as Japanese 452.) 
(Re) Prerequisite(s): 252.

490 Chinese and Japanese Internship (1-15) Career-related experiences in the United States or abroad. 
Grading Restriction: Satisfactory/No Credit grading only. 
Repeatable: May be repeated. Maximum 15 hours. 
Registration Restriction(s): Language and world business (Japanese) concentration or language and world business (Chinese) concentration.

491 Chinese and Japanese Foreign Study (1-15) 
Repeatable: May be repeated. Maximum 15 hours.
Asian Studies (145)

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

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

121 Elementary Modern Standard Arabic I (4) Taped language program. (Same as Arabic 121.)

122 Elementary Modern Standard Arabic II (4) Taped language program. (Same as Arabic 122.) (RE) Prerequisite(s): 121.

141 Elementary Modern Hebrew I (4) Taped language program. (Same as Hebrew 141.)

142 Elementary Modern Hebrew II (4) Taped language program. (Same as Hebrew 142.) (RE) Prerequisite(s): 141.

161 Elementary Persian I (4) Taped language program. (Same as Persian 161.)

162 Elementary Persian II (4) Taped language program. (Same as Persian 162.) (RE) Prerequisite(s): 161.

221 Intermediate Modern Standard Arabic I (4) Taped language program. (Same as Arabic 221.) (CC)

222 Intermediate Modern Standard Arabic II (4) Taped language program. (Same as Arabic 222.) (CC) (RE) Prerequisite(s): 221.

241 Intermediate Modern Hebrew I (4) Taped language program. (Same as Hebrew 241.) (CC)

242 Intermediate Modern Hebrew II (4) Taped language program. (Same as Hebrew 242.) (CC) (RE) Prerequisite(s): 241.

261 Intermediate Persian I (4) Taped language program. (Same as Persian 261.) (CC)

262 Intermediate Persian II (4) Taped language program. (Same as Persian 262.) (CC) (RE) Prerequisite(s): 261.

322 Classical Islam (3) (See Religious Studies 332.)

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

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

491 Foreign Study (1-5) Repeatability: May be repeated. Maximum 5 hours.

492 Off-Campus Study (1-5) Repeatability: May be repeated. Maximum 5 hours.

493 Independent Study (1-5) Repeatability: May be repeated. Maximum 5 hours.

Astronomy (150)

151 A Journey through the Solar System (4) Study of Earth’s nearest astronomical neighbors including the sun, planets, asteroids, and comets. Seasons, solar and lunar eclipses, motion of the planets in the night sky, recent planetary space probe discoveries, development of our modern understanding of the origin and evolution of our solar system and its place in the universe, discovery of extrasolar planets in distant solar systems. A minimum of mathematical analysis. Credit Restriction: Only one of the three courses (151, 161, or 217) may be taken for credit.

152 Stars, Galaxies, and Cosmology (4) Life and death of stars, exotic objects including white dwarfs, supernovae, neutron stars, pulsars, and black holes. Structure of galaxies, formation of large-scale structure in the universe, and cosmological issues such as the big bang, dark matter, dark energy, and the past, present, and projected future behavior of the universe in light of modern astrophysics and particle physics. Conditions for the existence of life in the universe and the possibility of extraterrestrial intelligence. A minimum of mathematical analysis. Credit Restriction: Only one of the three courses (152, 162, or 218) may be taken for credit.

161 A Journey through the Solar System with Laboratory (4) Study of Earth’s nearest astronomical neighbors including the sun, planets, asteroids, and comets. Seasons, solar and lunar eclipses, motion of the planets in the night sky, recent planetary space probe discoveries, development of our modern understanding of the origin and evolution of our solar system and its place in the universe, discovery of extrasolar planets in distant solar systems. A minimum of mathematical analysis. Principles for interpretation of astronomical observations are reinforced in laboratory. (NS) Credit Restriction: Only one of the three courses (151, 161, or 217) may be taken for credit.

162 Stars, Galaxies, and Cosmology with Laboratory (4) Life and death of stars, exotic objects including white dwarfs, supernovae, neutron stars, pulsars, and black holes. Structure of galaxies, formation of large-scale structure in the universe, and cosmological issues such as the big bang, dark matter, dark energy, and the past, present, and projected future behavior of the universe in light of modern astrophysics and particle physics. Conditions for the existence of life in the universe and the possibility of extraterrestrial intelligence. A minimum of mathematical analysis. Principles for interpretation of astronomical observations are reinforced in the laboratory. (NS) Credit Restriction: Only one of the three courses (152, 162, or 218) may be taken for credit.

217 Honors: Introductory Astronomy (4) Introduction to astronomy and astrophysics. Historical perspectives in understanding the celestial universe, with emphasis on the laws of physics as they apply to the changing conceptions of the universe; structure of the solar system and celestial motions; evolution and properties of stars; galactic structure and models of the universe; observational technique and interpretation of underlying physical laws in accompanying lab. The 217-218 sequence satisfies the College of Arts and Sciences requirement for a natural science with laboratory. (NS) Contact Hour Distribution: 3 hours lecture and 2 hours lab. Credit Restriction: Credit given for only one sequence for lower-division astronomy. (RE) Corequisite(s): Mathematics 141 or Mathematics 130.

218 Honors: Introductory Astronomy (4) Introduction to astronomy and astrophysics. Historical perspectives in understanding the celestial universe, with emphasis on the laws of physics as they apply to the changing conceptions of the universe; structure of the solar system and celestial motions; evolution and properties of stars; galactic structure and models of the universe; observational technique and interpretation of underlying physical laws in accompanying lab. The 217-218 sequence satisfies the College of Arts and Sciences requirement for a natural science with laboratory. (NS) Contact Hour Distribution: 3 hours lecture and 2 hours lab. Credit Restriction: Credit given for only one sequence for lower-division astronomy. (RE) Corequisite(s): Mathematics 141 or Mathematics 130.

411 Astrophysics (3) Development of analytical physical models of the galactic structure of the universe, stellar and interstellar matter, and planetary systems. Topical and interdisciplinary approach includes consideration of quasars, pulsars, black holes and current developments in the field. Acceptable for credit toward the physics major. (RE) Prerequisite(s): Physics 136 or Physics 138. (DE) Prerequisite(s): Physics 222 or 232. Registration Permission: Consent of instructor.

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

Audiology and Speech Pathology (160)

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

302 Acoustics and Perception (3) Basic acoustics. Introduction to psychoacoustics and speech perception. (RE) Corequisite(s): 305.


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. (RE) Prerequisite(s): 305.

320 Speech and Language Development (3) Speech and language development in the normal child.
(Re) Prerequisite(s): 300.

343 Observation of Clinical Practice (1)  
(Re) Prerequisite(s): 300 and 320.

344 Clinical Practice in Speech-Language Pathology II (1-4)  
Repeatability: May be repeated. Maximum 4 hours.  
(Re) Prerequisite(s): 433.  
Comment(s): Enrollment for fewer than 2 semester hours must have prior departmental approval.

345 Introduction to Speech Sound Disorders (3) Etiology, diagnosis, and treatment of articulatory and phonological disorders.  
(Re) Prerequisite(s): 300 and 305.

400 Voice Disorders (3) Etiology, diagnosis, and treatment of organic and functional voice disorders.  
(Re) Prerequisite(s): 300 and 306.

445 Clinical Practice in Audiology (1-4)  
Repeatability: May be repeated. Maximum 6 hours.  
(Re) Prerequisite(s): 473 and 494.

455 Problems in Speech Pathology (1-3)  
Repeatability: May be repeated. Maximum 6 hours.  
Registration Permission: Consent of instructor.

457 Senior Honors Thesis (1-3) Students in the speech pathology program work individually under the direction of a tenure-track faculty member to write an honors thesis. The thesis must be approved by the departmental honors committee.  
Repeatability: May be repeated. Maximum 6 hours.

461 Introduction to Language Pathology in Children (3) Etiology, diagnosis, and treatment of language impairments in children.  
(Re) Prerequisite(s): 300 and 320.

473 Introduction to Audioligic Assessment (3) Basic principles of clinical audiology; pure tone, speech, masking, and overview of special audiological tests.  
(Re) Prerequisite(s): 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.  
(De) Prerequisite(s): 300.  
Registration Restriction(s): Minimum student level – senior.  
Registration Permission: Consent of instructor.

491 Foreign Study (1-15)  
Repeatability: May be repeated. Maximum 30 hours.

492 Off-Campus Study (1-15)  
Repeatability: May be repeated. Maximum 30 hours.

493 Independent Study (1-15)  
Repeatability: May be repeated. Maximum 15 hours.

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

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.  
(De) Prerequisite(s): 300.  
Registration Restriction(s): Minimum student level – senior.  
Registration Permission: Consent of instructor.

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.  
Contact Hour Distribution: 4 hours and 1 lab.  
Credit Restriction(s): May not be applied toward the biochemistry and cellular and molecular biology concentration.  
(Re) Prerequisite(s): Chemistry 110 or Chemistry 130.

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. Each session will include: basic biological principles/processes; scientific advances and current status about new diagnostic and treatment procedures of the particular disease state.  
Contact Hour Distribution: Meets 2 hours a week.  
Grading Restriction: Satisfactory/No Credit grading only.  
(Re) Prerequisite(s): Biology 102 or Biology 140.

306 Genetics and Society (3) Introduction to genetics, anthropology and evolution with emphasis on their implications for human society.  
(See 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 coenzymes and prosthetic groups. Action of drugs and hormones.  
(See 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.  
(Re) Prerequisite(s): Chemistry 120 and Chemistry 130.  
(De) Prerequisite(s): Biology 101 and 102 or Biology 130 and 140.

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.  
(Re) Prerequisite(s): Biology 140 and Biology 240.  
Comment(s): Intended for biology majors in the biochemistry and cellular and molecular biology concentration, but also open to biology majors in other concentrations.

331 Mechanisms of Development Laboratory (2) Contact Hour Distribution: 2 labs.  
(Re) Corequisite(s): 330.

401 Biochemistry-Molecular Biology I (4) First semester of a two-course sequence providing in-depth coverage of biochemistry and molecular biology. 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.  
(Re) Prerequisite(s): Biology 240 and Chemistry 360.  
(De) Prerequisite(s): Chemistry 350 and Chemistry 369.

402 Biochemistry-Molecular Biology II (4) Second semester of a two-course sequence providing in-depth coverage of biochemistry and molecular biology. 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, chromosomal structure and function, regulation of gene expression, genome structure and genomics, and mechanisms of biological regulation.  
(Re) Prerequisite(s): 401.  
Comment(s): Intended for biology majors in the biochemistry and cellular and molecular biology concentration, but also open to biology majors in other concentrations.

403 Advanced Genetics Laboratory (3) Experiments illustrating methods in nonmendelian genetics, including techniques in classical, cyto-molecular and developmental genetics. Using model organisms, especially Drosophila and mouse.  
(Re) Prerequisite(s): Biology 240 and Chemistry 360.  
(De) Prerequisite(s): Chemistry 350 and 369.

404 Plant Molecular Biology (4) Introduction to current research approaches and methodologies in plant developmental biology and molecular genetics.  
Contact Hour Distribution: 1 lab and lecture.  
(Re) Prerequisite(s): Biology 140 and Biology 240.
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. (WC) (RE) Prerequisite(s): 401 or 402. Recommended Background: 9 additional hours of biochemistry and cellular and molecular biology or related courses.

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. (RE) Prerequisite(s): 401.

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. (RE) Prerequisite(s): Biology 140 and Physics 222.

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

419 Cellular and Comparative Biochemistry Laboratory (2) Experiments with enzymes, nucleic acids, and membranes and organelles. Chromatography, kinetics, hybridization, sequencing, and immunochromatography methods. (RE) Prerequisite(s): 419.

420 Advanced Topics in Biochemistry and Cellular and Molecular Biology (3) Selected topics of current research interest, e.g., allosteric theory and control of protein function, immunoochemistry, regulation of gene expression, bioenergetics, etc. Emphasis on original literature and the experimental basis of current knowledge. Historical background, societal impact, ethical and moral implications, and future development of technologies. Written reports required. Writing-emphasis course. (RE) Prerequisite(s): 420.

421 Cell and Tissue Structure and Function (4) Study of animal cells and tissues at light and electron microscope levels. Contact Hour Distribution: 2 hours and 2 labs. (RE) Prerequisite(s): Biology 140.

429 Cell Biology Laboratory (3) A series of open-ended, discovery-based exercises will be developed to design and test new drugs using modern cell biology and computer technologies. Experimental modules include techniques used in cell isolation, purification, culturing, fluorescent microscopy, receptor binding and signal transduction, apoptosis, cell cycle analysis, protein and steroid secretion, computer modeling, and state-of-the-art electron microscopy. Students will actively participate in experiment design, execution, data analysis, and peer evaluation. (RE) Prerequisite(s): 429.

440 General Physiology (3) Principles of cellular and organ-system animal physiology. (RE) Prerequisite(s): Biology 140 and Chemistry 360. Recommended Background: Physics 221 and 222.

452 Independent Research in Biochemistry (1-6) Special experimental problems under direction of a staff member. Repeatability: May be repeated. Maximum 12 hours. (RE) Corequisite(s): 401 and 419.

457 Honors Thesis (1-3) Written preparation and oral presentation of faculty-supervised student research conducted in 452 or equivalent. Repeatability: Not repeatable. May be taken once for 1-3 hours. Credit Restriction(s): Credit may not be applied toward the biochemistry and cellular and molecular biology concentration. (RE) Prerequisite(s): 452. Registration Restriction(s): Biological sciences major/honors biochemistry and cellular and molecular biology concentration.

459 Biophysical Crystallography (3) Theories and practices of X-ray diffraction, neutron diffraction and neutron scattering to elucidate the structure of nucleic acids, proteins, nucleosomes, ribosomes and viruses. Application of 3-D structures in designing drugs against AIDS, cancer, cardiac disease and neurodegenerative disorders. Recommended Background: 401, or two 300-level chemistry courses or Physics 240 or consent of instructor.

460 Cancer Biology (3) Fundamental mechanisms of cancer formation and therapy, including: Cell cycle, cancer epidemiology, cancer pathogenesis, cancerogenesis, tumor suppressor genes, DNA repair and metastasis. Recommended Background: Biology 240 or consent of instructor. (RE) Prerequisite(s): Biology 240.

465 Human Genetics (3) Genetic and molecular principles and problems of human inheritance. (RE) Prerequisite(s): Biology 240.

471 Biophysical Chemistry (3) Physicochemical principles with applications to biological systems. Thermodynamics; chemical equilibrium; solution chemistry; transport; electrochemistry; kinetics; enzyme catalyzed reactions. (Same as Chemistry 471.) (DE) Prerequisite(s): Chemistry 350 and 360; Chemistry 350, 360, 369 and Biology 130 or 102. Recommended Background: Calculus.

480 Physiology of Exercise (3) (See Exercise Science 480.)

481 Biophysical Chemistry (3) Physicochemical principles with applications to biological systems. Elementary quantum chemistry; interactions of light with biological molecules; optical and magnetic spectroscopy; light scattering; case studies of selected macromolecules. (Same as Chemistry 481.) (DE) Prerequisite(s): Chemistry 350, 360, 369 and Biology 130 or 102. Recommended Background: Calculus.

492 Off-Campus Study (1-6) Grading Restriction: Satisfactory/No Credit grading only. Repeatability: May be repeated. Maximum 6 hours. Credit Restriction: Maximum 2 hours may be applied toward the biochemistry and cellular and molecular biology concentration. Registration Permission: Consent of instructor.

493 Independent Study (1-3) Independent study under the direction of a faculty member. Repeatability: May be repeated. Maximum 12 hours. Credit Restriction: Maximum 3 hours may be applied toward the biochemistry and cellular and molecular biology concentration. Registration Permission: Consent of instructor.

Biology (190)

101 Humankind in the Biotic World (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. 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). Laboratories involve a mix of skills-oriented exercises and assignments focused on topics. (NS) Contact Hour Distribution: 3 hours lecture and 1 hour lab. Comment(s): Although not required, it is strongly recommended that 101 and 102 be taken in sequence.

102 Humankind in the Biotic World (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. Focuses on the diversity of the Earth’s biota and the interdependence among components. Topics include: survey 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. Laboratories involve a mix of skills-oriented exercises and assignments focused on topics. (NS) Contact Hour Distribution: 3 hours lecture and 1 hour lab. Comment(s): Although not required, it is strongly recommended that 101 and 102 be taken in sequence.

111 General Botany (4) 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). (NS) Credit Restriction: Students receiving credit for 111 and 112 may not receive credit for 101 and 102.

112 General Botany (4) Plant growth, anatomy, growth regulation; uptake and transport; origin of life and mechanisms of evolution; ecology; importance to humans and environmental concerns. (NS) Credit Restriction: Students receiving credit for 111 and 112 may not receive credit for 101 and 102.

130 Biodiversity (4) Unifying concepts and principles of biology, illustrated with diversity of life, intended for science majors. Properties of life, evolution, origin of life, 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. (NS) Contact Hour Distribution: 3 hours lecture and 1 hour lab. Credit Restriction: Students receiving credit for both 101 and 102 may not receive credit for 130.
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 basic techniques for analysis of cell components such as electrophoresis and centrifugation. (NS) (RE) Prerequisite(s): 130 and Chemistry 120. (NS) Credit Restriction: Students receiving credit for both 101 and 102 may not receive credit for 157.

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. (NS) (OC) Credit Restriction: Students receiving credit for both 101 and 102 may not receive credit for 157.

202 Inside the Biological Sciences (1) Presentations by faculty and other biology professionals emphasizing applied biological research. Familiarizes students with diverse nature and current applications of biology.
Grading Restriction: Satisfactory/No Credit grading only. Repeatability: May be repeated. Maximum 3 hours.

203 Inside the Biological Sciences (1) Presentations by faculty and other biology professionals emphasizing applied biological research. Familiarizes students with diverse nature and current applications of biology.
Grading Restriction: Satisfactory/No Credit grading only. Repeatability: May be repeated. Maximum 3 hours.

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. (RE) Prerequisite(s): 140 or 112. (DE) Prerequisite(s): Chemistry 130.

250 General Ecology (4) Relations between organisms and their environment, including human environmental problems. Topics include populations, communities, and ecosystems.
Contact Hour Distribution: 3 hours lecture and 1 hour discussion, field problems, or computer simulations. (RE) Prerequisite(s): 140 or 112. (DE) Prerequisite(s): Chemistry 130. Comment(s): A working knowledge of college algebra is required.

307 Honors: Colloquy in Biological Research (1) Presentations by professional biologists emphasizing rewards of careers in different areas of biology. Nationally recognized speakers invited each term.
Grading Restriction: Satisfactory/No Credit grading only. Repeatability: May be repeated. Maximum 4 hours. Recommended Background: 8 hours of 200-level or above biology courses.
Registration Restriction(s): Biological sciences major or honors biology concentration or honors microbiology concentration or honors cell and molecular biology concentration or honors ecology and evolutionary biology biology concentration or honors microbiology concentration or honors plant biology concentration; minimum student level – sophomore.

308 Honors: Colloquy in Biological Research (1) Presentations by professional biologists emphasizing rewards of careers in different areas of biology. Nationally recognized speakers invited each term.
Grading Restriction: Satisfactory/No Credit grading only. Repeatability: May be repeated. Maximum 4 hours. Recommended Background: 8 hours of 200-level or above biology courses.
Registration Restriction(s): Biological sciences major or honors biology concentration and cellular and molecular biology concentration or honors ecology and evolutionary biology concentration or honors microbiology concentration or honors plant biology concentration; minimum student level – sophomore.

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

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

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.
Repeatability: May be repeated. Maximum 12 hours.

Biomedical Engineering (192)

271 Biomedical Engineering Principles (3) Application of engineering principles and methods to problem solving in the life sciences and medicine. (RE) Prerequisite(s): 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.
Registration Permission: 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. (RE) Prerequisite(s): Mechanical Engineering 321.

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

401 Thesis (3) Research and design problems in biomedical engineering with prior approval of a professor.
Repeatability: May be repeated. Maximum 6 hours.
Registration Permission: Consent of instructor.

408 Cell and Tissue Engineering (3) Mammalian cell culture. Effects of mechanical forces on cells. Tissue engineering of cardiovascular and orthopedic devices. (RE) Prerequisite(s): 310 and Biology 140.

410 Professional Topics (2) Topics relating to professional responsibilities, communications, and organization. Requires a formal oral presentation by each student on an engineering topic chosen by the student and approved by the instructor. (OC) (RE) Prerequisite(s): English 102. Registration Restriction(s): Minimum student level – senior.

430 Biomedical Engineering Laboratory (4) 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.). (RE) Prerequisite(s): 310.

455 Biomedical Engineering Design I (2) Design of biomedical systems. Economics, optimization, reliability, patents and product liability. Participation in team design efforts. Requires oral and written design reports. (RE) Prerequisite(s): 310. (OC) Corequisite(s): 430.

469 Biomedical Engineering Design II (3) Design of complete biomedical device: documentation includes complete specification, design calculations, preparation of working drawings, and cost analysis. Requires written and oral reports. (RE) Prerequisite(s): 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. (RE) Prerequisite(s): Aerospace Engineering 341 and Mathematics 231.

494 Special Project in Biomedical Engineering (1-3) Problems related to recent developments and practice. Repeatability: May be repeated once. Registration Permission: Consent of instructor.

495 Special Project in Biomedical Engineering (1-3) Problems related to recent developments and practice. Repeatability: May be repeated once. Registration Permission: 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.
Contact Hour Distribution: 2-hour lab. (RE) Prerequisite(s): 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 psychometric processes; biological systems and the biosphere (bioenergetics, hydrologic cycle, global energy cycle).

Contact Hour Distribution: 2 hours and 1 lab. (RE) Prerequisite(s): Chemistry 120 and 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 enzymes in biological solutions; fundamental biochemicals of proteins and enzymes; introduction to bioenergetics and metabolic pathways, and the replication, transcription, and translation of DNA.

(32) Prerequisite(s): Chemistry 120 and Mathematics 141.

232 Biophysical Thermodynamics, 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.

Contact Hour Distribution: 2 hours and 1 lab. (RE) Prerequisite(s): 221 and Nuclear Engineering 203.

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. (OC)

(RE) Prerequisite(s): 431 and 451. (Corequisite(s): 404)

402 Biosystems Engineering Design II (6) Culmination of capstone design sequence. Intensive design experience on project chosen and approved in 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 and submission of design to external engineering design competition or display required.

Contact Hour Distribution: 2-hour lecture, 2-hour recitation, 4-hour lab. (RE) Prerequisite(s): 401 and 444.

404 Engineering Project Management (3) Fundamentals of engineering 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.

(RE) Corequisite(s): 401.

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.

Contact Hour Distribution: 2 hours and 1 lab. (RE) Prerequisite(s): Mechanical Engineering 231 and Mechanical Engineering 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, hydrographs, routing, open channel flow, and urban hydrology. (Same as Civil Engineering 416.)

(RE) Prerequisite(s): Civil Engineering 390 or Aerospace Engineering 341.

431 Bioprocess Engineering (3) Development of interdisciplinary bioprocess engineering; basics of biology in an engineering perspective; enzymatic reaction kinetics; metabolism and bioenergetics; cell growth and division; reaction kinetics; reactor design and systems; introduction to bioprocesses; practical aspects of bioprocesses and process development.

Contact Hour Distribution: 2 hours and 1 lab. (RE) Prerequisite(s): 231 and 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.

Contact Hour Distribution: 1 hour and 2 labs. (RE) Corequisite(s): 401.

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 projects.

Contact Hour Distribution: 3 hours and 1 lab. Design content – 1 hour. (RE) Prerequisite(s): Electrical and Computer Engineering 301.

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

Repeatability: May be repeated. Maximum 6 hours. Registration Permission: Consent of instructor.

480 Selected Topics in Biosystems Engineering (1-3) Current trends and problems in biosystems engineering.

Repeatability: May be repeated. Maximum 6 hours.

**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.

Contact Hour Distribution: 1 hour and 2 labs.

212 Surveying (3) Measurement of distances, angles, and areas; differential and profile leveling; topographic surveying and mapping; area computation.

Contact Hour Distribution: 1 hour a one 3-hour lab. (RE) Prerequisite(s): Mathematics 119 or Mathematics 123.

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 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.

(AC) Prerequisite(s): Agriculture and Natural Resources 290.

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, structures, and processes. Applications in mechanical, structural, and biosystems. 2-D applications with limited exposure to 3-D applications. Computer intensive course. Hands-on experience.

Credit Restriction: Students cannot receive credit for both 414 and 514.

Contact Hour Distribution: Two 2-hour labs. Recommended Background: Computer proficiency.

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.

Contact Hour Distribution: 2 hours and 1 lab. (AC) Prerequisite(s): Physics 101 or Physics 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 harvesting systems, forage and small grain harvesting, and cotton harvesting. Crop drying processes, off-road machinery safety considerations, and operator ergonomics.

Contact Hour Distribution: 2 hours and 1 lab. (RE) Prerequisite(s): Mathematics 123 or Mathematics 125.

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.

Contact Hour Distribution: 2 hours and 1 lab. (RE) Corequisite(s): 326.

442 Agricultural Waste Management and Pollution Control (3) Waste renovation fundamentals; characteristics of animal manure, techniques for collecting, transporting, storing, and utilizing livestock waste.

Contact Hour Distribution: 2 hours and 1 lab. (AC) Prerequisite(s): Mathematics 123 or Mathematics 125.

452 Small Internal Combustion Engines (3) Theory, concepts and applications of small internal combustion engines; theoretical cycles, selection, operation, adjustment, troubleshooting and repair of single-cylinder engines.

Contact Hour Distribution: 2 hours and 1 lab. (AC) Prerequisite(s): Mathematics 123 or Mathematics 125.

462 Agricultural Chemical Application Technology (3) Equipment for application of liquid, solid, and gaseous agricultural chemicals; system components; operational characteristics, calibration, selection and management; application; and safety considerations; materials handling and disposal methods.

Contact Hour Distribution: 2 hours and 1 lab. (AC) Prerequisite(s): Mathematics 123 or Mathematics 125.
474 Environmental Instrumentation and Monitoring (3) Equipment and techniques commonly used to measure all aspects of hydrologic cycle: precipitation, runoff, streamflow, and subsurface water movement. Sampling of all flows for contaminants. Design of monitoring systems. Analysis of data. Contact Hour Distribution: 2 hours and 1 lab. Credit Restriction: Students cannot receive credit for both 474 and 574. (RE) Prerequisite(s): Environmental and Soil Sciences 324.

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. Grading Restriction: Satisfactory/No Credit grading only.

201 Business Functions (4) Understanding how business works through application and integration of fundamental business functions. Includes aspects of marketing, finance, logistics, operations, organizational behavior, and information management. (RE) Prerequisite(s): Accounting 200 and Economics 201. (RE) Corequisite(s): Statistics 201 or Statistics 207.

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. Grading Restriction: Satisfactory/No Credit grading only.

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. (RE) Prerequisite(s): 201. (RE) Corequisite(s): 332. Registration Restriction(s): Majors in the College of Business Administration.

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. (RE) Prerequisite(s): 201. (RE) Corequisite(s): Statistics 201. Registration Restriction(s): Majors in the College of Business Administration.

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. (RE) Prerequisite(s): 201. (RE) Corequisite(s): 342. Registration Restriction(s): Majors in the College of Business Administration.

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. (RE) Prerequisite(s): 201. (RE) Corequisite(s): 341. Registration Restriction(s): Majors in the College of Business Administration.

353 CBM III: Integrated Process Management (3) Behavioral processes in organizations with an emphasis on team dynamics and decision making within the contextual framework of integrated business process management. (RE) Prerequisite(s): 331 and 341. (RE) Corequisite(s): 361 and Finance 301. Registration Restriction(s): Majors in the College of Business Administration.

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. (RE) Prerequisite(s): 201. Registration Restriction(s): Majors in the College of Business Administration.

371 International Business (3) Survey of strategic implications of conducting business operations in an international context. Analysis of relevant cross-cultural environments, including cultural, political, economic and legal characteristics. (RE) Prerequisite(s): 361. Registration Restriction(s): Majors in the College of Business Administration.

400 Special Topics (1-9) Topics of current interest in international business. Topics announced prior to offering. Repeatability: May be repeated if topic is different. Maximum 9 hours. (RE) Prerequisite(s): 361. Registration Restriction(s): Majors in the College of Business Administration.

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. Recommended Background: Business Administration 332 and Finance 301. Registration Restriction(s): Majors in the College of Business Administration; minimum student level – senior. Registration Permission: Consent of instructor.

491 Foreign Study (1-15) Repeatability: May be repeated. Maximum 15 hours. Registration Restriction(s): Majors in the College of Business Administration. Registration Permission: Consent of instructor.

492 Off-Campus Study (1-15) Grading Restriction: Satisfactory/No Credit grading only. Repeatability: May be repeated. Maximum 15 hours. Registration Restriction(s): Majors in the College of Business Administration. Registration Permission: Consent of instructor.

Business Law (216)

301 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. (Same as Legal Studies 301.) Registration Restriction(s): Minimum student level – junior.

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. (RE) Prerequisite(s): Engineering Fundamentals 152 and Chemistry 130. (RE) Corequisite(s): 200 and Mathematics 142.

240 Fluid Flow and Heat Transfer (4) Force, energy and mechanical energy balances; flow in tubes, piping systems, packed and fluidized beds; pumping and metering; steady and unsteady state heat conduction; heat transfer in tubes and heat exchangers; radiation. (RE) Prerequisite(s): 200. (RE) Corequisite(s): Mathematics 231.

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. (RE) Prerequisite(s): 200 and 230.


310 Chemical Engineering Laboratory (3) Thermodynamics, fluid flow and heat transfer in chemical engineering. (RE) Prerequisite(s): 215 and Mathematics 142. Registration Restriction(s): Chemical engineering major; 2.5 GPA.
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 design of diffusive processes. Applications include gas absorption, stripping, binary distillation, and extraction.

(Re) Prerequisite(s): 200 and 230.
Registration Restriction(s): 2.5 GPA.

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.

(Re) Prerequisite(s): 200 and 240.
(Re) Corequisite(s): Mathematics 231.
Registration Restriction(s): 2.5 GPA.

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

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

Grading Restriction: Letter grade only.
(Re) Prerequisite(s): 450.

407 Honors Seminar (1) Presentations and discussions on topics of importance to chemical engineers.
Grading Restriction: Satisfactory/No Credit grading only.
Repeatability: May be repeated. Maximum 2 hours.
Registration Permission: Consent of instructor.

408 Honors Seminar (1) Presentations and discussions on topics of importance to chemical engineers.
Grading Restriction: Satisfactory/No Credit grading only.
Repeatability: May be repeated. Maximum 2 hours.
Registration Permission: Consent of instructor.

410 Chemical Engineering Laboratory II (3) Laboratory investigations of mass transfer and chemical reaction phenomena in chemical engineering.
(Re) Prerequisite(s): 310 and 450.

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.
(Re) Prerequisite(s): 310.
Registration Restriction(s): Minimum student level – senior.


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

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.
Recommended Background: 360.
Registration Permission: 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.
Registration Permission: Consent of instructor.

480 Equipment Design and Economic Methods (4) Design, optimization and costing of chemical plant equipment, introduction to economic evaluation methods, capital investment, discounted cash flows, net present value.
(Re) Prerequisite(s): 360 and Chemistry 350.
(Re) Corequisite(s): 445 and 450.

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.
Registration Permission: Consent of instructor.

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

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

(Re) Prerequisite(s): 200 and 240.

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.
(Re) Prerequisite(s): 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.
(Re) Prerequisite(s): 480.

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

498 Honors Thesis (3) Research in problems related to recent developments in chemical engineering.
Registration Permission: 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. (NS)
Contact Hour Distribution: 3 hours and 1 lab.
Credit Restriction: Credit may be received for only one of the following courses – 100, 120, or 128.

Contact Hour Distribution: 3 hours and 1 lab.
(De) Prerequisite(s): 100 or 130 or 138 or consent of department head.

120 General Chemistry I (4) A general course in theoretical and descriptive chemistry. Modern atomic theory, chemical bonding, stoichiometry, quantitative treatment of gas laws, quantitative aspects of solution chemistry, kinetics. (NS)
Contact Hour Distribution: 3 hours and 1 lab.
Credit Restriction: Credit may be received for only one of the following courses – 100, 120, or 128.
128 Honors: General Chemistry I (4) (NS)
Contact Hour Distribution: 3 hours and 1 lab.
Credit Restriction: Credit may be received for only one of the following courses – 100, 120, or 128.

130 General Chemistry II (4) A general course in theoretical and descriptive chemistry. Chemical equilibria, thermodynamics, descriptive chemistry of nonmetallic and metallic elements, electrochemistry, introduction to organic and biochemistry. (NS)
Contact Hour Distribution: 3 hours and 1 lab.
(RE) Prerequisite(s): 120 or 128.

138 Honors: General Chemistry II (4) (NS)
Contact Hour Distribution: 3 hours and 1 lab.
(RE) Prerequisite(s): 128.

150 Chemistry and Society (3) Food and agricultural chemistry; chemistry of life; chemistry in medicine; air and water pollution; energy and fuels.
Contact Hour Distribution: 3 hours lecture.
Credit Restriction: May not be used toward a major or minor in chemistry.

160 Chemistry and the Home (3) Chemistry and the consumer; household products; chemistry in the kitchen and around the home.
Contact Hour Distribution: 3 hours lecture.
Credit Restriction: May not be used toward a major or minor in chemistry.

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. Repeatability: May be repeated. Maximum 4 hours.
Credit Restriction: May not be used toward a major or minor in chemistry.
Comment(s): Chemistry course numbered 230 or higher is a corequisite. Registration Permission: Consent of department head.

230 Inorganic Chemistry (3) Periodicity, valence, bonding, and the descriptive chemistry of the elements; coordination compounds; nuclear chemistry; transition elements, inner transition elements.
Contact Hour Distribution: 2 hours and 1 lab.
(RE) Prerequisite(s): 130 or 138.

240 Chemical Programming (2) Use of the computer in solving problems encountered in chemistry.
Contact Hour Distribution: 1 hour and 1 lab.
(RE) Prerequisite(s): Prior.

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 the entire semester as a member of a theoretical or experimental team.
Grading Restriction: Satisfactory/No Credit grading only.
Credit Restriction: May not be applied toward a major or minor in chemistry.
(RE) Prerequisite(s): 130 or 138.
Registration Permission: Consent of department head.

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.
(RE) Prerequisite(s): 130 or 138.

319 Analytical Chemistry Laboratory (1) Experiments on topics covered in 310.
(RE) Corequisite(s): 310.

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

329 Advanced Analytical Chemistry Laboratory (2) Experiments on topics covered in 320.
(RE) Corequisite(s): 320.

350 Organic Chemistry I (3) Compounds of carbon and their reactions. Reaction mechanisms, synthesis, spectroscopic and other physical properties.
(RE) Prerequisite(s): 130 or 138.

360 Organic Chemistry II (3) Compounds of carbon and their reactions. Reaction mechanisms, synthesis, spectroscopic and other physical properties.
(RE) Prerequisite(s): 350. (RE) Corequisite(s): 369.

369 Organic Chemistry Laboratory (2) Experiments on topics discussed in 350-360.
Contact Hour Distribution: 1-hour lecture and 4-hour lab.
(RE) Corequisite(s): 360.
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.

106 Introduction to ECE (3) History of ECE programs, practices, and policies; overview of children’s development and behavior; introduction of application of developmental theory to curriculum development and classroom methods; summary of current ECE issues and research; introduction of impact of family, schools, and community on children’s learning; readings, observations, colloquy, and exposure to a broad spectrum of ECE professionals.

210 Human Development (3) Conception through adulthood in various social/ecological contexts; interrelationships among various aspects of development: physical, cognitive, emotional, social; normative, non-normative development. (SS)

211 Development in Infancy and Early Childhood (3) Development from conception through early childhood; interrelationships among cognitive, emotional, social, physical aspects of ontology; normative, non-normative development. Includes observation. (RE) Prerequisite(s): 210.

213 Development in Middle Childhood and Adolescence (3) Development during middle childhood and adolescence; interrelationships among cognitive, emotional, social, physical aspects of ontology; normative and non-normative development. Includes observation. (RE) Prerequisite(s): 210.

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 elderhood; adjustment to internal, environmental changes through adulthood; interrelationships among various aspects of development: physical, cognitive, emotional, social. Includes observation. (RE) Prerequisite(s): 210.

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. Registration Restriction(s): Minimum student level – junior.

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. Registration Restriction(s): Minimum student level – junior.

350 Early Childhood Education I: Environments for Children (4) Classroom management, behavior guidance, organization of day care environments, communication, interpersonal skills, interaction with children, stress reduction and management in classroom. Contact Hour Distribution: Includes laboratory participation. (RE) Prerequisite(s): 106 and 211.

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. Contact Hour Distribution: Includes laboratory participation. (RE) Prerequisite(s): 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. (RE) Prerequisite(s): 350.

360 Family Stress (3) Family’s response to stressful circumstances; skills for intervention into family systems; violence, abuse, divorce, illness, death. Registration Restriction(s): Minimum student level – junior.

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. Registration Restriction(s): Minimum student level – junior.

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. (RE) Prerequisite(s): 210 and 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. (OC) (WC) (RE) Prerequisite(s): 210 and 220. Registration Restriction(s): Child and family studies major; minimum student level – junior.

422 Early Childhood Teaching Methods (6) Fundamentals of teaching language arts, math, science and social studies through a holistic, integrative approach to early childhood education. Focus on grades K-3. Includes field experience. (RE) Prerequisite(s): 351 and 470. Registration Restriction(s): Qualification – admission to teacher education.

423 Pre-K Teaching Methods (6) The knowledge, skills and dispositions needed to become an inquiry-based, reflective practitioner who is a teacher of young children (birth through five years of age), in pre-kindergarten and kindergarten classrooms; involves lecture and field placement components. (RE) Prerequisite(s): 350. Registration Restriction(s): Qualification – admission to teacher education.

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. (RE) Prerequisite(s): 320. Registration Restriction(s): Child and family studies major.

460 Directed Study in Child and Family Studies (1-3) Individual learning experience arranged for students under supervision of faculty. Repeatability: May be repeated if topic is different. Maximum 6 hours. Recommended: 12 hours in child and family studies. Registration Permit: Consent of instructor.

470 Practicum: Pre-K Teaching (6-12) Responsibility for planning and guiding groups of infants, toddlers, or preschoolers under supervision of a classroom teacher and coordinator. Includes weekly seminar. Grading Restriction: Satisfactory/No Credit grading only. (RE) Prerequisite(s): 351 and 405. Comment(s): Fall and spring practicum placements begin on first day of registration and end on the last day of the final examination period. The practicum follows the ELC calendar and does not include fall or spring breaks. Summer practicum begins the day following spring commencement and ends on the last day of summer term. Priority for summer practicum is given to students who have completed all other program requirements, except practicum, prior to the summer session.

471 Practicum: Child Development (3-12) Supervised experiences working with children and families in early childhood settings. Grading Restriction: Satisfactory/No Credit Grading only. Repeatability: May be repeated. Maximum 12 hours. (RE) Prerequisite(s): 405.

472 Practicum: Student Teaching Pre-K (12) Field placement in Pre-K classroom settings with responsibility for curriculum planning and the supervision, assessment, and teaching of young children. Includes weekly seminar. This course is only for students in the Pre-K Teacher Licensure program and is designed to meet Pre-K licensure requirements. Grading Restriction: Satisfactory/No Credit grading only. (RE) Prerequisite(s): 405 and 423. Comment(s): Fall placements are based on public school calendars and the beginning date will vary. Spring placements begin on the first day of registration. All placements end on the last day of the final examination period (Placements follow the school calendar, not the UT calendar and they do not include UT fall or spring breaks).
480 Practicum: Community Placement (9-12) Supervised experiences with an area agency serving the needs of children and families. 
Grading Restriction: Satisfactory/No Credit grading only. 
(RE) Prerequisite(s): 405. 
Comment(s): Summer practicum placement begins the Monday after spring commencement and concludes the last day of the summer session. 
Registration Restriction(s): Minimum student level – senior.

481 Research in Child and Family Studies (3-6) 
(RE) Prerequisite(s): 395. 
Recommended Background: 9 hours in child and family studies. 
Registration Restriction(s): 3.0 GPA. 
Registration Permission: Consent of instructor. 

485 Special Topics in Child and Family Studies (1-9) Personal or professional interest in human development or family studies. 
Repeatable: May be repeated. Maximum 9 hours. 
Recommended Background: 9 hours in child and family studies. 
Registration Restriction(s): Minimum student level – junior. 
Registration Permission: Consent of instructor.

490 Practicum: Research (3-12) A 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. 
Grading Restriction: Satisfactory/No Credit grading only. 
Repeatable: May be repeated. Maximum 12 hours. 
(RE) Prerequisite(s): 395 and 405. 

497 Honors: Child and Family Studies (3-6) Issues or topics affecting children and/or families, designed to meet particular interests of the student. 
Repeatable: May be repeated. Maximum 6 hours. 
Recommended Background: 15 hours in child and family studies. 
Registration Restriction(s): 3.25 GPA; minimum student level – junior. 
Registration Permission: Consent of instructor.

Chinese (249) 
131 Elementary Chinese I (5) (See Asian Languages 131.)
132 Elementary Chinese II (5) (See Asian Languages 132.)
231 Intermediate Chinese I (5) (See Asian Languages 231.) (CC) 
232 Intermediate Chinese II (5) (See Asian Languages 232.) (CC) 
311 Chinese Literature in English Translation (3) (See Asian Languages 311.) 
312 Chinese Literature in English Translation (3) (See Asian Languages 312.) 
331 Advanced Chinese I (4) (See Asian Languages 331.) 
332 Advanced Chinese II (4) (See Asian Languages 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 Political Science 312.) 
315 Asian Film (3) (See Asian Languages 315.) 
316 Luso-Brazilian Cinema and Literature (3) (See Portuguese 316.) 
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) 
Repeatable: 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.) 
482 Special Topics in Global Cinema (3) (See Modern Foreign Languages and Literatures 482.) 
489 Special Topics in Film (3) (See English 489.) 

491 Foreign Study (1-15) 
Repeatable: May be repeated. Maximum 15 hours. 
492 Off-Campus Study (1-15) 
Repeatable: May be repeated. Maximum 15 hours. 
493 Independent Study (1-15) 
Repeatable: May be repeated. Maximum 15 hours.

Civil Engineering (254) 
205 Professional Development I (2) Introduction to civil engineering specialties, history, and achievements; Professional responsibility; communication, and organizations. (OCI) (WCI) 
(RE) Prerequisite(s): Engineering Fundamentals 151 or 157. 
Registration Restriction(s): Minimum student level – sophomore.

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 CAD and an introduction to global positioning systems (GPS) and geographical information systems (GIS) used in civil engineering. 
Contact Hour Distribution: 3 hours and 1 lab. 
Registration Restriction(s): Minimum student level – sophomore.

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

305 Professional Development II (1) Legal and ethical responsibilities, continuous improvement, career planning, and leadership. 
(RE) Prerequisite(s): 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, through the department, through the college, or through other approved groups. May include participation in the annual ASCE Regional Student Chapter Conference. 
Repeatable: May be repeated. Maximum 3 hours. 
Credit Restriction: May not be used as credit toward graduation. 
Registration Restriction(s): Majors in the College of Engineering; minimum student level – sophomore.

Contact Hour Distribution: 2 lectures and 1 lab. 
(RE) Prerequisite(s): 205 and 261.

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. 
Contact Hour Distribution: 3 hours and 1 lab. 
(RE) Prerequisite(s): 321. 
(RE) Corequisite(s): 381. 

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. 
(RE) Prerequisite(s): 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. 
(RE) Prerequisite(s): 210.

361 Structural Analysis II (3) Stress and strain in beams and columns; Mohr’s circle; influence lines; deflections and beams and trusses; analysis of indeterminate structures; moment distribution. 
(RE) Prerequisite(s): 261.

380 Water and Waste Treatment (3) Principles of unit operations employed in physical, chemical, and biological treatment of water, wastewater, and solid wastes. 
(RE) Prerequisite(s): Chemistry 130 and Engineering Fundamentals 152.

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. 
Contact Hour Distribution: 3 hours and 1 lab. 
(RE) Prerequisite(s): Engineering Fundamentals 152 and Mathematics 231. 
(DE) Prerequisite(s): Civil Engineering 205 or Biosystems Engineering 243.
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. (RE) Prerequisite(s): 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 the course 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 term of graduation. Summer graduates must take the course during their last preceding term.

Grading Restriction: Letter grade only.
Registration Permission: Consent of instructor and department head.

409 Special Topics (1-3) Recent developments and current practice in civil and environmental engineering through field internship and/or self-study. (DE) Prerequisite(s): Consent of instructor.

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

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. (RE) Prerequisite(s): 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. (RE) Prerequisite(s): Statistics 251.
Registration Restriction(s): Minimum student level – senior.

442 Construction Methods and Equipment (3) Fundamental operations in construction and equipment selection and productivity; concrete and steel construction; and construction contracts and economics. Registration Restriction(s): Minimum student level – senior.

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. (RE) Prerequisite(s): 352.

453 Airport/Railroad Planning and Design (3) Airport master planning and railroad engineering. Runway configuration, airfield capacity, geometric and terminal layout and design. Railroad capacity, geoemtics and system layout and design. (RE) Prerequisite(s): 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. (RE) Corequisite(s): 471.

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. (RE) Prerequisite(s): 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. (RE) Prerequisite(s): 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. (RE) Prerequisite(s): 471.

480 Water and Waste Transport (3) Theory and design of water distribution systems and wastewater collection systems. (RE) Prerequisite(s): 390.

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

486 Air and Waste Management (3) Principles of air quality management, solid waste management and hazardous waste management. Review of regulations, environmental quality, transport of pollutants, and control technologies including treatment and disposal. (RE) Prerequisite(s): 390 or Chemistry 200.

490 Water Resources Engineering (3) Application of hydrologic/hydraulic principles for development of water resource project design and management of water resources; assessment of environmental impacts to surface water and groundwater; regulatory framework for water supply and water quality. (RE) Prerequisite(s): 395 or Biosystems Engineering 416.

Classics (257)

111 Beginning Latin (4) Credit Restriction: Not available to students eligible for 150.

112 Beginning Latin (4) Credit Restriction: Not available to students eligible for 150. (RE) Prerequisite(s): 111.

121 Beginning Greek (4) (RE) Prerequisite(s): 121.

122 Beginning Greek (4) (RE) Prerequisite(s): 121.

150 Latin Transition (4) Designed to prepare students for enrollment in 251. Credit Restriction: Since 150 is a review of elementary Latin, students who receive credit in this course may not also receive credit for any other 100-level Latin course and, therefore, also forfeit the 6 hours of elementary language credit awarded through placement examination. Comment(s): Placement exam required.

201 Introduction to Classical Civilization (3) Introductory survey of civilization of ancient Greece and Rome. Includes aspects of history, literature, art and archaeology, philosophy and religion. Writing-emphasis course. (CC)

221 Early Greek Mythology (3) Archaic Greek religion through comprehensive study of Greek myths with emphasis on how they reflect the early Greek vision of the universe and humanity’s place in it. Origins and development of Greek myths and the rise of organized religion, from Bronze Age to about 450 BC. Readings include Hesiod and Aeschylyus. Writing-emphasis course. (AH)

222 Classical Greek and Roman Mythology (3) Use of myth in literature, history, religion and philosophy of Greece and Rome from about 450 BC to about 350 AD. Two foci are the latter half of the 5th century BC and the last quarter of the 1st century BC. Includes oriental intrusions into Greece and Rome, including early Christianity. Readings include Sophocles, Euripides, Roman poetry, and modern scholarship. Writing-emphasis course. (AH)

232 Archaeology and Art of Ancient Greece and Rome (3) Survey from the earliest human presence in the Mediterranean to the end of the Roman Empire (c. 200,000 BC–AD 476). For prehistoric times emphasis on material remains and anthropological theory used to recreate the cultures of the Minoans, Mycenaeans, Dark Age Greeks, and Etruscans. For the historical Greek and Roman periods emphasis on developments in architecture, sculpture, vase painting, wall painting, mosaics, and minor arts. Relationship of art to society. Writing-emphasis course. (AH)

251 Intermediate Latin: Grammar Review and Readings (3) (CC) (DE) Prerequisite(s): 112 or 150 or placement exam.

252 Intermediate Latin: Vergil's Aeneid (3) (CC) (RE) Prerequisite(s): 251.

253 Greek and Roman Literature in English Translation (3) Major literature of ancient Greece from Homer to Tacitus. Writing-emphasis course. (AH)

261 Intermediate Greek: Grammar Review and Readings (3) Systematic review of Attic Greek and readings from selected authors. (CC) (RE) Prerequisite(s): 122.

264 Intermediate Readings in Greek (3) Content varies. (CC) (RE) Prerequisite(s): 261.

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

301 History of Early Greece (3) Greek history from the earliest human occupation of Greece to the Greek recovery after the Persian Wars, with an emphasis on the 8th-6th centuries BCE. Readings and discussion to include: Bronze Age Greece and Crete; economy and society in the early Iron Age; the emergence and evolution of the Greek city-state; social tensions and the development of classical democracy; ideologies of militarism, empire, and civil strife. Writing-emphasis course. (Same as History 301.)

302 History of Classical and Hellenistic Greece (3) Greek history from the Persian Wars to the Achaean War, with an emphasis on the 5th-4th centuries BCE. Readings and discussion to include: Classical Athens and Sparta; the Peloponnesian War; crises of the Greek city-states; the rise of Macedon; Alexander the Great and the expansion of the Greek world; monarchy; the rise of Rome in the eastern Mediterranean. Writing-emphasis course. (Same as History 302.)
303 History of the Roman Republic (3) (See History 303.)
304 History of the Roman Empire (3) (See History 304.)
305 History of the Late Roman Empire (3) (See History 305.)
351 Cicero and Sallust (3) (RE) Prerequisite(s): 252.
352 Roman Lyric Poetry (3) Poetry of Catullus, Horace, and the elegists. (RE) Prerequisite(s): 351.
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 8th and 5th 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 art is examined from the age of Homer to the 2nd century AD with emphasis on the role of women in the 5th century BC and Roman Italy in the 1st and 2nd centuries AD. Writing-emphasis course. (Same as Women’s Studies 383.)
401 Greek Poetry (3) Epic, lyric, drama. Authors vary. (RE) Prerequisite(s): 261.
402 Greek Prose (3) History, philosophy, and oratory. Authors vary. (RE) Prerequisite(s): 261.
405 Selected Readings from Greek Literature (3) For advanced students in Greek. The study of plays, the historical writings, the poetry of ancient Greece in the original Greek. Repeatability: May be repeated. Maximum 9 hours. (RE) Prerequisite(s): 261.
406 Selected Readings from Greek Literature (3) For advanced students in Greek. The study of plays, the historical writings, the poetry of ancient Greece in the original Greek. Repeatability: May be repeated. Maximum 9 hours. (RE) Prerequisite(s): 261.
414 Cicero and Techniques of Latin Prose Composition (3) For advanced students in Latin. Practice in prose composition, the writings of Cicero the model. (RE) Prerequisite(s): 351 or 352.
431 Selected Readings from Latin Literature (3) For advanced students in Latin. Oratory, historical writings, and poetry of ancient Rome in the original Latin. Repeatability: May be repeated. Maximum 9 hours. (RE) Prerequisite(s): 351 or 352.
432 Selected Readings from Latin Literature (3) For advanced students in Latin. Oratory, historical writings and poetry of ancient Rome in the original Latin. Repeatability: May be repeated. Maximum 9 hours. (RE) Prerequisite(s): 351 or 352.
435 Medieval Latin (3) Selected readings from the Latin prose and poetry of medieval Europe. (RE) Prerequisite(s): 351 or 352.
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 -- land and architecture -- 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. Repeatability: May be repeated. 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 Orientizing 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) Repeatability: May be repeated. Maximum 15 hours.
492 Off-Campus Study (1-15) Repeatability: May be repeated. Maximum 15 hours.
493 Independent Study (1-15) Repeatability: May be repeated. Maximum 15 hours.

College Scholars Honors (509)
317 College Scholars Seminar (1) Sequence (317 and 318) is required of all College Scholars each year and may be taken in any order. Grading Restriction: Satisfactory/No Credit grading only. Repeatability: May be repeated. Maximum 8 hours. Registration Restriction(s): College scholars major.
318 College Scholars Seminar (1) Sequence (317 and 318) is required of all College Scholars each year and may be taken in any order. Grading Restriction: Satisfactory/No Credit grading only. Repeatability: May be repeated. Maximum 8 hours. Registration Restriction(s): College scholars major.
491 College Honors: Foreign Study (1-15) Repeatability: May be repeated. Maximum 15 hours. Registration Restriction(s): College scholars major.
492 College Honors: Off-Campus Study (1-15) Repeatability: May be repeated. Maximum 15 hours. Registration Restriction(s): College scholars major.
493 College Honors: Independent Study (1-15) Repeatability: May be repeated. Maximum 15 hours. Registration Restriction(s): College scholars major.
498 Honors: College Scholars Studies (2-12) Designed for College Scholars working on senior thesis, project, or performance. Repeatability: May be repeated. Maximum 16 hours. Registration Restriction(s): College scholars major.

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.

Communication Studies (250)
201 Introduction to Communication Studies (3) Fundamental theories and practices with particular reference to interpersonal, group, organizational, and public communication. (RE) Prerequisite(s): Communication and Information 150.
207 Honors: Introduction to Communication Studies (3) Analysis and exploration of the fundamental theories and practices in communication studies. (RE) Prerequisite(s): 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. (RE) Prerequisite(s): 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 Intercollegiate Forensics (1) For students actively participating in intercollegiate debate. 
Repeatability: May be repeated. Maximum 4 hours.

272 Intercollegiate Forensics (1) For students actively participating in intercollegiate debate. 
Repeatability: 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.

340 Research Methods in Communication Studies (3) Survey of contemporary methods used for research in communication studies. Emphasis on interpreting and evaluating communication research reports. 
(RE) Prerequisite(s): 201 or 207. 
(RE) Corequisite(s): Mathematics 115 or Statistics 201.

350 Communication Theory (3) Analysis and critique of foundational theories with particular reference to interpersonal, group, organizational, and public communication. 
(RE) Prerequisite(s): 201 or 207. 
(DE) Prerequisite(s): 340.

371 Intercollegiate Forensics (1) For students actively participating in intercollegiate debate. 
Repeatability: May be repeated. Maximum 4 hours.

372 Intercollegiate Forensics (1) For students actively participating in intercollegiate debate. 
Repeatability: May be repeated. Maximum 4 hours.

397 Honors Seminar (1) 
Comment(s): Required of students enrolled in the Honors program.

400 Topics in Communication Studies (3) 
Repeatability: May be repeated. Maximum 6 hours. 
Comment(s): Topics, scope of subject matter, and prerequisites to be determined by department.

407 Honors Seminar (3) In-depth survey of communication research topics. Topics rotate among health, interpersonal, organizational and team, and public communication. 
Repeatability: 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. 
Grading Restriction: Satisfactory/No Credit grading only. 
Repeatability: May be repeated. Maximum 6 hours. 
Registration Restriction(s): Communication studies major; 3.0 GPA; minimum student level – junior.

450 Propaganda (3) Study of political, commercial, and social propaganda in the 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 and proposal deadlines available in school office. 
Repeatability: May be repeated. Maximum 6 hours. 
Credit Restriction: Maximum of 3 hours may be applied to the major. 
Registration Restriction(s): 2.75 GPA; minimum student level – junior.

492 Off-Campus Study (1-15) 
Repeatability: May be repeated. Maximum 15 hours. 
Registration Restriction(s): 3.0 GPA; minimum student level – junior.

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 and proposal deadlines available in school office. 
Repeatability: May be repeated. Maximum 6 hours. 
Credit Restriction: Maximum of 3 hours may be applied to the major. 
Registration Restriction(s): 3.0 GPA; minimum student level – junior.

497 Senior Honors Thesis (3) Required of students enrolled in the Honors program.

498 Senior Honors Thesis (3) Required of students enrolled in the Honors program.

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. 
(RE) Prerequisite(s): 201 or 207. 
(DE) Prerequisite(s): 340 and 350. 
Recommended Background: 12 or more hours of communication studies courses. 
Registration Restriction(s): Minimum student level – senior.

Comparative and Experimental Medicine – Graduate School of 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. 
Grading Restriction: Satisfactory/No Credit grading only. 
Repeatability: May be repeated with consent. Maximum 9 hours.

Comparative Literature (260)

202 Cross-Cultural Perspectives in World Literature (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 Special Topics in Comparative Literature (3) 
Repeatability: May be repeated. Maximum 9 hours.

402 Special Topics in Comparative Literature (3) Content varies. 
Repeatability: 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 (1-6) 
Repeatability: May be repeated. Maximum 6 hours.

492 Off-Campus Study (1-6) 
Repeatability: May be repeated. Maximum 6 hours.

493 Independent Study (1-6) 
Repeatability: May be repeated. Maximum 6 hours.
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. (QR)
   Contact Hour Distribution: 2-hour lab required.
   Credit Restriction: May not be applied toward the computer science major or minor.

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. (QR)
   Credit Restriction: Students who have received credit for 140 or 160 may not receive credit for 102 without consent of instructor.

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

291 Lower-Division Special Topics (1-3) Topics vary. Programming languages, operating systems and application software packages.
   Repeatability: 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/at/,ed/sed, awk, perl, python, make, rcs, jgraph, gcc/cpp/purify/quantify.
   Grading Restriction: Satisfactory/No Credit grading only.
   (RE) Prerequisite(s): 140.

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

311 Discrete Structures (3) Equivalence relations, partial orderings. Combinations, permutations, analysis of algorithms. Finite automata and regular languages.
   (RE) Prerequisite(s): 140 and Mathematics 300.
   (DE) Prerequisite(s): 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.
   Contact Hour Distribution: 3-hour lab required.
   (RE) Prerequisite(s): 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.
   Contact Hour Distribution: 2-hour lab required.
   Credit Restriction: Does not fulfill any requirements for the computer science major.
   (RE) Prerequisite(s): Mathematics 142.

360 Systems Programming (3) Introduction to user-level systems programming, file control, process control, memory management, system utilities, network programming.
   Contact Hour Distribution: 3-hour lab required.
   (RE) Prerequisite(s): 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.
   (RE) Prerequisite(s): 302.
   Registration Restriction(s): 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.
   Contact Hour Distribution: 3-hour lab required.
   Credit Restriction: Students may not receive credit for both Computer Science 370 and Mathematics 371.
   (RE) Prerequisite(s): 140 and Mathematics 251.
   (DE) Prerequisite(s): 160.

370 Theory of Computation (3) Countability and diagonalization. Finite automata and regular sets. Push-down automata and context-free languages. Introduction to Turing machines and undecidability. (RE) Prerequisite(s): 311.

   Registration Restriction(s): Minimum student level – senior.

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.
   Repeatability: May be repeated. Maximum 9 hours.
   Recommended Background: Completion of core courses.

430 Advanced Topics in Hardware Systems (3) Topics such as architecture, parallel processors, microprogramming, networks and communications. Emphasis on faculty research.
   Repeatability: May be repeated. Maximum 9 hours.
   Recommended Background: Completion of core courses.

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.
   Repeatability: May be repeated. Maximum 9 hours.
   Recommended Background: Completion of core courses.

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.
   Repeatability: May be repeated. Maximum 9 hours.
   Recommended Background: Completion of core courses.

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.
   Repeatability: May be repeated. Maximum 9 hours.
   Recommended Background: Completion of core courses.

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.
   Repeatability: May be repeated. Maximum 15 hours.
   Credit Restriction: Maximum of 6 hours may be applied to the major.
   Registration Permission: Consent of instructor.

494 Special Topics in Computer Science (1-3)
   Repeatability: 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.
   Grading Restriction: Satisfactory/No Credit grading only.
   Repeatability: May be repeated. Maximum 6 hours.

206 Facilitation of Technical Work Teams (3) Psychological and cultural dynamics of technical work team performance. Supervised experience in leading work teams.
   Grading Restriction: Letter grade only.
   Registration Restriction(s): Students in the College of Engineering; minimum student level – sophomore.

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.

   Grading Restriction: Letter grade only.
   Registration Restriction(s): Students in the College of Engineering; minimum student level – sophomore.

404 Special Topics (1-3) Instructor initiated course offered at convenience of the department on various topics of current interest.
   Repeatability: 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.

### Dance (274)

- **101 Practicum: Dance Production (1)** Supervised technical and promotional production aspects of university dance company.
  - **Repeatability:** May be repeated. Maximum 2 hours.
- **201 Practicum: Dance Performance (1-2)** Preparation and presentation of university dance company performances.
  - **Repeatability:** May be repeated. Maximum 16 hours.
  - **Comment(s):** Audition required.
- **210 Ballet: Level I (2)** Instruction and practice in elementary classical ballet techniques.
  - **Repeatability:** May be repeated. Maximum 4 hours.
- **220 Jazz: Level I (2)** Instruction and practice in elementary jazz dance styles and techniques.
  - **Repeatability:** May be repeated. Maximum 4 hours.
- **230 Modern: Level I (2)** Instruction and practice in elementary modern dance techniques.
  - **Repeatability:** May be repeated. Maximum 4 hours.
- **240 Tap: Level I (2)** Instruction and practice in elementary tap dance techniques.
  - **Repeatability:** May be repeated. Maximum 4 hours.
- **310 Ballet: Level II (2)** Instruction and practice in intermediate classical ballet techniques.
  - **Repeatability:** May be repeated. Maximum 12 hours.
- **320 Jazz: Level II (2)** Instruction and practice in intermediate jazz dance styles and techniques.
  - **Repeatability:** May be repeated. Maximum 12 hours.
- **330 Modern: Level II (2)** Instruction and practice in intermediate modern dance styles and techniques.
  - **Repeatability:** May be repeated. Maximum 12 hours.
- **340 Tap: Level II (2)** Instruction and practice in intermediate tap dance techniques.
  - **Repeatability:** May be repeated. Maximum 12 hours.
- **380 Special Topics (1-3)** Selected disciplinary or professional areas of dance.
  - **Repeatability:** May be repeated.
- **410 Ballet: Level III (2)** Instruction and practice in advanced classical ballet techniques.
  - **Repeatability:** May be repeated. Maximum 16 hours.
- **415 Teaching Creative Dance for Children (2)** Theory, methods, materials and practical experience in the presentation and integration of creative dance in grades K-6. A mini-teaching experience is involved in this class.
- **420 Jazz: Level III (2)** Instruction and practice in advanced jazz and musical theater dance styles and techniques.
  - **Repeatability:** May be repeated. Maximum 16 hours.
- **430 Modern: Level III (2)** Instruction and practice in advanced modern dance techniques.
  - **Repeatability:** May be repeated. Maximum 16 hours.
- **440 Composition I (2)** Choreographic skills emphasizing the basic techniques and concepts of dance composition. This course focuses on the choreography of solos and duets.
  - **Recommended Background:** Minimum of 4 hours of 310, 320, 330, 340, 410, 420, 430.
- **445 Composition II (2)** Choreographic skills emphasizing the advanced techniques and concepts of dance composition. This course will focus on the choreography of group works and the technical aspects of production.
  - **(RE Corequisite(s):)** 440.
- **480 Dance History through the 19th Century (3)** Survey of the dance of various societies and cultures from pre-history through the 19th century.
- **493 Directed Independent Studies (1-3)** Independent study in a specialized area with dance.
  - **Repeatability:** May be repeated. Maximum 9 hours.
- **495 Dance Pedagogy (3)** Principles and methods of the teaching of dance with practical application in a mini-teaching experience.
  - **Registration Restriction(s):** Minimum student level – junior.

### Ecology and Evolutionary Biology (278)

- **202 Ecology and Evolutionary Biology Colloquium (1)** Weekly discussions of current topics in ecology, behavior, and evolutionary biology including undergraduate research and career opportunities, for declared and potential departmental majors. Course familiarizes students with the contemporary research and with its applications and introduces them to departmental faculty and resources.
  - **Grading Restriction:** Satisfactory/No Credit grading only.
  - **(DE) Prerequisite(s):** Biology 130 or Biology 101 and 102 or Biology 111 and 112.
- **240 Human Anatomy (4)** Gross and microanatomy of the human.
  - **Credit Restriction:** May not be applied toward the ecology and evolutionary biology concentration.
  - **Contact Hour Distribution:** 3 hours lecture and 3 hours lab.
  - **(DE) Prerequisite(s):** Biology 130 or Biology 101 and 102 or Biology 111 and 112.
- **304 Socio-Economic Impact of Plants (3)** Significance of plants in origin and development of human cultures, evolution of cultivated plants, and role of plants in present civilization.
  - **Contact Hour Distribution:** Includes occasional field trips.
  - **Credit Restriction:** May not be applied toward the ecology and evolutionary biology concentration.
- **305 Evolution and Society (3)** Issues and controversies surrounding the teaching and learning of evolution in America today. Writing-emphasis course. (Same as Anthropology 305.)
  - **Credit Restriction:** May not be applied toward the ecology and evolutionary biology concentration.
  - **(DE) Prerequisite(s):** Biology 130 or Biology 101 and 102 or Biology 111 and 112 or Anthropology 110.
- **309 Biology of Human Affairs (3)** Current topics in biology and their public relevance, especially the interaction between biology and government. Issues include conservation, health, agriculture, national parks, population, etc.
- **330 Field Botany (3)** Principles of taxonomy, basic ecological concepts and identification, recognition, collection and preservation of local, native and naturalized plants.
  - **(RE) Prerequisite(s):** Biology 140.
- **360 Comparative Invertebrate Biology (4)** Origins, phylogeny and functional anatomy of invertebrates with emphasis on diversity of life forms and adaptations to specific local environments.
  - **Contact Hour Distribution:** 2 hours and 2 labs.
- **370 Ethology and Sociobiology (3)** Basic concepts in the evolutionary approach to behavior, including applications to psychology, the social sciences, and the humanities. (Same as Psychology 370.)
- **400 Undergraduate Research (1-2)** Research projects under supervision of faculty.
  - **Repeatability:** May be repeated. Maximum 8 hours.
  - **Credit Restriction:** Maximum of 4 hours may be applied toward the biological sciences major.
  - **Registration Permission:** Consent of instructor.
- **402 Practicum in Ecology and Evolutionary Biology (2)** Participation in individualized practical applications of ecology, behavior, and evolutionary biology in community, government, and industry.
  - **(DE) Prerequisite(s):** Biology 240 and Biology 250.
  - **Registration Permission:** Consent of instructor.
- **407 Senior Honors Thesis (3)** Written preparation and oral presentation of faculty-supervised student research.
  - **(RE Prerequisite(s):)** 400.
  - **Registration Restriction(s):** Biological sciences major/honors ecology and evolutionary biology concentration.
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).

(DE) Prerequisite(s): Biology 102 or Biology 111 or Biology 130.

411 Minicourse in Ecology and Evolutionary Biology (2) Selected advanced topics in ecology, behavior, and evolutionary biology, concentrated in time and subject matter.
Repeatable: May be repeated. Maximum 4 hours.
Credit Restriction: Maximum 4 hours may be applied toward the departmental major.
Comment(s): See Timetable for prerequisite(s).

412 Minicourse in Ecology and Evolutionary Biology (2) Selected advanced topics in ecology, behavior, and evolutionary biology, concentrated in time and subject matter.
Repeatable: May be repeated. Maximum 4 hours.
Credit Restriction: Maximum of 4 hours may be applied toward the departmental major.
Comment(s): See Timetable for prerequisite(s).

414 Plant Anatomy (3) Cells, tissues and organs, their development in vegetative and reproductive structures of vascular plants. Emphasis on seed plants.

(DE) Prerequisite(s): Biology 111 and 112 or Biology 130 and 140.

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, nonscience, 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. (Same as Philosophy 419.)
Recommended Background: Introductory science or philosophy course.

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. Includes periodic field trips or laboratories.

(RE) Prerequisite(s): Biology 250.

433 Plant Ecology (3) Interactions between individuals, species, communities and their environments. Circulation of energy and matter in ecosystems. Includes weekly field trips or laboratory periods and at least two weekend field trips.

(RE) Prerequisite(s): Biology 250.

446 Introduction to Oceanography (4) Basic oceanography, including physical, chemical, geological and biological processes and patterns. Emphasis on oceanic sub-systems such as upwellings, polar oceans, hydrothermal vents, gyres, coral reefs, estuaries, and coastal regions. Field trip to coast required.

(RE) Prerequisite(s): Chemistry 130 and Biology 250.

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. (Same as Psychology 459.)

(RE) Corequisite(s): 450.


Contact Hour Distribution: 3 hours lecture and 2 hours lab/discussion.

(RE) Prerequisite(s): Biology 240.

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

(RE) Prerequisite(s): Biology 240.

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.

Contact Hour Distribution: 2 hours and 2 labs.

(ER) Prerequisite(s): Biology 140.

470 Aquatic Ecology (3) Introduction to the physico-chemical nature of inland waters with description of biotic communities and their interrelations.

Contact Hour Distribution: 2 hours and 1 lab.

(ER) Prerequisite(s): Chemistry 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.

Contact Hour Distribution: 2 hours and 2 labs.

(ER) Prerequisite(s): Biology 250.

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

(ER) Prerequisite(s): Biology 250.

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

(ER) Prerequisite(s): Biology 240 and Biology 250.

490 Undergraduate Seminar (1) Student oral presentations of topics related to developmental and working concepts of ecology and evolution.
Repeatable: May be repeated. Maximum 2 hours.
Registration Restriction: (S) Biological sciences major; minimum student level -- junior.

493 Independent Study (1-9) Independent study under the direction of a faculty member.
Repeatable: May be repeated. Maximum 9 hours.

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.

Credit Restriction: Students may not receive credit for both 495 and 595.

(ER) Prerequisite(s): Biology 250.

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.

(ER) Prerequisite(s): 201 or 207.

300 Special Topics I (3) Variable topics treated at the introductory level.

(ER) Prerequisite(s): 201 or 207.

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

Credit Restriction: Students may not receive credit for both Economics 311 and 312.

(ER) Prerequisite(s): 201 and Statistics 201.

312 Managerial Economics (3) Microeconomic fundamentals of managerial decision-making and strategy intended for business students. Topics include supply and demand interactions, production and cost, consumer behavior and demand, optimization, market structure, pricing strategy, risk and uncertainty, and game theory.

Credit Restriction: Students may not receive credit for both Economics 311 and 312.

(ER) Prerequisite(s): 201 and Statistics 201.

Registration Restriction: Majors in the College of Business Administration.

313 Intermediate Macroeconomics (3) Measurement of income and prices, aggregate demand, output, employment, price determination, inflation, business fluctuations, fiscal and monetary policies and growth.

(ER) Prerequisite(s): 201 and Statistics 201.

322 The Global Economy: Trade and Development (3) Analyses of international trade and finance, and their effects on economic development.
Course utilizes a policy-oriented approach drawing upon introductory economic principles. Overview of relevant topics such as theories of economic development, poverty and income inequality, comparative advantage and commodity composition of trade, regional economic integration, foreign investment, finance, and debt. Writing-emphasis course.

Credit Restriction: Students may not receive credit for both Economics 322 and 329.

(ER) Prerequisite(s): 201 or 207.
329 International Economics for Business (3) 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. Credit Restriction: Students may not receive credit for both 322 and 329. (RE) Prerequisite(s): Business Administration 361. Comment(s): Students must be in the international business collateral or dual concentration. Registration Restriction(s): Majors in the College of Business Administration.

331 Government and Business (3) Antitrust and regulatory economics. Problems in regulation and social control of business organization, oligopoly models. Writing-emphasis course. (RE) Prerequisite(s): 201 or 207.

333 Law and Economics (3) Analysis of legal decisions and rulings as they affect the allocation and distribution of resources in the economy. Topics include property law, contracts, torts and administrative law, with applications drawn from various areas in economics and case law. Writing-emphasis course. (RE) Prerequisite(s): 201 or 207.


361 Regional and Urban Economics (3) Overview of regional differences. Theory of industrial and agricultural location and human migration, economic basis for land use patterns, central places, and urban form, regional and urban structure, growth, and methods of analysis, examination of urban problems. Writing-emphasis course. (RE) Prerequisite(s): 201 or 207.

362 Environmental and Natural Resource Policy (3) Application of introductory microeconomic principles to contemporary environmental and natural resource policy issues such as air pollution, global climate change, population growth, forest management, and endangered species protection. Writing-emphasis course. (RE) Prerequisite(s): 201 or 207.

371 Public Finance: Expenditure Analysis (3) Problems of collective consumption, external effects, public investment, social decision making. Writing-emphasis course. (RE) Prerequisite(s): 201 or 207.

381 Introduction to Econometrics (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. (RE) Corequisite(s): 311 or 313.

400 Special Topics II (3) Variable topics for advanced students. (RE) Prerequisite(s): 311 and 313. Registration permission: Consent of instructor.

413 Macroeconomics: Business Cycles and Growth (3) Analysis of macroeconomic short-run fluctuations and long-term growth. Coverage will also include the role of monetary and fiscal policy on aggregate output, employment, and interest rates. (RE) Prerequisite(s): 313.

421 International Economics (3) Balance of payments, exchange rate determination, monetary and fiscal policies, monetary arrangements, comparative advantage, tariff and nontariff trade distortions, protectionist arguments, and regional integration, with analyses based upon intermediate-level economic theory. (RE) Prerequisite(s): 311.

435 Industrial Organization (3) Monopoly and competition in United States economy, interrelationship of market structure, business behavior, and economic performance. (RE) Prerequisite(s): 311.

436 Economic Health and Health Care (3) Medical care and health status; demand for medical care and insurance; physician and hospital supplies; government provision of services and insurance; regulation of health care markets. Writing-emphasis course. (RE) Prerequisite(s): 311.

441 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. (RE) Prerequisite(s): 311.

463 Environmental Economics (3) Economic foundations for public decision-making about environmental resources, utilizing tools from intermediate microeconomic theory. Emphasis on the welfare economic approach for the provision of public goods, with specific emphasis on market failure, externalities, benefit-cost analysis, and methods for valuing environmental resources and human health. (RE) Prerequisite(s): 311.

472 Public Finance: Taxation and Fiscal Federalism (3) Analysis of federal, state, and local government revenue systems, to include individual and corporate income, sales, and property taxes and other tax and non-tax revenue sources. Consideration of current policy issues and relations among various levels of government. (RE) Prerequisite: 311.

482 Introduction to Mathematical Economics (3) Application of basic mathematical tools (e.g., calculus, matrix algebra, etc.) to major topics of economic theory. (RE) Prerequisite(s): 311. Comment(s): Grade of B or better in 311 is required.

492 Economics Off-Campus Study (1-3) Internship or other supervised economics experience with firm, government agency or other relevant organization. Student must seek approval from a faculty member prior to starting work, register for credit in the first semester following work completion, and write a paper describing the economic nature of the work performed. Graduation Restriction: Satisfactory/No Credit grading only. Repeatability: May be repeated. Maximum 3 hours. (RE) Prerequisite(s): 311 and 313. Registration Restriction(s): Economics major. Registration Permission: Consent of faculty member.

493 Independent Study (1-3) Directed research on subjects of mutual interest to student and faculty member. Student must meet with the faculty member before registering. Repeatability: May be repeated. Maximum 3 hours. (RE) Prerequisite(s): 311 and 313. Comment(s): GPA of 3.0 or better in economics courses required. Registration Restriction(s): Economics major. Registration Permission: Consent of faculty member.

498 Honors Thesis (3) Completion of undergraduate thesis. Registration Restriction(s): Honors economics concentration. Registration Permission: Consent of faculty advisor.

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. (RE) Prerequisite(s): 311 and 313. Recommended Background: 9 or more hours of upper-division economics courses. Registration Restriction(s): Economics major.

Education (285)

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. Repeatability: 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.


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.
COURSES OF INSTRUCTION

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.

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.

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.

(Re) Prerequisite(s): 223.

335 Interpreting Techniques (3) Introduces students to linguistic techniques to enhance interpreting performance. Introduction of translation techniques that form the basis for interpreting. Students will practice intralingual technique designs to improve English and ASL skills.


345 Interpreting in Educational Settings (4) Covers issues related to working with deaf and hard of hearing children in mainstream programs. Examines interpreter roles and responsibilities within the classroom setting. Practicum experiences.

350 Voice to Sign Interpretation (3) Interpreting from English to sign language 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.

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. Selecting appropriate to the context. Attention is also given to cross-cultural considerations.

431 American Sign Language III (Sequence 431-432) 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.

(Re) Prerequisite(s): 226.

432 American Sign Language IV (Sequence 431-432) 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.

(Re) Prerequisite(s): 431.

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.

(Re) Prerequisite(s): 431.

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.

Grading Restriction: 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: Applications in Educational Psychology (2) Application of concepts, principles, techniques and models from educational psychology to facilitate student learning and creation of effective classroom environments.

Registration Restriction(s): Qualification – admission to teacher education.

404 Special Topics (1-3) Instructor initiated course offered at convenience of the department on various topics of current interest.

Repeatability: 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.

Recommended Background: Introductory course in psychology.

493 Independent Study (1-15) Independent investigation of problems in educational and counseling psychology.

Repeatability: 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 within procedures and data, and programming in a modern computer language. Includes Level 1 design projects which require laboratory work.

255 Introduction to Logic Design of Digital Systems (4) Standard codes, number systems, base conversions and computer arithmetic. Boolean algebra, minimization and synthesis techniques for combinational and sequential logic. Use of VHDL for logic synthesis. Implementation of circuits using SSI, MSI and LSI components. 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, resistance, conductance, capacitance and inductance analyzed using mesh and nodal analysis, superposition and source transformation, Norton 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 experiments.

Registration Permission: Consent of associate department head.

301 Circuits and Electro Mechanical Components (3) DC and AC circuits, transistors, transformers, motors, generators.

(Re) Prerequisite(s): Physics 231 and Mathematics 231.

302 Electronics and Computer Circuits (3) Analog circuits, operational amplifiers, digital systems and logic circuits, semiconductor devices.

(Re) Prerequisite(s): 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.

(Re) Prerequisite(s): Mathematics 231.


(Re) Prerequisite(s): 300.

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.

(Re) Prerequisite(s): 315.


(Re) Prerequisite(s): 300.

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 diode switching and rectifier circuits; basic transistor switching circuits and single stage amplifiers; electronic circuit simulation using SPICE Chemical Engineering. Includes 1-credit laboratory work involving Level 1 design projects.

(Re) Prerequisite(s): 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. (DE) Prerequisite(s): 335. (RE) Corequisite(s): 315.

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

342 Analog Communication Amplifier and Frequency Modulation (3) Probability and random variables, signal-to-noise ratio, propagation models, link budget analysis, bandpass signals, amplitude modulation, frequency modulation, spread-spectrum. Includes Level 1 design projects which require laboratory experiments. (RE) Prerequisite(s): 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. (RE) Prerequisite(s): 315.

382 Power Electronic Circuits (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. (RE) Prerequisite(s): 315.

422 Power System Operations and Planning (3) Dynamic phenomena in power systems. Transient stability assessment and enhancement; direct and indirect methods for stability determination in nonlinear systems. Operations planning, unit commitment, economic dispatch, frequency regulation and automatic generation control. Volt-var control, load management, cogeneration and other topics of contemporary concern. Includes Level 1 design projects. (RE) Prerequisite(s): 316.

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. (RE) Prerequisite(s): 421.

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. Level 2 design projects require laboratory work. (RE) Prerequisite(s): 411.

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 techniques. Includes Level 1 design projects. (RE) Prerequisite(s): 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. (RE) Prerequisite(s): 316 and 341. (DE) Prerequisite(s): 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 shielding. Conductors and circuit elements. Radiated and conducted emissions and susceptibility. Crosstalk, shielding, electrostatic discharge, and EMG regulations. Includes Level 1 design projects which require laboratory work. (RE) Prerequisite(s): 316 and 341. (RE) Prerequisite(s): 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, and interfacing. Includes Level 1 design projects which require laboratory work. (RE) Prerequisite(s): 355.

452 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. (RE) Prerequisite(s): 356.

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. (RE) Prerequisite(s): 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. (RE) Prerequisite(s): 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. (RE) Prerequisite(s): 356.

472 Introduction to Digital Image Processing (3) Basic methods for digitizing, storing, processing, and displaying images. Computational procedures for image enhancement, restoration, coding, and segmentation. Includes Level 1 design projects. (RE) Prerequisite(s): 356.

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

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

491 Special Topics (3) Topics relating to basic design and current practice. Includes Level 1 or Level 2 design projects which may require laboratory work. Repeatability: May not be repeated for credit. Course may not be repeated to satisfy senior requirements for graduation.

495 Senior Seminar (1) Current topics in electrical engineering. Repeatability: May not be repeated for credit.
### 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. Techniques for planning to both fields including inquiry, multisensory activities and group approaches.
  - **Registration Restriction(s):** Qualification – admission to teacher education.

### Teaching Language Arts/Reading in Elementary and Middle Schools (3)

- **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.
  - **Registration Restriction(s):** Qualification – admission to teacher education.

### Laboratory and Field Studies in Elementary Education (1-2)

- **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.
  - **Grading Restriction:** Satisfactory/No Credit grading only.
  - **Repeatability:** May be repeated. Maximum 3 hours.
  - **(RE) Corequisite(s):** 422.
  - **Registration Restriction(s):** Qualification – admission to teacher education.

### 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.
  - **(RE) Corequisite(s):** 422.
  - **Registration Restriction(s):** Qualification – admission to teacher education.

### Elementary and Middle School Science and Social Studies Instruction (3)

- **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.
  - **Comment(s):** Not open to students with recent course or background in teaching science and/or social studies.
  - **Registration Restriction(s):** Qualification – admission to teacher education.

### Elementary and Middle School Teaching Methods I (6)

- **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. Must be taken prior to professional internship year.
  - **Registration Restriction(s):** Qualification – admission to teacher education.

### Studies in Elementary Education (1-3)

- **424 Studies in Elementary Education (1-3)** Variable topics on teaching in Elementary (K-3), Middle Elementary (4-8), and Skills (K-8).
  - **Repeatability:** May be repeated. Maximum 8 hours.
  - **Registration Restriction(s):** Qualification – admission to teacher education.
  - **Registration Permission:** Consent of instructor.

### Language Arts/Reading Instruction in Elementary and Middle Schools (3)

- **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).
  - **Comment(s):** Not open to students with recent course in language arts methods.
  - **Registration Restriction(s):** Qualification – admission to teacher education.

### Early Childhood Education: Program Development and Teaching in Kindergarten (3)

- **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.
  - **Registration Restriction(s):** Qualification – admission to teacher education.

### Engineering Fundamentals (323)

- **100 Engineering Skills Development (1-3)** Exercises in the skills and tools essential to the practice of engineering.
  - **Grading Restriction:** Satisfactory/No Credit grading only.
  - **Repeatability:** May be repeated.
  - **Credit Restriction:** May not be applied toward any engineering degree.
  - **Registration Permission:** Consent of instructor.

### Computer Methods in Engineering Problem Solving (1)

- **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.
  - **(RE) Corequisite(s):** 151 or 157.
  - **Comment(s):** 153 is an acceptable corequisite for transfer students.

### Physics for Engineers I (4)

- **151 Physics for Engineers I (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.
  - **Grading Restriction:** A, B, C, No Credit grading.
  - **(RE) Corequisite(s):** Mathematics 141.
  - **Comment(s):** A higher level math course in the engineering curriculum is an acceptable corequisite.

### Physics for Engineers II (4)

- **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.
  - **(RE) Prerequisite(s):** 151.
  - **(RE) Corequisite(s):** Mathematics 142.

### Introduction to Engineering (2)

- **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, team work and design through individual and team projects. Oral and written reports required.
  - **Recommended Background:** Advanced placement or transfer credit for calculus-based mechanics physics.

### Honors: Physics for Engineers I (4)

- **157 Honors: Physics for Engineers I (4)** Honors version of 151 for well-prepared students.
  - **Grading Restriction:** Satisfactory/No Credit grading.
  - **(RE) Corequisite(s):** Mathematics 141.
  - **Comment(s):** A higher level math course in the engineering curriculum is an acceptable corequisite.

### Honors: Physics for Engineers II (4)

- **158 Honors: Physics for Engineers II (4)** Honors version of 152.
  - **(RE) Corequisite(s):** Mathematics 142.
  - **Comment(s):** A higher level math course in the engineering curriculum is an acceptable corequisite.

### Computer Solution of Engineering Problems (2)

- **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.
  - **(RE) Prerequisite(s):** 151.

### Computer Solution of Engineering Problems (2)

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

### Engineering Career Planning and Placement (1)

  - **Grading Restriction:** Satisfactory/No Credit grading only.

### Fundamentals of Engineering (1)

- **402 Fundamentals of Engineering (1)** 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.
  - **(RE) Prerequisite(s):** 151.

### English (339)

- **101 English Composition I (3)** Intensive instruction in writing, focusing on analysis and argument. Strategies for reading critically, analyzing texts from diverse perspectives, developing substantive arguments through systematic revision, addressing specific audiences, integrating sources, and expressing ideas with clarity and correctness. (WC)
  - **Grading Restriction:** A, B, C, No Credit grading.
  - **Comment(s):** Mechanical, aerospace, biomedical engineering majors must enroll for letter grade.

### English (339)

- **102 English Composition II (3)** Advancing concepts introduced in English 101, intensive writing instruction focused on inquiry and research. Strategies for formulating and investigating questions, locating and evaluating information, using varied sources and research methods, developing positions on intercultural and interdisciplinary issues from diverse texts (print, digital, and multimedia), and presenting research using appropriate rhetorical conventions. (WC)
  - **Grading Restriction:** A, B, C, No Credit grading.
  - **(RE) Prerequisite(s):** 101.
  - **Comment(s):** Students wishing additional help with writing should also register for English 103.

### English (339)

- **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 450/800), Individual instruction in mechanics, paragraph development and essay structure.
  - **Credit Restriction:** To receive credit, students must participate at least two hours per week and must also pass the 101 class in which they are currently enrolled.
  - **(RE) Corequisite(s):** 101.
COURSES OF INSTRUCTION

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. Grading Restriction: Satisfactory/No Credit grading only. (RE) Prerequisite(s): 102. (RE) Corequisite(s): 102.

118 Honors: English Composition (3) 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. Grading Restriction: A, B, C, No Credit grading. (RE) Prerequisite(s): 102 or 118. (RE) Corequisite(s): 102. Registration Restriction(s): 3.25 GPA.

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. Contact Hour Distribution: Meets 4 hours a week. Comment(s): Admission by English placement exam. Required of all non-native English-speaking students who demonstrate on the English Placement Examination a need for work in English structures, reading, or writing. (AH) (RE) Prerequisite(s): 101 or 131. (AH) Registration Restriction(s): 3.25 GPA. Comment(s): ACT English and composite scores at or above 28 required.

201 British Literature I: Beowulf through Johnson (3) Major literary works from three periods – Middle Ages, Renaissance and Restoration, and 18th century. Writing-emphasis course. (AH) (RE) Prerequisite(s): 102 or 118. (AH) Grading Restriction: A, B, C, No Credit grading. Comment(s): Admission by English placement exam.


206 Introduction to Shakespeare (3) An overview of Shakespeare’s world and his work. (AH) (WC) (RE) Prerequisite(s): 102 or 118. (AH) Registration Restriction(s): 3.25 GPA.

207 Honors: British Literature I (3) Enriched section of 201. (AH) (RE) Prerequisite(s): 101 or 118. (AH) Registration Restriction(s): 3.25 GPA.

208 Honors: British Literature II (3) Enriched section of 202. (AH) (RE) Prerequisite(s): 102 or 118. (AH) Registration Restriction(s): 3.25 GPA.

211 Literature of the Western World I: Ancient, Medieval, and Renaissance (3) Writing-emphasis course. (AH) (RE) Prerequisite(s): 102 or 118. (AH) (WC)

221 Literature of the Western World II: Enlightenment, Romantic, and Modern (3) Writing-emphasis course. (AH) (RE) Prerequisite(s): 102 or 118. (AH) (WC)

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) (RE) Prerequisite(s): 102 or 118. (AH) (WC)

232 American Literature II: Civil War to the Present (3) Development of American literature from Civil War to the present. Writing-emphasis course. (AH) (RE) Prerequisite(s): 102 or 118. (AH) (WC)

233 Major Black Writers (3) Black American literature as a literary tradition. Writing-emphasis course. (Same as Africana Studies 233.) (AH) (RE) Prerequisite(s): 102 or 118. (AH) (WC)

237 Honors: American Literature I: Colonial Era to the Civil War (3) Enriched section of 231. (AH) (RE) Prerequisite(s): 102 or 118. (AH) Registration Restriction(s): 3.25 GPA.

238 Honors: American Literature II: Civil War to the Present (3) Enriched section of 232. (AH) (RE) Prerequisite(s): 102 or 118. (AH) Registration Restriction(s): 3.25 GPA.

251 Introduction to Poetry (3) Poetry as a distinct mode of artistic expression. Critical tools for perceptive reading of poems. Writing-emphasis course. (AH) (RE) Prerequisite(s): 102 or 118. (AH) (WC)

252 Introduction to Drama (3) Critical tools for perceptive reading of plays. Writing-emphasis course. (AH) (RE) Prerequisite(s): 102 or 118. (AH) (WC)

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) (RE) Prerequisite(s): 102 or 118. (AH) (WC)

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. See Timetable for topics. Writing-emphasis course (AH) (WC) (RE) Prerequisite(s): 102 or 118. (AH) (WC)

255 Business and Technical Writing (3) Principles of written communication in science and business. (WC) (RE) Prerequisite(s): 102 or 118. (WC)

295 Business and Technical Writing (3) Principles of written communication in science and business. (WC) (RE) Prerequisite(s): 102 or 118. (WC)

300 British Culture to 1660 (3) Major literary works from three periods – Middle Ages, Renaissance and Restoration, and 18th century. Writing-emphasis course. (AH) (RE) Prerequisite(s): 102 or 118. (AH) Grading Restriction: A, B, C, No Credit grading. Comment(s): Admission by English placement exam. Required of all non-native English-speaking students who demonstrate on the English Placement Examination a need for work in English structures, reading, or writing. (AH) (WC) (RE) Prerequisite(s): 102 or 118. (AH) Registration Restriction(s): 3.25 GPA.

321 Introduction to Old English (3) Language and literature of England from c. 700 to c. 1100. Reading of verse, works and shorter poetry in Old English. Cultural context of Anglo-Saxon England explored through classical essays, histories, and primary texts in translation. Focus on manuscript evidence and medieval and modern textual practices. Writing-emphasis course. (Same as Linguistics 321.) (RE) Prerequisite(s): 102 or 118. (RE) Grading Restriction: Satisfactory/No Credit grading only.

330 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.) (RE) Prerequisite(s): 102 or 118. (RE) (WC)

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 Africana Studies 331.) (RE) Prerequisite(s): 102 or 118. (RE) (WC)

332 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 Africana Studies 333.) (RE) Prerequisite(s): 102 or 118. (RE) (WC)

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.) (RE) Prerequisite(s): 102 or 118. (RE) (WC)

351 The Short Story (3) American, British, and international. Content varies. (RE) Prerequisite(s): 102 or 118. (RE) (WC)
355 Rhetoric and Writing (3) Strategies of writing on personal and academic subjects. Discussion of student and professional writing. (WC) (RE) Prerequisite(s): 102 or 118.

360 Technical and Professional Writing (3) For students who need to sharpen their technical communication skills. Writing of definitions, process descriptions, proposals, abstracts, executive summaries, and major reports. (WC) (RE) Prerequisite(s): 102 or 118. Registration Restriction(s): Minimum student level – junior.

363 Writing Poetry (3) Introduction to writing poetry. (WC) (RE) Prerequisite(s): 102 or 118.

364 Writing Fiction (3) Introduction to writing novels and short stories. (WC) (RE) Prerequisite(s): 102 or 118.

365 Writing Drama and the Screenplay (3) Introduction to writing one-act and full-length plays, as well as screenplays. (RE) Prerequisite(s): 102 or 118.

371 Foundations of the English Language (3) Phonology, morphology, and syntax of English. History of the English language to 1800. (Same as Linguistics 371.) (RE) Prerequisite(s): 102 or 118.

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.) (RE) Prerequisite(s): 102 or 118.

376 Colloquium in Literature (3) Methods and objectives of literary study; conferences to plan student’s program in major. (RE) Prerequisite(s): 102 or 118. Recommended Background: 200-level literature package.

381 Introduction to Folklore (3) Essential terms and concepts in modern folklore/folk-life studies. Emphasis on North American folklore, folktale, folklore, myth, legend, proverbs, riddles, superstitions, dances, games, and architecture. (Same as Religious Studies 389.) (RE) Prerequisite(s): 102 or 118.

389 Literature of the English Bible (3) Types of literature in the Bible – legend, folktale, history, biography, poetry, prophecy, apocalyptic. (Same as Religious Studies 389.) (RE) Prerequisite(s): 102 or 118.

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. (WC) (RE) Prerequisite(s): 102 or 118. Comment(s): Enrollment limited to 15. See Director of Undergraduate Studies in English for details.

401 Medieval Literature (3) Reading and analysis of selected medieval literary masterpieces in modern English. Writing-emphasis course. (Same as Medieval Studies 405.) (RE) Prerequisite(s): 102 or 118.

402 Chaucer (3) Reading and analysis of the Canterbury Tales and Troilus and Criseyde in Middle English. (Same as Medieval Studies 406.) (RE) Prerequisite(s): 102 or 118.

404 Shakespeare I: Early Plays (3) Shakespeare’s dramatic achievement before 1601. Reading and discussion of selected plays from romantic comedies, including Twelfth Night; English histories, including Henry IV; and early tragedy, including Hamlet. (RE) Prerequisite(s): 102 or 118.

405 Shakespeare II: Later Plays (3) Shakespeare’s dramatic achievement between 1601 and 1613. Reading and discussion of selected plays from romantic tragedies, including Othello; problem plays, including Measure for Measure; and dramatic romances, including The Tempest. (RE) Prerequisite(s): 102 or 118.

406 Renaissance Drama (3) English theatre between 1590 and 1640. Representative plays by Shakespeare’s contemporaries -- Marlowe, Webster, Jonson. (RE) Prerequisite(s): 102 or 118.

409 Spenser and his Contemporaries (3) Principal achievements in prose and poetry of the first two-thirds of the 17th century. Poetry of Milton, Donne, Marvell. Prose of Browne, Bacon, Walton. (RE) Prerequisite(s): 102 or 118.

411 Literature of the Restoration and Early 18th Century: Dryden to Pope (3) Survey of English literature and culture from 1660 to 1745. (RE) Prerequisite(s): 102 or 118.

412 Literature of the Later 18th Century: Johnson to Burns (3) Survey of English literature and culture from 1745 to 1800. (RE) Prerequisite(s): 102 or 118.

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. Repeatability: May be repeated. (RE) Prerequisite(s): 102 or 118.

414 Romantic Poetry and Prose I (3) Emphasis on Wordsworth, Coleridge, and Blake, with readings from Lamb, De Quincey, and other prose writers. (RE) Prerequisite(s): 102 or 118.

415 Romantic Poetry and Prose II (3) Emphasis on Keats, Shelley and Byron, with readings from Hazlitt, Peacock, and other prose writers. (RE) Prerequisite(s): 102 or 118.

416 Early Victorian Literature (3) May include poetry by Tennyson and the Brownings; prose by Carlyle, Newman, and Mill. (RE) Prerequisite(s): 102 or 118.

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. (RE) Prerequisite(s): 102 or 118.

420 The 19th-Century British Novel (3) Major novelists from Scott to Hardy. (RE) Prerequisite(s): 102 or 118.

421 Modern British Novel (3) Authors such as Joyce and Woolf through contemporary British fiction writers. (RE) Prerequisite(s): 102 or 118.

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. (Same as Women’s Studies 422.) Repeatability: May be repeated. Maximum 6 hours. (RE) Prerequisite(s): 102 or 118.

423 Colonial and Post-Colonial Literature (3) Emphasis on historical and theoretical methodologies for reading colonial and post-colonial literature. Repeatability: May be repeated with instructor’s consent. Maximum 6 hours. (RE) Prerequisite(s): 102 or 118.

431 Early American Literature (3) From the earliest texts to 1830, including exploration and discovery, Native American, colonial, revolutionary, and early national works. (RE) Prerequisite(s): 102 or 118.

432 American Romanticism and Transcendentalism (3) Prose and poetry of the American Renaissance, from c. 1830 to the end of the Civil War. Includes writers such as Cooper, Poe, Hawthorne, Melville, Emerson, Thoreau, Stowe, Douglass, Whitman, Dickinson. (RE) Prerequisite(s): 102 or 118.

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, Lew, Freeman, Crane, Norris. (RE) Prerequisite(s): 102 or 118.

434 Modern American Literature (3) World War I to the present. (RE) Prerequisite(s): 102 or 118.

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. (RE) Prerequisite(s): 102 or 118.

436 Modern American Novel (3) Authors such as Faulkner, Steinbeck, Welty. (RE) Prerequisite(s): 102 or 118.

441 Southern Literature (3) Southern writing from colonial period into the 20th century, including frontier humorists, local color writers, and southern literary renaissance. (RE) Prerequisite(s): 102 or 118.

442 American Humor (3) Development of American humor from the early 19th century into the 20th century, with particular emphasis on Mark Twain. (Same as American Studies 442.) (RE) Prerequisite(s): 102 or 118.

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 Africana Studies 443.) (RE) Prerequisite(s): 102 or 118.
451 Modern British and American Poetry (3) From Yeats and Frost to Auden, Stevens, and more recent poets. 
(Re) Prerequisite(s): 102 or 118.

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.) 
(Re) Prerequisite(s): 102 or 118.

453 Contemporary Drama (3) Survey of British, American, and international drama since World War II. 
(Re) Prerequisite(s): 102 or 118.

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.) 
(Re) Prerequisite(s): 102 or 118.

455 Persuasive Writing (3) Focuses on writing and analyzing persuasive texts in public, private, and academic contexts. (WC) 
(Re) Prerequisite(s): 355.

456 Contemporary/Postmodern Literature (3) Studies in literature written after World War II. Content will vary. 
Repeatability: May be repeated with consent of instructor. Maximum 6 hours. 
(Re) Prerequisite(s): 102 or 118.

460 Technical Editing (3) Editing technical material for publication. Principles of style, format, graphics, layout, and production management. 
(Re) Prerequisite(s): 360.

462 Writing for Publication (3) Principles and practices of writing for publication. Dissertations, theses, articles, and reports in science and technology. 
(Re) Prerequisite(s): 360.

463 Advanced Poetry Writing (3) Development of skills acquired in basic poetry-writing course. 
(Re) Prerequisite(s): 363.

464 Advanced Fiction Writing (3) Development of skills acquired in basic fiction-writing course. 
(Re) Prerequisite(s): 364.

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. 
(Re) Prerequisite(s): 360.

470 Special Topics in Rhetoric (3) Topics vary. 
Repeatability: May be repeated with consent of department. Maximum 6 hours. 
(Re) Prerequisite(s): 355.

471 Sociolinguistics (3) Language in relation to society. Empirical and theoretical focus. Emphasis on large-scale units—tribes, nations, social groups. (Same as Linguistics 471.) 
(De) Prerequisite(s): 371 or 372 or Linguistics 200.

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. (Same as Linguistics 472.) 
(De) Prerequisite(s): 371 or 372 or Linguistics 200.

474 Teaching English as a Second or Foreign Language I (3) Introduces major issues surrounding teaching ESL/EFL, including pedagogical approaches to 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. (Same as Linguistics 474.) 
(Re) Prerequisite(s): 102 or 118. 
Recommended Background: Second year of a foreign language.

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.) 
(Re) Prerequisite(s): 102 or 118.

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.) 
(Re) Prerequisite(s): 102 or 118.

479 Literary Criticism (3) Historical survey of major works of literary criticism. 
(Re) Prerequisite(s): 102 or 118.

(Re) Prerequisite(s): 102 or 118.

481 Studies in Folklore (3) Topic varies. 
Repeatability: May be repeated if topic differs. Maximum 6 hours. 
(Re) Prerequisite(s): 102 or 118.

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). 
Repeatability: May be repeated. Maximum 6 hours. 
(Re) Prerequisite(s): 102 or 118.

483 Special Topics in Literature (3) Topic varies. 
Repeatability: May be repeated. Maximum 6 hours. 
(Re) Prerequisite(s): 102 or 118.

484 Special Topics in Writing (3) Original writing integrated with reading, usually taught by a professional author. 
Repeatability: May be repeated. Maximum 6 hours. 
(Re) Prerequisite(s): 102 or 118.

485 Special Topics in Language (3) (Same as Linguistics 485.) 
Repeatability: May be repeated with consent of department. Maximum 6 hours. 
(Re) Prerequisite(s): 102 or 118.

486 Special Topics in Criticism (3) Content varies. Special topics in theoretical and practical approaches to British and American literature. 
Repeatability: May be repeated with consent of department. Maximum 6 hours. 
(Re) Prerequisite(s): 102 or 118.

489 Special Topics in Film (3) Content varies. Particular directors, film genres, national cinema movements, or other topics. (Same as Cinema Studies 489.) 
Repeatability: May be repeated with consent of department. Maximum 6 hours. 
(Re) Prerequisite(s): 102 or 118.

490 Language and Law (3) Language in the Anglo-American legal process: focus on differences between spoken and written language; lexical and syntactic ambiguity; pragmatics; speech act analysis; and the language rights of linguistic minorities. (Same as Legal Studies 490; Linguistics 490.) 
(Re) Prerequisite(s): 102 or 118.

491 Foreign Study: Drama in Stratford and London (1-4) Seeing, studying, and writing about drama as performed in London and Stratford-upon-Avon during the summer. 
Repeatability: May be repeated once with instructor’s permission. 
(Re) Prerequisite(s): 102 or 118.

492 Off-Campus Study: Drama in New York (3) Seeing, studying, and writing about drama as performed in New York City. 
(Re) Prerequisite(s): 102 or 118.

493 Independent Study (1-6) Tutorial in subjects not adequately covered in regular courses. 
Repeatability: May be repeated. Maximum 6 hours. 
(Re) Prerequisite(s): 102 or 118.

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. 
(Re) Prerequisite(s): 355.

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. (Same as Legal Studies 496.) 
(Re) Prerequisite(s): 355.

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. 
(Re) Prerequisite(s): 398.

499 Senior Seminar (3) Intensive study of 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. Capstone experience. Writing-emphasis course. (WC) 
(Re) Prerequisite(s): 102 or 118. 
Comment(s): Completion of 15 upper-division hours in English required. 
Registration Restriction(s): English major.

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. 
Grading Restriction: Satisfactory/No Credit grading only.
Supply, temperature, aeration, fertility and plant nutrition. Use and pollution; soil management relative to tillage, erosion, moisture physical, chemical, and biological properties of soil; relation of soil to land impacts during modern times. Comparison of past soil management ancient civilizations and environmental degradation and its societal 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 sitiation. Introduction to the role of soil resources in current global environmental issues and conflicts. (CC)

Introduction to Soil Science (4) Differences in soils: soil genesis, physical, chemical, and biological properties of soil; relation of soil to land use and pollution; soil management relative to tillage, erosion, moisture supply, temperature, aeration, fertility and plant nutrition.

Contact Hour Distribution: 3 hours lecture and one 2-hour lab.
325 Athletic Training Techniques (3) Prevention of athletic injuries through sound conditioning programs and practices; recognition and immediate treatment of injuries.
(Re) Prerequisite(s): 332.
Registration Restriction(s): Exercise science major.

332 Applied Anatomy (3) Structure and roles of bones, joints and muscles in human movement and exercise; related biomechanical principles.

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.
Repeatability: 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.
(Re) Prerequisite(s): 332.
Registration Restriction(s): Exercise science major; 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.
(Re) Prerequisites: Biochemistry and Cellular and Molecular Biology 230.
Registration Restriction(s): Exercise science major; 2.5 GPA.

(Re) Prerequisite(s): 332 and Physics 221.
Registration Restriction(s): Exercise science major; 2.5 GPA.

426 Exercise Science Practicum II (1-6) Supervised experience in exercise/fitness areas.
Grading Restriction: Satisfactory/No Credit grading only.
Repeatability: May be repeated. Maximum 10 hours.
Registration Restriction(s): 2.5 GPA.

440 Strength and Conditioning Programs (3) Covers scientific and practical foundations of strength and conditioning programs and program design applied to healthy adults, athletes, youth, and older adults. Provides teaching experiences with young adults and requires the development of educational materials. This course is designed to prepare students for nationally recognized strength and conditioning certification exams.
(Re) Prerequisite(s): 332 and Biochemistry and Cellular and Molecular Biology 230.
(De) Prerequisite(s): Physical Education 252.
Registration Restriction(s): Exercise science major; 2.5 GPA.

480 Physiology of Exercise (3) Lecture and laboratory class dealing with functional and physiological aspects of exercise in muscular work. Topics include physiological aspects of fatigue, training, and adaptation to environment. (Same as Biochemistry and Cellular and Molecular Biology 480.)
Contact Hour Distribution: 2 lectures and 1 lab.
(Re) Prerequisite(s): Biochemistry and Cellular and Molecular Biology 230 or Biochemistry and Cellular and Molecular Biology 400.
(De) Prerequisite(s): 426.
Registration Restriction(s): Exercise science major; 2.5 GPA.

490 Exercise Physiology/fitness Internship (12-15) Full-time practicum in exercise/fitness at approved agency.
Grading Restriction: Satisfactory/No Credit grading only.
(Re) Prerequisite(s): 414 and 422.
Registration Restriction(s): Exercise science major; 2.5 GPA.
Registration Permission: Consent of instructor.

493 Directed Independent Studies (1-3) Independent study in a specialized area with exercise science.
Repeatability: May be repeated. Maximum 9 hours.
Registration Restriction(s): Exercise science major; 2.5 GPA.
Registration Permission: Consent of instructor.

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 preparation of results. Project should be approved with two semesters of study remaining.
Registration Restriction(s): Minimum student level – senior.

Finance (349)

301 Financial Management (3) Principles of financial management. Investment, financing and asset management functions of the firm.
(Re) Prerequisite(s): Business Administration 201.

402 Special Topics in Finance (3-6) Junior- and senior-level finance seminar.
Repeatability: Not repeatable for credit. May be taken once for 3-6 hours.
(Re) Prerequisite(s): 301.
(Re) Corequisite(s): Accounting 301.
Registration Restriction(s): Majors in the College of Business Administration.

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.
(Re) Prerequisite(s): 301.
(Re) Corequisite(s): Accounting 301.
Registration Restriction(s): Majors in the College of Business Administration.

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.
(Re) Prerequisite(s): 301.
(Re) Corequisite(s): Accounting 301.
Registration Restriction(s): Majors in the College of Business Administration.

455 Financial Management: Theory and Practice (3) Decision-making topics in financial management including valuation, capital budgeting under uncertainty, cost of capital, capital structure theory and dividend policy. Major writing requirement.
(Re) Prerequisite(s): 425.
Registration Restriction(s): Majors in the College of Business Administration.

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.
(Re) Prerequisite(s): 301.
(Re) Corequisite(s): Accounting 301.
Registration Restriction(s): Majors in the College of Business Administration.

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.
(Re) Prerequisite(s): 301.
(Re) Corequisite(s): Accounting 301.

492 Off-Campus Study (1-3) Professional internship with practicing professionals under the direction of a faculty member.
Grading Restriction: Satisfactory/No Credit grading only.
Repeatability: May be repeated. Maximum 3 hours.
Credit Restriction: Free elective credit only.
Registration Restriction(s): Finance major.
Registration Permission: Consent of instructor.

493 Independent Study (1-3) Grading Restriction: Letter grade only.
Repeatability: May be repeated. Maximum 3 hours.
Registration Restriction(s): Finance major.
Registration Permission: Consent of instructor.

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.
Repeatability: May be repeated. Maximum 3 hours.
Comment(s): 3.0 in all upper-division business courses required.
Registration Permission: Consent of instructor.

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.
Grading Restriction: A, B, C, No Credit grading.

401 Peer Mentor Techniques (1) Training of upper-class 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.
Registration Permission: Consent of instructor.
402 Peer Mentor Practicum (1) Peer mentoring of first year studies students.
Grading Restriction: Satisfactory/No Credit grading only.
Repeatability: May be repeated. Maximum 3 hours.
(RE) Prerequisite(s): 401.
Registration Permission: Consent of instructor.

Food Science and Technology (390)
101 Science of Foods (3) (See Hotel, Restaurant, and Tourism 101.)
150 History and Culture of Food (3) Impact of people and historical events on the production, distribution, and consumption patterns of food; the role of food as an indicator of cultural, societal, and historical changes around the world; major, technological advances in food processing and their impact on the globalization of the food supply.
Contact Hour Distribution: 3 hours lecture.

240 Field Observations in Food Processing (3) Introduction to, observation of and familiarization with processing, packaging, quality control and distribution of different types of foods.
Contact Hour Distribution: 1 hour discussion and one 4-hour lab.
Registration Restriction(s): Food science and technology major.
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.
Registration Restriction(s): Minimum student level – sophomore.
340 Food Preservation and Packaging (3) Principles, methods and equipment used for preservation of foods.
Contact Hour Distribution: 2 hours lecture and 1 lab.
Recommended Background: Microbiology 210.
401 Professional Food Science Communication (1) Individual reports and group discussion on current topics.
Repeatability: May be repeated. Maximum 3 hours.
Registration Restriction(s): Minimum student level – junior.
410 Food Chemistry (3) Reactions of water, proteins, lipids, carbohydrates, minerals, enzymes, vitamins, and additives in foods.
Contact Hour Distribution: 3 hours lecture.
(RE) Prerequisite(s): Chemistry 110 or Chemistry 350.
415 Food Analysis (4) Principles, methods and techniques for qualitative and quantitative analyses of composition and physical, chemical, and biological properties of food and food ingredients.
Contact Hour Distribution: 3 hours and one 2-hour lab.
(RE) Prerequisite(s): Chemistry 110 or 350.
419 Food Chemistry Lab (1) Interaction of water, proteins, lipids, carbohydrates, minerals, enzymes, vitamins, and additives in foods and methods of evaluation of chemical properties of foods.
Contact Hour Distribution: One 2-hour lab.
(RE) Corequisite(s): 410.
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.
(RE) Prerequisite(s): Microbiology 210 or Microbiology 310.
429 Food Microbiology Lab (3) Methods for examination, enumeration, cultivation and identification of foodborne microorganisms.
(RE) Corequisite(s): 420.
430 Sensory Evaluation of Food (3) Principles and methods of sensory evaluation of foods.
Contact Hour Distribution: 2 hours and 1 lab.
Recommended Background: A statistics course.
441 Food Engineering (3) Units and dimensions, physical properties, transport processes, fluid flow, heat transfer, thermal and nonthermal preservation processes, refrigeration, freezing, evaporation, psychrometrics, mass transfer, membrane separations, dehydration.
Contact Hour Distribution: 2 hours and one 2-hour lab.
(RE) Prerequisite(s): Physics 101 or Physics 221.
442 Special Topics In Food Science and Technology (1-3) Topics of current concern to the food industry.
Repeatability: 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.
Contact Hour Distribution: 3 hours lecture and 1 lab.
(RE) Prerequisite(s): 410 and 340.

461 Fresh Meats (3) Basic principles in the conversion of muscle to meat and the factors that contribute to the utilization and marketing of quality fresh meat products.

462 Manufactured Meat Technology (2) Basic principles of manufacturing value-added meat products.
Contact Hour Distribution: 1 hour lecture and 1 hour lab.

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.
Comment(s): Core courses in food science and technology will serve as an essential basis for understanding of material covered in this course.
Registration Restriction(s): Minimum student level – senior.

491 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.
Repeatability: 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.
Registration Restriction(s): Minimum student level – senior.

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.
Recommended Background: Completion or near completion of foreign language hours for certification.
Registration Restriction(s): Qualification – admission to teacher education.

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 North America.

214 Tree Biology (3) An introduction to the anatomy and development of woody plants, their reproduction, growth requirements, and functioning.
(RE) Prerequisite(s): Biology 111 or 101.

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.
Contact Hour Distribution: 2 hours and 1 lab.
(RE) Prerequisite(s): Forestry, Wildlife and Fisheries 212.

305 Prescribed Fire Management (2) Prescribed fire ecology, use, and management in forest stands.
Grading Restriction: Satisfactory/No Credit grading only.
(Re) Prerequisite(s): Forestry, Wildlife and Fisheries 312.

306 Forest Protection (3) Biological and economic considerations of native and exotic pathogens, insects, and vertebrates, and damage from weather in the forest ecosystem. One or more all day or overnight field trips may be required.
Contact Hour Distribution: 2 hours and 1 lab.
(Re) Prerequisite(s): Forestry, Wildlife and Fisheries 212.

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 resource management decisions.
(Re) Prerequisite(s): Economics 201.

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. (WC)

322 Silvicultural Practices (2) Application of silvicultural techniques; tree improvement; use of herbicides; fire management.
(Re) Prerequisite(s): Forestry, Wildlife and Fisheries 312.
(Re) Corequisite(s): 305 and 323.

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 are required.
Grading Restriction: Letter grade only.
(Re) Corequisite(s): 305 and 322.
326 Land Measurement Techniques (2) Surveying techniques; road layout and construction as applied to forestry; timber harvest techniques. 
(Re) Prerequisite(s): Forestry, Wildlife and Fisheries 313. 
(Re) Corequisite(s): 305 and 323.

329 Forest Resource Inventory (3) Tree, log and lumber scaling and grading; land inventory and stand mapping; volume estimation. 
(Re) Prerequisite(s): Forestry, Wildlife and Fisheries 313. 
(Re) Corequisite(s): 305 and 323.

330 Ecosystem Prescription Preparation (1) Analysis of resources on assigned tract of land and synthesis of situation to address problem assigned. Oral presentation and written report required. 
(Re) Corequisite(s): 305 and 323.

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. 
(Re) Prerequisite(s): Biology 112. 
(Re) Corequisite(s): 332.

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. 
(Re) Prerequisite(s): Forestry, Wildlife and Fisheries 212. 
(Re) Corequisite(s): 331.

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. 
Credit Restriction: Students cannot receive credit for both 414 and 514. 
(Re) Prerequisite(s): Biology 112 or Biology 102.

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. 
Repeatability: May be repeated. Maximum 3 hours. 
Credit Restriction: May not be taken by forestry or wildlife and fisheries majors. 
Registration Permission: Consent of instructor.

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.

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. 
(Re) Prerequisite(s): 305 and 323. 
Minimum student level – senior. 
Registration Restriction(s): 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. 
Contact Hour Distribution: 2 hours and 1 lab.

492 Practicum in Forestry (1-6) Supervised experience at departmental-approved employment location. 
Grading Restriction: Satisfactory/No Credit grading only. 
Repeatability: May be repeated. Maximum 6 hours. 
Registration Restriction(s): Minimum student level – junior.

493 Independent Study in Forestry (1-15) Special research or individual problem in forestry. 
Repeatability: May be repeated. Maximum 15 hours. 
Registration Permission: Consent of instructor.

495 Internship in Wildland Recreation (1-6) A highly structured field experience guided by specific learning objectives. Students earn one credit per two weeks of full-time field experience. The student is responsible for field placement. Must be pre-approved by the instructor and the field supervisor. 
Repeatability: May be repeated. Maximum 6 hours. 
Registration Restriction(s): Minimum student level – junior.

496 Internship in Forestry (1-6) Supervised experience at departmental-approved employment location arranged by the student. Students earn one credit per two weeks of full-time field experience. Internship learning objectives must be pre-approved by the advisor/instructor and the field supervisor. Daily log, supervisor evaluations, and final report required. 
Repeatability: May be repeated. Maximum 6 hours. 
Registration Restriction(s): Minimum student level – junior.

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. Day field trips may be required. 
Contact Hour Distribution: 2 hours and 1 lab. 
(Re) Prerequisite(s): Biology 102 or Biology 112.

250 Conservation (3) Use and abuse of wildland resources. Historical perspectives and current management of forests, wildlife, and fish of North America including aspects of outdoor recreation and pollution problems. (NS)

312 Principles of Silviculture (3) Principles for treating forest stands to achieve selected objectives. (WC) 
Contact Hour Distribution: 2 hours and 1 lab. 
(Re) Prerequisite(s): Statistics 201.

313 Measurements and Sampling (2) Measurement techniques and sampling methods for vegetation; estimation of animal populations; map and aerial photo use. 
Contact Hour Distribution: 1 hour and 1 lab. 
(Re) Prerequisite(s): Statistics 201.

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. 
(Re) Prerequisite(s): Chemistry 100 or 120.

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. 
Contact Hour Distribution: 2 hours and 1 lab. 
(Re) Prerequisite(s): 317.

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. 
Contact Hour Distribution: 2 hours and 1 lab. 
(Re) Prerequisite(s): 317.

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. 
Contact Hour Distribution: 1 hour and 2 labs. 
Registration Restriction(s): Minimum student level – senior.

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 Elementary French (3) Language laboratory required. 
Credit Restriction: Not available to students eligible for 150.

112 Elementary French (3) Language laboratory required. 
Credit Restriction: Not available to students eligible for 150. 
(Re) Prerequisite(s): 111.

150 Intermediate French Transition (3) This course is designed to prepare students for enrollment in 211. 
Credit Restriction(s): For elective credit only. 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 6 hours of elementary language credit awarded through placement examination.

211 Intermediate French (3) (CC) 
(De) Prerequisite(s): 150 or 112 or departmental placement exam. 
Comment(s): Students who place in 200-level courses from high school will receive 6 hours of elementary French credit.

212 Intermediate French (3) (CC) 
(Re) Prerequisite(s): 211. 
Comment(s): Students who place in 200-level courses from high school will receive 6 hours of elementary French credit.
217 Honors: Intermediate French (3) For students of superior ability in French. Students follow enriched program with emphasis on speaking ability and reading, including literary selections (CC) Comment(s): Incoming freshmen admitted on basis of diagnostic test, high school average, and performance on ACT.

218 Honors: Intermediate French (3) For students of superior ability in French. Students follow enriched program with emphasis on speaking ability and reading, including literary selections. (CC) (RE) Prerequisite(s): 217. Comment(s): Incoming freshmen are admitted on the basis of diagnostic test, high school average, and performance on ACT. Students with a grade of A in 211 may enter 218 with permission of instructor. Credit for 300 is given to students receiving a grade of A or B in 218.

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. Credit Restriction: May not be applied toward the major or minor. (RE) Prerequisite(s): 212 or 218.

301 Elements of French for Upper-Division and Graduate Students (3) Elements of language, elementary and advanced readings. Grading Restriction: No auditors. Credit Restriction: No credit for students who have completed 111 and 112 or equivalent. Comment(s): Open to graduate students (for undergraduate credit) preparing for advanced French literature. Excerpts from Rabelais and Montaigne; readings of major works of 17th century and tutorial in which students reflect on the raison d'être of the discipline from a multidimensional point of view. Writing-emphasis course.

311 Elements of French for Upper-Division and Graduate Students (3) Elements of language, elementary and advanced readings. Grading Restriction: No auditors. Credit Restriction: No credit for students who have completed 111-112 or equivalent. Comment(s): Open to graduate students (for undergraduate credit) preparing for advanced French literature and tutorial in which students reflect on the raison d'être of the discipline from a multidimensional point of view. Writing-emphasis course.

333 Intermediate Composition and Grammar (3) Emphasizes writing skills. Review of major grammatical points in French. (RE) Prerequisite(s): 212 or 218.


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. Credit Restriction: Either 334 or 345 may be applied toward the major, but not both. (RE) Prerequisite(s): 333.

351 History of French Literature (3) Chronological view of French literature in relation to the specific historical developments that have influenced it. (RE) Prerequisite(s): 333.

352 History of French Literature (3) Chronological view of French literature in relation to the specific historical developments that have influenced it. (RE) Prerequisite(s): 333.

400 Consecutive and Simultaneous French-English and English-French Translation (3) Consecutive translation to and from English. Introduction to simultaneous translation to English. (RE) Prerequisite(s): 333.

410 Medieval French Literature (3) Major representative works of Medieval French literature. Texts in modern French. Writing-emphasis course. (Same as Medieval Studies 410.) (RE) Prerequisite(s): 351 or 352.

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 Pléiade. Writing-emphasis course. (RE) Prerequisite(s): 351 or 352.

412 French Literature of the 17th Century (3) Masterpieces of 17th-century French literature. Writing-emphasis course. (RE) Prerequisite(s): 351 or 352.

413 French Literature of the 18th Century (3) Major works of the Enlightenment. Writing-emphasis course. (RE) Prerequisite(s): 351 or 352.

414 French Literature of the 19th Century (3) French Romanticism and its counter movements: Realism, Parnassianism and Naturalism. Writing-emphasis course. (RE) Prerequisite(s): 351 or 352.

415 French Literature of the 20th Century (3) Evolution of 20th-century French literature. Writing-emphasis course. (RE) Prerequisite(s): 351 or 352.

420 French Cinema (3) The French cinema from its earliest days through the New Wave directors. May be applied toward the French major. Writing-emphasis course. (Same as Cinema Studies 420.) (RE) Prerequisite(s): 351 or 352.

421 Phonetics (3) Foundation in the science of phonetics. Practical exercises and individual performance. (RE) Prerequisite(s): 333.

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. (RE) Prerequisite(s): 333.

423 Advanced Conversation (1) Informal conversation with native speaker on contemporary topics. Stresses in-class contact rather than outside preparation. Contact Hour Distribution: Meets 2 hours a week. (RE) Prerequisite(s): 333.

424 Advanced Conversation (1) Informal conversation with native speaker on contemporary topics. Stresses in-class contact rather than outside preparation. Contact Hour Distribution: Meets 2 hours a week. (RE) Prerequisite(s): 333.

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. Writing-emphasis course. (Same as German 425; Linguistics 425; Russian 425; Spanish 425.) Recommended Background: Linguistics 200.

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. May be applied toward the major as a literature course. Writing-emphasis course. (RE) Prerequisite(s): 351 or 352.

431 Highlights of French Civilization (3) Survey of French civilization from the Gauls to World War II. Historical events, daily life, all forms of art. Writing-emphasis course. (RE) Prerequisite(s): 351 or 352.

432 Contemporary French Culture (3) Current French cultural issues placed in historical perspective with a comparative emphasis. In English with readings in French for majors. May be applied toward the French major. Writing-emphasis course.

433 French and Francophone Women Writers (3) Works by women writers in French considered in cultural context. In English, readings in French for majors. May be applied toward the 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. (RE) Prerequisite(s): 351 or 352.

440 Capstone Experience in French (3) Synthesizing senior colloquium and tutorial in which students reflect on the raison d'être of the discipline from a multidimensional point of view. Writing-emphasis course. Registration Restriction(s): Minimum student level – senior.

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 cultural differences and the dangers of simplistic stereotyping. Writing-emphasis course. (RE) Prerequisite(s): 345.

450 Special Topics (3) Selected topics in French studies. Repeatability: May be repeated if topic differs. Maximum 6 hours.
Geography (415)

101 World Geography (3) Selected topics and world regions, especially those with problems or situations of contemporary interest, to illustrate geographical points of view, concepts, and techniques. (SS)
Comment(s): 101 and 102 do not have to be taken in sequence.

102 World Geography (3) Selected topics and world regions, especially those with problems or situations of contemporary interest, to illustrate geographical points of view, concepts, and techniques. (SS)
Comment(s): 101 and 102 do not have to be taken in sequence.

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.
Credit Restriction: Students may not receive credit for both 102 and 108.
Comment(s): Open to students who have received an A in 101.

131 Geography of the Natural Environment I (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. Covers elements and the controls of climate, atmospheric circulation, precipitation and storms, the hydrological cycle, world climate and vegetation patterns, and climate change. (NS)
Contact Hour Distribution: 3 hours lecture and 2 hours lab.

132 Geography of the Natural Environment II (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. Covers earth materials, tectonic activity, geomorphic processes and landforms, soils, and human impacts on the landscape. (NS)
Contact Hour Distribution: 3 hours lecture and 2 hours lab.
(Re) Prerequisite(s): 131.

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.
Contact Hour Distribution: 2 hours lecture and 2 hours lab.

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.
(Re) Prerequisite(s): 131.


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.


361 Regional Geography of the United States and Canada (3) Physical, economic, and social distributions as they interrelate 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 contemporary 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 Africana Studies 379.)

410 Global Positioning Systems and Geographical Data (3) Theory, field, and laboratory use of Global Positioning Systems for capturing digital geographic data; management of geographic data, including coordinate systems, datum issues, scanning digitalizing, map standards, and uncertainty in Geographic Information Systems.
Contact Hour Distribution: 2 hours lecture and 2 hours lab.

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.
Contact Hour Distribution: 2 hours lecture and 2 hours lab.
(Re) Prerequisite(s): 310.

412 Advanced Cartography Techniques (3) Cartographic design and data display techniques for reference and thematic maps. Basic principles and methods of map reproduction.
Contact Hour Distribution: 2 hours lecture and 2 hours lab.
(Re) Prerequisite(s): 310.

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.
Contact Hour Distribution: 3 hours lecture and 2 hours lab.
(Re) Prerequisite(s): Mathematics 115 or Statistics 201.

414 Spatial Databases and Data Management (3) Types, sources, acquisition, and documentation of spatial data. Spatial database management methods and strategies for data sharing.
Contact Hour Distribution: 2 hours lecture and 2 hours lab.
(Re) Prerequisite(s): 411.

415 Quantitative Methods in Geography (4) Geographic application of statistical techniques, point pattern analysis, spatial analyses, and correlation and regression techniques.
Contact Hour Distribution: 3 hours lecture and 2 hours lab per week.
(Re) Prerequisite(s): Mathematics 115 or Statistics 201.

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.
Repeatability: May be repeated. Maximum 6 hours.
Registration Permission: Consent of department.

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.)

432 Dendrochronology (4) Principles, techniques, and interpretation in tree-ring science. Applications in geography, climate, ecology, forestry, archaeology, and earth sciences.
Contact Hour Distribution: 3 hours lecture and 2 hours.
(De) Prerequisite(s): 132.

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.
(De) Prerequisite(s): 132.
<table>
<thead>
<tr>
<th>COURSES OF INSTRUCTION</th>
<th>233</th>
</tr>
</thead>
<tbody>
<tr>
<td>434 Climatology (3)</td>
<td>General circulation system leading to world pattern of climates. Climatic change and modification, and interrelationships of climate and human activity. (RE) Prerequisite(s): 131.</td>
</tr>
<tr>
<td>435 Biogeography (3)</td>
<td>Study of the changing distribution patterns of plants and animals on a variety of spatial and temporal scales. The effects plate tectonics, Pleistocene climatic change, and human activity of world biota. Recommended Background: Introductory physical geography or coursework in botany or ecology.</td>
</tr>
<tr>
<td>437 Water Resources (3)</td>
<td>Global water resources and hydrologic processes, including water availability, flooding, and water quality issues examined from physical and economic geographic perspectives. (DE) Prerequisite(s): 132.</td>
</tr>
<tr>
<td>439 Plant Geography of North America (3)</td>
<td>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. Recommended Background: Introductory physical geography or coursework in botany or ecology.</td>
</tr>
<tr>
<td>441 Urban Geography of the United States (3)</td>
<td>Concepts and theories concerning development and significance of systems of cities and internal morphology of cities in the United States. Writing-emphasis course.</td>
</tr>
<tr>
<td>442 Urban Social Geography (3)</td>
<td>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.</td>
</tr>
<tr>
<td>443 Rural Geography of the United States (3)</td>
<td>Geographical appraisal of rural areas of the United States, including small towns and urban fringes. Problems and potentials of rural America. Writing-emphasis course.</td>
</tr>
<tr>
<td>444 Geography of Transportation (3)</td>
<td>Examination of transportation systems, emphasizing their effects on trade patterns, land use, location problems, and development.</td>
</tr>
<tr>
<td>450 Process Geomorphology (3)</td>
<td>(See Geology 450.)</td>
</tr>
<tr>
<td>454 Terrain Analysis (3)</td>
<td>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. (DE) Prerequisite(s): 132 or Geology 101 and 102 or Geology 107 and 108.</td>
</tr>
<tr>
<td>466 Teaching and Learning Geography (3)</td>
<td>Preparation of 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.</td>
</tr>
<tr>
<td>490 Internship (1-15)</td>
<td>Career-related experience for geography majors with business, nonprofit, and government organizations. Grading Restriction: Satisfactory/No Credit grading only. Repeatability: May be repeated. Maximum 6 hours. Registration Permission: Consent of department.</td>
</tr>
<tr>
<td>491 Foreign Study (1-15)</td>
<td>Repeatability: May be repeated. Maximum 15 hours. Registration Permission: Consent of department.</td>
</tr>
<tr>
<td>492 Off-Campus Study (1-15)</td>
<td>Repeatability: May be repeated. Maximum 15 hours. Registration Permission: Consent of department.</td>
</tr>
<tr>
<td>493 Independent Study (1-15)</td>
<td>Repeatability: May be repeated. Maximum 15 hours. Registration Permission: Consent of department.</td>
</tr>
<tr>
<td>494 Undergraduate Research Experience (1-3)</td>
<td>Supervised participation in active research projects. Grading Restriction: Satisfactory/No Credit grading only. Repeatability: May be repeated. Maximum 6 hours. Registration Permission: Consent of department.</td>
</tr>
<tr>
<td>495 Special Topics in Geography (1-4)</td>
<td>Topics vary. Repeatability: May be repeated with consent of instructor. Maximum 8 hours. Registration Permission: Consent of instructor.</td>
</tr>
<tr>
<td>497 Honors: Senior Thesis (3)</td>
<td>Students develop undergraduate thesis under the guidance of a faculty advisor. Comment(s): Completion of 75 hours with 3.2 GPA required. Registration Permission: Consent of thesis advisor.</td>
</tr>
<tr>
<td>498 Proseminar in Geography (3)</td>
<td>Major themes in geography, especially trends over the past 40 years. A required course for geography majors. Comment: To enroll, students must have completed 12 hours in geography. Registration Restriction(s): Minimum student level – senior.</td>
</tr>
<tr>
<td><strong>Geology (424)</strong></td>
<td>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. (NS) Contact Hour Distribution: 3 hours lecture and one 2-hours lab or field period.</td>
</tr>
<tr>
<td>102 Earth, Life, and Time (4)</td>
<td>Fossils, evolution and ancient environments, plus a review of 4.5 billion years of Earth history. (NS) Contact Hour Distribution: 3 hours lecture and one 2-hours lab or field period.</td>
</tr>
<tr>
<td>103 The Earth’s Environments (4)</td>
<td>Contemporary problems and solutions related to nature and human disturbance of the environment. Topics include: natural hazards, global climate change, pollution, resource depletion. (NS) Contact Hour Distribution: 3 hours lecture and one 2-hours lab or field period.</td>
</tr>
<tr>
<td>107 Honors: The Dynamic Earth (4)</td>
<td>Laboratory and field emphasis to understanding physical processes, including the formation of rocks, plate tectonics, earthquakes, and landscapes. (NS) Contact Hour Distribution: One 2-hour lab and 2 field trips. Credit Restriction: Students may not receive credit for both 101 and 107.</td>
</tr>
<tr>
<td>108 Honors: Earth, Life, and Time (4)</td>
<td>Laboratory and field emphasis to understanding fossils, evolution, and ancient environments throughout 4.5 billion years of Earth history. (NS) Contact Hour Distribution: One 2-hour lab and 2 field trips. Credit Restriction: Students may not receive credit for both 102 and 108.</td>
</tr>
<tr>
<td>201 Biodiversity: Past, Present, and Future (3)</td>
<td>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. (NS) Credit Restriction: May not be applied toward the geology major.</td>
</tr>
<tr>
<td>202 Earth as an Ecosystem: Modern Problems and Solutions (3)</td>
<td>Study of the earth as an integrated system between physical and biological processes. Focus is on human disturbances such as habitat destruction and pollution. (NS) Credit Restriction: May not be applied toward the geology major.</td>
</tr>
<tr>
<td>203 Geology of National Parks (3)</td>
<td>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. Writing-emphasis course. (NS) Contact Hour Distribution: 3 hours lecture and an optional field trip. Credit Restriction: May not be applied toward the geology major.</td>
</tr>
<tr>
<td>205 Age of the Dinosaurs (3)</td>
<td>Survey of the major groups of dinosaurs: skeletal structure, ecology, environments, evolutionary history, and extinction. (NS) Credit Restriction: May not be applied toward the geology major.</td>
</tr>
<tr>
<td>310 Mineralogy (4)</td>
<td>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. Contact Hour Distribution: 3 hours lecture and one 2-hour lab. (RE) Prerequisite(s): Chemistry 120. (DE) Corequisite(s): Chemistry 130. Recommended Background: Two 100-level geology courses.</td>
</tr>
<tr>
<td>320 Paleobiology (4)</td>
<td>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. Contact Hour Distribution: 3 hours lecture and one 2-hour lab. Recommended Background: Two 100-level geology courses.</td>
</tr>
<tr>
<td>330 Igneous and Metamorphic Petrology (4)</td>
<td>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. Contact Hour Distribution: 3 hours lecture and one 2-hour lab. (RE) Prerequisite(s): 310.</td>
</tr>
</tbody>
</table>
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.

Contact Hour Distribution: 3 hours lecture and one 2-hour lab.
Recommended Background: Two 100-level geology 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 includes field observation and measurement, recording data, regional geology.

Contact Hour Distribution: 3 hours lecture and one 2-hour lab.
(RE) Prerequisite(s): 330 and 370.
Recommended Background: 310, 330, 340, and Physics 135 or consent of instructor.

380 Planetary Geoscience (4) Geologic, geophysical, and geochemical systems and processes at planetary scales. Topics include accretion, differentiation, outgassing, seismology, magnetism, geochronology, remote sensing, processes modifying surface morphology and materials, geochemical cycles, planetary exploration.

Contact Hour Distribution: 3 hours lecture and one 2-hour lab.
(RE) Prerequisite(s): 330 and 370.

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.

390 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 loading and boundary conditions in structural geology and tectonics.

Contact Hour Distribution: 3 hours lecture.
(RE) Prerequisite(s): Mathematics 142.
Recommended Background: Two 100-level geology courses.


Contact Hour Distribution: 2 lectures and one 2-hour lab.
(RE) Prerequisite(s): 310.

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.

(RE) Prerequisite(s): 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.

(RE) Prerequisite(s): 310.

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 societally focused field techniques demonstrated, practiced, and applied to the solution of geologic problems.

Recommended Background: At least 16 hours from 310, 320, 330, 340, 370. Registration Permission: 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. (Same as Geography 450.)

Contact Hour Distribution: 2 hours lecture and one 2-hour lab.
Recommended Background: Two 100-level or 200-level geology courses or consent of instructor.

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.

Recommended Background: Two 100-level or 200-level geology courses 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.

Contact Hour Distribution: 3 hours lecture and one 2-hour tutorial.
(RE) Prerequisite(s): Chemistry 130 and Mathematics 142.
Recommended Background: 330.

470 Applied Geophysics (3) Basic principles of data collection, processing, and analysis for several common geophysical techniques will be presented through lectures, computer assignments (labs), and field work. Passive (earthquake) and active (reflection and refraction) seismology, potential fields (gravity and magnetics), heat flow, electromagnetics (including ground penetrating radar), and electrical techniques will be covered.

Contact Hour Distribution: One 3-hour meeting per week consisting of lecture, computer lab, or field work. One optional day or weekend field trip will be scheduled.
(RE) Prerequisite(s): Mathematics 141 and Physics 135.
Recommended Background: 8 hours from 330, 340, or 370 or consent of instructor.

480 Principles of Economic Geology (4) Basic principles of data collection, processing, and analysis for several common geophysical techniques will be presented through lectures, computer assignments (labs), and field work. Passive (earthquake) and active (reflection and refraction) seismology, potential fields (gravity and magnetics), heat flow, electromagnetics (including ground penetrating radar), and electrical techniques will be covered.

Contact Hour Distribution: 3 hours lecture and one 2-hour lab.
(RE) Prerequisite(s): 330.
Recommended Background: 460.

485 Principles of Hydrogeology (3) Physical principles of flow, flow equations, geologic controls, aquifer analysis, water well design/testing, introduction to transport processes. (Same as Civil Engineering 485.)

(RE) Prerequisite(s): Mathematics 141 and Physics 135.
Recommended Background: One 100-level geology course or consent of instructor.

486 Hydrogeology Laboratory (1) Application and demonstration of hydrogeological principles in the field and laboratory.

(RE) Corequisite(s): 485 or Environmental Engineering 535.

490 Special Problems in Geology (1-12) Student- or instructor-initiated course offered at the convenience of the department, with focus on specialized topics in the geological sciences.

Repeatability: May be repeated. Maximum 12 hours.

491 Foreign Study (1-12)

Repeatability: May be repeated. Maximum 12 hours.
Credit Restriction: Maximum of 3 hours may be applied to the geology major.
Registration Permission: Consent of instructor.

492 Off-Campus Study (1-12)

Repeatability: May be repeated. Maximum 12 hours.
Credit Restriction: Maximum of 3 hours may be applied to the geology major.
Registration Permission: Consent of instructor.

493 Independent Study (1-12) Student- or instructor-initiated independent study.

Repeatability: May be repeated. Maximum 12 hours.
Credit Restriction: Maximum of 3 hours may be applied to the geology major.
Registration Permission: Consent of instructor.

German (433)

101 Elementary German (3) Language laboratory required.
Credit Restriction: Not available to students eligible for 150.
Recommended Background: At least two years of German in high school.
Comment(s): Placement exam required.

102 Elementary German (3) Language laboratory required.
Credit Restriction: Not available to students eligible for 150.
(Re)Prerequisite(s): 101.

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.
Credit Restriction: 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 6 hours of elementary language credit awarded through placement examination.
Recommended Background: At least 2 years of German in high school.
Comment(s): Placement exam required.

201 Intermediate German (3) (CC)
(De)Prerequisite(s): 102 or 150 or placement exam.

202 Intermediate German (3) (CC)
(De)Prerequisite(s): 201.

215 German Special Topics (3)
Repeatability: May be repeated if topic differs. Maximum 6 hours.

301 Introduction to German Literature (3)
Recommended Background: 202 or placement exam.

302 Introduction to German Literature (3)
Recommended Background: 202 or placement exam.
305 Readings in German (3) Topics in both literary and nonliterary fields. Students or student groups are encouraged to suggest topics for future courses.  
Repeatability: May be repeated. Maximum 6 hours.  
Recommended Background: 202 or placement exam.

311 Conversation and Composition (3)  
Repeatability: May be repeated. Maximum 6 hours.  
Recommended Background: 202 or placement exam.

312 Conversation and Composition (3)  
Repeatability: May be repeated. Maximum 6 hours.  
Recommended Background: 202 or placement exam.

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 Elements of German for Upper-Division and Graduate Students (3) Elements of language, elementary and advanced readings and a final 10,000 word translation project.  
Grading Restriction: A, B, C, No Credit grading.  
Credit Restriction: No credit for students who have completed 101-102.  
Comment(s): Open to graduate students (for undergraduate credit) preparing for language examinations and upper-division students desiring reading knowledge of the language.

332 Elements of German for Upper-Division and Graduate Students (3) Elements of language, elementary and advanced readings and a final 10,000 word translation project.  
Grading Restriction: A, B, C, No Credit grading.  
Repeatability: May be repeated. Maximum 6 hours.  
(RE) Prerequisite(s): 301 or 302.  
(DE) Prerequisite(s): 302 or 311 or 312.  
Comment(s): Open to graduate students (for undergraduate credit) preparing for language examinations and upper-division students desiring reading knowledge of the language.

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. Writing-emphasis course. (Same as Judaic Studies 350.)  
Repeatability: May be repeated with approval of department. Maximum 6 hours.

363 Modern German Culture (3) German culture from the mid-19th century to the present: customs, art, music, literature, sociology, studies. Readings in English for non-majors and in German for majors. Fulfills upper-level distribution requirement for foreign studies for those who have not satisfied the history requirement with Western Civilization. Writing-emphasis course.  
Credit Restriction(s): Major credit, but no foreign language credit.

411 Advanced Conversation and Composition (3)  
(RE) Prerequisite(s): 311 and 312.  

412 Advanced Conversation and Composition (3)  
(RE) Prerequisite(s): 311 and 312.  

415 German Special Topics (3)  
Repeatability: May be repeated if topic differs. Maximum 6 hours.  
(RE) Prerequisite(s): 202.

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.  
(RE) Corequisite(s): 101 and 102.

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.  
(RE) Prerequisite(s): 301 and 302.

420 Selected Topics in German Literature from 1750 to the Present (3)  
(RE) Prerequisite(s): 301 and 302.

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. (Same as French 426, Linguistics 426; Russian 426, Spanish 426.)  
(RE) Prerequisite(s): 311 and 312.  
(DE) Prerequisite(s): 301 or 302.

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.  
(RE) Prerequisite(s): 301 and 302.

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.  
(RE) Prerequisite(s): 301 and 302.

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.  
(RE) Prerequisite(s): 301 and 302.

434 Extraordinary WoMen–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.  
(RE) Prerequisite(s): 301 and 302.

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. (Same as Linguistics 435.)  
(RE) Prerequisite(s): 311 and 312.  
(DE) Prerequisite(s): 301 and 302.

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. (Same as Linguistics 436.)  
(RE) Prerequisite(s): 311 and 312.  
(DE) Prerequisite(s): 301 and 302.

477 German Honors (1) Preparation of honors paper portfolio and oral presentation.  
Registration Permission: Consent of department.

478 German Honors (1) Preparation of honors paper portfolio and oral presentation.  
Registration Permission: Consent of department.

485 Business German (3) German used in fields of business, government, administration and economics.  
(RE) Prerequisite(s): 311 and 312.

490 Internship (1-15) Career-related experiences in the United States or abroad.  
Grading Restriction: Satisfactory/No Credit grading only.  
Registration Restriction(s): German major/language and world business concentration.

491 Foreign Study (1-15)  
Repeatability: May be repeated. Maximum 15 hours.  
Registration Permission: Consent of program chair.

492 Off-Campus Study (1-15)  
Repeatability: May be repeated. Maximum 15 hours.  
Registration Permission: Consent of program chair.

493 Independent Study (1-15)  
Repeatability: May be repeated. Maximum 15 hours.  
Registration Permission: Consent of instructor.

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.  
Repeatability: May be repeated. Maximum 3 hours. (Maximum 1 hour per semester.)  
(DE) Prerequisite(s): 411 or 485.  
Registration Permission: Consent of program chair.

497 Senior Honors (1-6)  
Repeatability: May be repeated. Maximum 6 hours.  
Registration Permission: Consent of program chair.

Global Studies (440)

250 Introduction to Global Studies (3) (See Sociology 250.) (CC)  
393 Global Justice and Human Rights (3) (See Philosophy 393.)  
482 Special Topics in Global Cinema (3) (See Modern Foreign Languages and Literatures 482.)

491 Foreign Study (1-15)  
Repeatability: May be repeated. Maximum 15 hours.  
Comment(s): Requires advance approval of hours and topic by program chair.

493 Independent Study (1-15)  
Repeatability: May be repeated. Maximum 15 hours.  
Comment(s): Requires advance approval of hours and topic by program chair.
Health (449)
110 Personal Health and Wellness (3) Information and behavior necessary to approach health and wellness scientifically and to develop confidence in judgment affecting personal health and wellness.
Credit Restriction: Students who have received credit for 330 may not 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.
Grading Restriction: 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.
Credit Restriction: 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, poisoning, 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 organization and presenting health content, 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 taking personal responsibility for one's health. Includes topics related to the healthy lifestyle and provides specific guidelines of how to change inappropriate behaviors.
Credit Restriction: Students who have received credit for 330 may not receive credit for 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.
(Re) Prerequisite(s): 300 or 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.)

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. (Same as Safety 406.)

420 Sex Education as it Relates to Human Sexuality (3) Science of human sexuality. Emphasis on the trends, issues, and 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.
(Re) Prerequisite(s): 300 or 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.
Repeatability: May be repeated. Maximum 12 hours.
Registration Restriction(s): Minimum student level – junior.
COURSES OF INSTRUCTION

304 History of the Roman Empire (3) 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 3rd-century crisis, DIOCLETIAN and Constantine, the Christian empire, rise of bureaucratic government, the development of barbarian kingdoms and the fall of the 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.
Registration Permission: Consent of honors director.

312 Medieval History (3) Early Middle Ages – 300-1100. Formation of medieval society and institutions. (Same as Medieval Studies 312.)

313 Medieval History (3) Later Middle Ages – 1100-1400. Height of medieval civilization, and its waning in the 14th century. (Same as Medieval Studies 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 on 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 policies and institutions designed to uncover and combat heretics, homosexuals, Jews, and witches. Writing-emphasis course.

330 History of England (3) To 1688. Medieval state, church, and society; origins of Anglo-American law, the monarchy and parliamentary government, the Reformation.

331 History of England (3) 1689 to the present. Seventeenth-century revolutions, commercial, agricultural and industrial revolutions; class conflict, empire, the welfare state, world wars, economic, social and cultural history. Themes include England’s status as England’s first colony from the Norman period to Cromwell and beyond, peasant revolt, Catholic-Protestant antagonism, nationalistic revolutionary movements, the famine, home rule, partition, and independence in the 20th century, with continuing sectarian tensions.

340 History of Russia (3) To the middle of the 19th century.

341 History of Russia (3) 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 Era, 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, 1877-1933 (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, anti-war protests, new art forms, Great Society legislation, the rise of neoconservatism, empowerment movements throughout the decade, Cold War brinkmanship in Cuba, and the escalation of ground and air wars in Vietnam. Writing-emphasis course. (Same as American Studies 356.)

360 History of Latin America (3) Colonialism and independence – 1500-1825. Writing-emphasis course. (Same as Latin American Studies 360.)

361 History of Latin America (3) National development – 1825 to present. Writing-emphasis course. (Same as Latin American Studies 361.)

366 History and Archaeology of Mesopotamia (3) Mesopotamia (Assyria and Babylonia) from the 5th 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 intersocietal interaction. Writing-emphasis course.

369 History of the Middle East (3) Rise and spread of Islamic civilization to the 16th century. Writing-emphasis course. (Same as Judaica Studies 369.)

370 History of the Middle East (3) 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 370.)

371 African History (3) Survey of sub-Saharan Africa from 700-1700. State creation, trade, spread of Islam. Writing-emphasis course. (Same as Africana Studies 371.)

372 African History (3) Dynamics of Africa’s encounter with Europe from 1500 to the present. Slave trade, colonial, and independence eras. Writing-emphasis course. (Same as Africana Studies 372.)

373 Historical Issues (3) Variable content. Broad thematic issues in historical perspective. Especially suitable for non-majors, also open to majors. Lecture-discussion.
Repeatability: 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 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 in the developing world, including Latin America, 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 Africana 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; Sephardic and Ashkenazi Jewry in medieval Europe, North Africa and the Middle East; Jewish mysticism; Judaism's encounter with modernity, Hasidism, the Haskala; the Reform movement and Zionism; the Holocaust; the formation 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. Repeatability: May be repeated. Maximum 9 hours.

389 History of China (3) 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. Writing-emphasis course.

390 History of China (3) 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 intellec tuals, 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 1700s, the Meiji restoration, and Japanese militarism. Writing-emphasis course.

Credit Restriction: Students who have received credit for 389 may not receive credit for 392.

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.

408 Honors: Senior Paper (3) Organization and writing of the senior honors thesis. Required of students working for honors in history.

Credit Restriction(s): Grade of A or B required for honors credit.

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 professional contexts. Writing-emphasis course.

430 European Intellectual and Cultural History (3) Renaissance to Revolution – 1300-1789.

431 European Intellectual and Cultural History (3) 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 20th-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 History of the South (3) Old South from colonial period through the Civil War.
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. 
Repeatability: May be repeated. Maximum 9 hours.

481 Studies in History (3) Variable content. Subject matter not covered in other courses. 
Repeatability: 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. (Same as Judaic Studies 484.) 
Repeatability: May be repeated. Maximum 9 hours.

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. 
Repeatability: 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. 
Repeatability: 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 and the Korean War.

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. 
Repeatability: May be repeated. Maximum 6 hours. 
Registration Permission: Consent of Director of the Center for the Study of War and Society.

491 Foreign Study (1-15) 
Repeatability: May be repeated. Maximum 15 hours.

492 Off-Campus Study (1-15) 
Repeatability: May be repeated. Maximum 15 hours.

493 Independent Study (1-15) 
Repeatability: May be repeated. Maximum 15 hours.

Hotel, Restaurant, and Tourism (514)

101 Science of Foods (3) Scientific principles involved with selection, preparation, and evaluation of quality food. (Same as Food Science and Technology 101.) 
Contact Hour Distribution: 2 hours lecture and 2 hours lab each week.

210 Foodservice Operations Management (3) Principles of menu development, equipment selection, layout, purchasing, production, and service of food in volume.

211 Hotel and Resort 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 analyses of the economic, social, cultural, and environmental impacts to tourism.

311 Human Resources Management in Hospitality and Retailing (3) The core concepts of managing an organization’s culturally-diverse workforce include – recruitment and selection, training and development, and employee relations. (Same as Retail and Consumer Sciences 311.) 
(Re) Prerequisite(s): 210 or 211.

326 Food and Lodging Cost Control (1-3) Budget, cost analysis, computer, financial statement use in decision-making in lodging and foodservice systems. 
(Re) Prerequisite(s): 210 and Accounting 200. 
(De) Prerequisite(s): Mathematics 123 and Mathematics 119.

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. 
(Re) Corequisite(s): 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. (Same as Retail and Consumer Sciences 390.) 
(WC) 
(Re) Prerequisite(s): 311. 
(De) Prerequisite(s): 326, 310, and English 101 and 102. 
Registration Restriction(s): Hotel, restaurant, and tourism major or retail and consumer sciences major.

392 Professional Experience I (6) Supervised educational experiences in selected hospitality operations. 
Grading restriction: Satisfactory/No Credit grading only. 
(Re) Prerequisite(s): 390. 
Registration Restriction(s): Hotel, restaurant, and tourism major.

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. 
(Re) Prerequisite(s): 390.

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. 
(Re) Prerequisite(s): 211 and 224. 
(De) Prerequisite(s): 210 and Marketing 300.

425 Legal Issues in Service Management (3) Legal rights and responsibilities of service industry managers, their staff and clientele. 
(Re) Prerequisite(s): 390. 
Registration Restriction(s): Hotel, restaurant, and tourism major.

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. 
(Re) Prerequisite(s): 210 or 211.

440 Special Topics: Hotel, Restaurant, and Tourism (1-3) Developments, issues and problems in hotel and restaurant; and tourism. Variable topics. 
Repeatability: 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. Contact Hour Distribution: 2 hours and 1 lab. 
(Re) Prerequisite(s): 390.

450 Advanced Lodging Management (3) 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. 
(Re) Prerequisite(s): 211 and 390. 
(De) Prerequisite(s): Marketing 300.

484 International and Multicultural Tourism (3) Examines international and intercultural tourism trends, planning, and development issues. Special emphasis is given to the factors affecting patterns of international travel, planning practices, facilities, and services necessary to attract and host international tourists, and the development and operation of tourism attractions in developing countries. An overseas study tour is required as part of this course.

494 Directed Study: Hotel, Restaurant, and Tourism (1-3) Individual student-faculty experience. 
Grading Restriction: Satisfactory/No Credit grading only. 
Registration Restriction(s): Minimum student level – junior. 
Registration Permission: Consent of instructor.
Human Resource Management (530)
330 Foundations of Organizational Behavior (3) Behavioral processes in organizations: perception, motivation, power and influence, leadership; behavioral consequences: group behavior, teamwork, politics, conflict, culture, change and development.
(RE) Corequisite(s): Business Administration 353.
Registration Restriction(s): Majors in the College of Business Administration.

340 Training Systems: Strategies and Techniques (3) Fundamental knowledge, strategies and techniques of training systems – needs assessment, transfer of training, methods, evaluation. Broadening roles of training due to its strategic nature, changing nature of the workforce, the workplace, and technology. Develop original training modules with multiple components.
(RE) Corequisite(s): Business Administration 353.
Registration Restriction(s): Majors in the College of Business Administration.

350 Employee and Labor Relations (3) Evolution of and current practices related to effective workplace relations between the employer and employee. The examination of the union and nonunion environments for the organization. The establishment and maintenance of a safe, healthy, diverse and secure workplace.
(RE) Corequisite(s): Business Administration 353.
Registration Restriction(s): Majors in the College of Business Administration.

460 Compensation, Benefits, and Technologies for Human Resource Management (3) Compensation and benefits including direct and indirect compensation. Total reward systems that are used by companies and the common parts of a reward system. Mandated regulations of compensation and benefits, e-HR technologies and systems used for compensation and benefits management.
(RE) Prerequisite(s): Business Administration 353.
Registration Restriction(s): Majors in the College of Business Administration.

470 Staffing Organizations (3) Theory, methods, and issues pertaining to technical aspects of successful organizational staffing: legal environment, measurement and validation, performance appraisal and criterion development, selection tests, recruitment.
(RE) Prerequisite(s): Business Administration 353.
Registration Restriction(s): Majors in the College of Business Administration.

492 Off-Campus Study (1-6) Practical application and classroom instruction in human resources. Aspects of career development and the transition to the corporate world.
Repeatability: May be repeated. Maximum 6 hours.
Registration Restriction(s): Human resource management major.
Registration Permission: Consent of instructor.

493 Independent Study (3) Readings, research, and special projects.
Repeatability: May be repeated. Maximum 6 hours.
Registration Restriction(s): Majors in the College of Business Administration.
Registration Permission: Consent of instructor.

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. 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.
Contact Hour Distribution: 2 hours lecture and 2 hours lab.
(RE) Prerequisite(s): Engineering Fundamentals 230.
(RE) Corequisite(s): Statistics 251.
Recommended Background: Completion of freshman engineering courses.
Comment(s): Available to other majors who have completed an introductory course in probability and statistics.

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.
Contact Hour Distribution: 2-hour lab.
Grading Restriction: Satisfactory/No Credit grading only.
(RE) Prerequisite(s): Engineering Fundamentals 152.
Registration Restriction(s): Industrial engineering major; minimum student level – sophomore.

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.
Contact Hour Distribution: 3 hours lecture.
(RE) Prerequisite(s): Statistics 251 or Mechanical Engineering 345.
Comment(s): Available to other majors who have completed an introductory course in probability and statistics.

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.
(RE) Prerequisite(s): Mathematics 200.
Recommended Background: Completion of an introductory course in probability and statistics.

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.
Comment(s): Available to other majors who have completed an introductory course in probability and statistics.

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.
(RE) Prerequisite(s): 300 and 301.
Recommended Background: Completion of a computer-programming course.

330 Manufacturing Materials/Processes (3) Characteristics of materials and processes used in modern manufacturing.
(RE) Prerequisite(s): Materials Science and Engineering 201.

340 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.
Contact Hour Distribution: 2-hour lab.
Registration Restriction(s): Industrial engineering major; minimum student level – junior.

350 Junior Seminar (1) The role of the industrial engineer in the fields of specialization; necessary training for each specialization, and project opportunities. Review of available career opportunities. Principles of written communication in science and engineering. Topics and activities include case studies, literature searches, and preparation of written engineering reports including abstracts, executive summaries, and recommendations. (WC)
Grading Restriction: Satisfactory/No Credit grading only.

401 Integrated Manufacturing Systems (3) NC and CNC machine tools, robotics and related materials handling systems, hard automation, alternative integrated manufacturing systems, and manufacturing information/control systems.
(RE) Prerequisite(s): 202 and 330.

402 Production System Planning and Control (3) Theory and application of forecasting systems including regression and time series models. Independent demand inventory models, including development of safety stock. All modules of Manufacturing Resource Planning (MRP) Systems, master production scheduling, resource requirements planning, bill of material and inventory file structures, material requirements planning, capacity planning, shop floor and purchase order control. Overview of just-in-time inventory concepts and MRP’s role in manufacturing automation.
(RE) Prerequisite(s): 202 and 310.

410 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.
Grading Restriction: Satisfactory/No Credit grading only.
(RE) Corequisite(s): 422.
Recommended Background: Completion of one semester of industrial engineering senior-level courses.
Registration Permission: Consent of instructor.

Registration Restriction(s): Restricted to majors in the College of Engineering; minimum student level – junior.

406 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.

Contact Hour Distribution: 2 hours lecture and 1 lab.

(Re) Prerequisite(s): 300 and 310.

Recommended Background: Completion of 202 and an introductory course in probability and statistics.

421 Information Systems Analysis and Design (3) Systems engineering approach to analysis and design of systems of information. Topics include: system development life cycle, system analysis methodologies, data analysis techniques, system design, joint application design, and rapid application design. Lab introduces analysis and design software tools.

(Re) Corequisite(s): 402.

Recommended Background: Completion of an introductory course in probability and statistics.

Registration Restriction(s): Industrial engineering major; minimum student level – senior.

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 students 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.

Recommended Background: Completion of one semester of industrial engineering senior-level courses.

Registration Permission: Consent of instructor.


Registration Restriction(s): Minimum student level – senior.

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, tools, and techniques of lean enterprise and Six Sigma. Activities will include case studies, industry based projects, and the preparation of written engineering reports.

(Re) Corequisite(s): 406.

Recommended Background: 350, 401, and completion of an introductory course in probability and statistics.

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.

Contact Hour Distribution: 2-hour lab.

Grading Restriction: Satisfactory/No Credit grading only.

Registration Restriction(s): Industrial engineering major; minimum student level – senior.

454 Visual Basic Applications in Engineering (3) Fundamentals of designing, implementing, and distributing certain Visual Basic applications. Transformation of engineering 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.

(Re) Prerequisite(s): 421.

Recommended Background: Completion of an introductory course in probability and statistics.

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.

(Re) Prerequisite(s): 354.

Recommended Background: Completion of an introductory course in probability and statistics.

Registration Restriction(s): Minimum student level – junior.

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

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

489 Special Topics in Industrial Engineering (1-3) Recent developments in industrial engineering including new areas of application, new research techniques and new methodologies.

Repeatability: May be repeated. Maximum 6 hours.

Registration Restriction(s): Minimum student level – junior.

495 Special Topics in Industrial Engineering (1-3) Recent developments in industrial engineering including new areas of application, new research techniques and new methodologies.

Repeatability: May be repeated. Maximum 6 hours.

Registration Restriction(s): Minimum student level – junior.

Information Management (558)

341 Business Process Analysis (3) Topics include strategic uses of information technology in business processes, analysis of business processes (including transaction processing cycles), analysis of business process risk exposures and controls, and conceptual modeling and the development of information systems.

(Re) Corequisite(s): Business Administration 342.

Registration Restriction(s): Majors in the College of Business Administration; minimum student level – junior.

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 with modern database management systems software and develop database project management skills.

(Re) Prerequisite(s): 341.

Registration Restriction(s): Majors in the College of Business Administration.

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.

(Re) Prerequisite(s): 341.

Registration Restriction(s): Majors in the College of Business Administration.

443 Business Applications and Tools (3) Fundamentals of business application logic, business application architectures, and project management. Students learn to apply advanced tools associated with spreadsheets and databases, including the creation of objects, arrays, macros, and modules (using Visual Basic algorithms), for use in the design and development of object-oriented applications.

(Re) Prerequisite(s): 341.

Registration Restriction(s): Majors in the College of Business Administration.

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.
271 Fundamentals of Interior Design I (6) Principles of spatial organization; creative problem-solving and communication techniques for micro-interior environments; perspective drawing, model building, experimentation with black and white media.
   Contact Hour Distribution: 6-hour studio.
   (RE) Prerequisite(s): 171 and 172.
   (DE) Prerequisite(s): 141 and Mathematics 123.

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.
   Contact Hour Distribution: 6-hour studio.
   (RE) Prerequisite(s): 271.
   (RE) Corequisite(s): 221.

311 History of Interior Architecture (4) Interior architecture, decoration and decorative arts within cultural context, ancient through 19th centuries, emphasis on Italy, France, England, and America.
   (RE) Prerequisite(s): Art History 172 and Art History 173.
   (DE) Prerequisite(s): 272.

312 History of Contemporary Interior Architecture (2) Interior architecture, furniture, design philosophies, 19th-century roots for 20th-century developments, Europe and America. Design as influenced by movements in the fine arts, technological advances, cultural context.
   (RE) Prerequisite(s): 311.

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.
   Contact Hour Distribution: 3-hour studio.
   (RE) Prerequisite(s): 272 and Architecture 231.

360 Business Principles and Practices (3) Interprofessional relationships and business practices, responsibilities, and liabilities.
   (RE) Prerequisite(s): 272.

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.
   Contact Hour Distribution: 6-hour studio.
   (RE) Prerequisite(s): 272 and 331.

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.
   Contact Hour Distribution: 6-hour studio.
   (RE) Prerequisite(s): 371 and 331.

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.
   Contact Hour Distribution: 2-hour studio.
   (RE) Prerequisite(s): 200 and Architecture 231.
   (RE) Corequisite(s): 471.

411 History of American Interior Architecture (3) Historical developments in interior architecture and decorative arts within cultural context, colonial era through 19th century.

420 Practicum for Interior Design (3) Supervised experience in a professional design firm; business practices, project management and design philosophy.
   (RE) Prerequisite(s): 360 and 372.

433 Digital Graphics for Interior Design (3) Theory and techniques of visual problem solving as applied to application of interior design.
   Contact Hour Distribution: 3-hour studio.
   (RE) Prerequisite(s): 272 and Architecture 231.
   Registration Restriction(s): 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 principles and techniques. (QR)
   (RE) Prerequisite(s): 271 and Physics 161.
   (RE) Corequisite(s): 372.

466 Environmental Factors in Design (3) Human factors and associated research techniques and design methodologies related to the built environment.
### Italian (584)

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Prerequisite(s)</th>
<th>Contact Hour Distribution</th>
</tr>
</thead>
<tbody>
<tr>
<td>111</td>
<td>Elementary Italian I</td>
<td></td>
<td>3-hour lecture and 3-hour lab.</td>
</tr>
<tr>
<td>112</td>
<td>Elementary Italian II</td>
<td>(RE) Prerequisite(s): 111</td>
<td>3-hour lecture and 3-hour lab.</td>
</tr>
<tr>
<td>211</td>
<td>Intermediate Italian I</td>
<td>(RE) Prerequisite(s): 212</td>
<td>3-hour lecture and 3-hour lab.</td>
</tr>
<tr>
<td>212</td>
<td>Intermediate Italian II</td>
<td>(RE) Prerequisite(s): 211</td>
<td>3-hour lecture and 3-hour lab.</td>
</tr>
<tr>
<td>311</td>
<td>History of Italian Literature</td>
<td>(RE) Prerequisite(s): 212</td>
<td>3-hour lecture and 3-hour lab.</td>
</tr>
<tr>
<td>312</td>
<td>History of Italian Literature II</td>
<td>(RE) Prerequisite(s): 212</td>
<td>3-hour lecture and 3-hour lab.</td>
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</table>

### Italian Cultural Studies (541)

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Prerequisite(s)</th>
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</thead>
<tbody>
<tr>
<td>414</td>
<td>Italian Cultural Studies</td>
<td></td>
<td>3-hour lecture and 3-hour lab.</td>
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</tbody>
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### Journalism and Electronic Media (592)

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Prerequisite(s)</th>
<th>Contact Hour Distribution</th>
</tr>
</thead>
<tbody>
<tr>
<td>201</td>
<td>Writing for Mass Media</td>
<td>(RE) Prerequisite(s): English 102 and Communication and Information</td>
<td>3-hour lecture and 3-hour lab.</td>
</tr>
<tr>
<td>222</td>
<td>Online Journalism</td>
<td>(RE) Prerequisite: 200</td>
<td>3-hour lecture and 3-hour lab.</td>
</tr>
</tbody>
</table>
275 Introduction to Journalism and Electronic Media (3) Overview of print and electronic media, including content selection, delivery methods, economic and ownership structures, and media effects.  
Contact Hour Distribution: Lecture and lab.

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.  
Contact Hour Distribution: Lecture and lab.  
(RE) Prerequisite(s): 200 or 201.

290 Photojournalism (3) Principles and practice of photography as a creative tool of communication. Basic camera technique, digital photography, historical and contemporary photojournalism.  
Contact Hour Distribution: Lecture and lab.

302 Readership and Audience Analysis (3) Measurement and analysis of readership and audience. Broad overview of methods used for newspapers, magazine, radio, television, cable, and the Internet. Applications to both internal decision-making and external communication in media.  
(RE) Prerequisite(s): 275.

311 Electronic News Writing and Reporting (3) Writing and reporting for electronic news media (radio, television, cable, and the Internet). Lecture and lab course with writing emphasis. Introduction to Computer Assisted Reporting (CAR).  
Contact Hour Distribution: Lecture and lab.  
(RE) Prerequisite(s): 200 and 275.

315 Print/Web News Writing and Reporting (3) Gathering and writing news for publication in magazines and newspapers.  
(RE) Prerequisite(s): 200.

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.  
(RE) Prerequisite(s): 200 and 275.

333 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.  
Contact Hour Distribution: Lecture and lab.  
(RE) Prerequisite: 315 or Public Relations 320.

336 Intermediate Video Production (3) Emphasis on concepts related to message design, development, field acquisition, writing, digital videography, producing and directing video productions. Students are introduced to non-linear digital editing. As part of the class, students provide production support for on-going programs produced for digital cable television channel.  
Contact Hour Distribution: Lecture and lab.  
(RE) Prerequisite: 236.

360 Electronic Media Performance (3) Development of vocal, visual, and performance skills for announcers, interviewers, newscasters, and reporters.  
Contact Hour Distribution: Lecture and lab.  
(RE) Prerequisite(s): 275.

365 Sports Broadcasting (3) Introduction to the skills needed to perform as a radio or TV sportscaster. Includes voice and diction training, interviewing athletes, radio and TV sportscasting, and play-by-play techniques.  
Contact Hour Distribution: Lecture and lab.  
(RE) Prerequisite(s): 200 and 275.


375 Sports Reporting Across the Media (3) An introductory course in gathering, writing and presenting sports news in a variety of formats, including print, photography, radio, television and the Web.  
Contact Hour Distribution: Lecture and lab.

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. (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.  
Contact Hour Distribution: Lecture and lab.  
(RE) Prerequisite: 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.

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. (WC)  
(RE) Prerequisite(s): 333.

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.  
Contact Hour Distribution: Lecture and lab.  
(RE) Prerequisite(s): 414.

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.  
(RE) Prerequisite(s): 302 and 320.

Contact Hour Distribution: Lecture and lab.  
(RE) Prerequisite: 222.

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.  
(RE) Prerequisite(s): 333.

433 Editing and Layout for Print/Web (3) Editing and layout for newspapers, magazines, and online publishing.  
Contact Hour Distribution: Lecture and lab.  
(RE) Prerequisite(s): 336.

436 Advanced Video Production (3) Students are actively involved in the program development process, including conceiving, writing and producing original video productions, as well as maintenance of existing shows airing weekly on the University's digital cable channel. Advanced post-production techniques, including non-linear digital editing.  
Contact Hour Distribution: Lecture and lab.  
(RE) Prerequisite: 436.

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. (WC)

446 Video Capstone (3) Overview of production management. The course will be taught in conjunction with visiting professionals from a variety of corporate and commercial video production facilities. In-depth seminars on production management, including budgeting, planning, staffing, producing, directing, and evaluating video projects. Students are involved in managing productions produced for digital cable channel.  
(RE) Prerequisite: 436.

450 Writing about Science and Medicine (3) Writing workshop to analyze examples of successful science writing and write series of articles for general public based on scientific journals, news conferences, technical meetings and interviews. (Same as Information Sciences 450.) (WC)

451 Environmental Writing (3) Writing for news media (including the Internet) on such environmental issues 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. (WC)

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. (WC)

457 Media and Society (3) Media processes and effects on society. Major theories/research are introduced and applied to current issues.  
(RE) Prerequisite(s): 200 and 275.

460 Electronic News Operations (3) Production of news programs for television, cable and the Internet. Advanced course in electronic news gathering, reporting, digital videography, non-linear editing, and producing. Computerized newsroom software is utilized.  
Contact Hour Distribution: Lecture and lab.  
(RE) Prerequisite(s): 411.

465 Media and Diversity (3) Major theories/research are introduced regarding media effects on public perceptions and attitudes toward various social groups (e.g., groups based on gender, class, race/ethnicity, and sexual orientation). Discussion of historical and legal implications of media effects. (Same as Women's Studies 465.)  
(RE) Prerequisite(s): 200 and 275.  
Registration permission: Consent of instructor.
470 Cable, Broadband, and Interactive Digital Media (3) History and structure of cable television and other broadband delivery systems (DBS, Internet, etc.). Development of digital broadcasting, interactive television, and other broadband media systems and digital technologies. Regulatory, policy, programming, and management issues arising from new media and digital technologies. (RE) Prerequisite(s): 275.

475 Sports Writing (3) Writing sports stories, features and columns. Sports writing is considered from the standpoint of sports reporters, sports information specialists and others with an interest in writing about sports.


485 Media Management (3) Business policies and practices of newspaper, broadcast, cable, and Internet operations. Departmental functions, cost and income analysis, leadership styles and techniques with an emphasis on mid and senior level management. Job-hunting guidelines provided.


491 Foreign Study (1-15) Repeatability: May be repeated. Maximum 15 hours. Comment(s): Approval of hours and topics by advisor required.

492 Practicum (1-2) Work and learning experience at newspaper, radio, television, cable, Web, or other non-broadcast facilities. Final written report required. Grading Restriction: Satisfactory/No Credit grading only. Registration Restriction(s): Minimum student level – senior.

493 Independent Study (3) Repeatability: May be repeated. Maximum 6 hours.

494 Special Topics (3) Topics vary. Repeatability: May be repeated. Maximum 6 hours.

498 Internship (3) Full-time (30-40 hours per week) work experience in news, production, or sales and management with non-university professional organization. Educational experience beyond that available at the university. Final term paper. Credit Restriction(s): No retroactive credit for previous work experience. Registration Restriction(s): Minimum student level – senior.

Judaic Studies (595)

311 Ancient Hebraic Religious Traditions (3) (See Religious Studies 311.)

312 Religious Aspects of Biblical and Classical Literature (3) (See Religious Studies 312.)

320 Women and Religion (3) (See Religious Studies 320.)

322 Medieval Philosophy (3) (See Philosophy 322.) (WC)

350 German-Jewish Topics in Literature and Culture (3) (See German 350.)

369 History of the Middle East (3) (See History 369.)

370 History of the Middle East (3) (See History 370.)

381 Introduction to Judaism (3) (See Religious Studies 381.)

383 History of Jewish Civilization I (3) (See History 383.)

384 History of Jewish Civilization II (3) (See History 384.)

385 Contemporary Jewish Thinkers (3) (See Religious Studies 385.)

386 Voices of the Holocaust (3) (See Religious Studies 386.)

395 The Crusades and the Medieval Christian-Muslim Relations (3) (See History 395.)

405 Modern Jewish Thought (3) (See Religious Studies 405.)

425 Early Christian and Byzantine Art to 1350 (3) (See Art History 425.)

431 Medieval Art of the West 800-1400 (3) (See Art History 431.)

484 Studies in Jewish History (3) (See History 484.)

Latin American Studies (600)

251 Introduction to Latin American Studies (3) (See History 255.) (CC)

252 Introduction to Latin American Studies (3) (See History 255.) (CC)

313 Peoples and Cultures of Mesoamerica (3) (See Anthropology 313.)

314 Peoples and Cultures of South America (3) (See Anthropology 316.)

315 Aspects of Luso-Brazilian Literature (3) (See Portuguese 315.)

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

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

331 Introduction to Hispanic Culture (3) (See Spanish 331.)

333 Survey of Spanish-American Literature: 1700 to Present (3) (See Spanish 333.)

334 Survey of Hispanic Literatures: Beginnings-1700 (3) (See Spanish 334.)

360 History of Latin America (3) (See History 360.)

361 History of Latin America (3) (See History 361.)

373 Geography of South America (3) (See Geography 373.)

401 Cultural Plurality and Institutional Changes in Latin America (3) (See Spanish 401.)

402 Latin American Studies Seminar (3) (See Spanish 402.)

431 Topics in Literature and Language of the Portuguese Speaking World (3) (See Portuguese 431.)

432 Topics in the Literature and Language of the Portuguese Speaking World (3) (See Portuguese 432.)

456 Latin American Government and Politics I (3) (See Political Science 456.)

460 History of Brazil (3) (See History 460.)

461 Cuban Revolution in Historical Perspective (3) (See History 461.)

462 History of Mexico (3) (See History 462.)

465 Latin American Film and Culture (3) (See Spanish 465.)

475 Studies in Latin American History (3) (See History 475.)

479 Disenched Texts in Hispanic Literature (3) (See Spanish 479.)

491 Foreign Study (1-15) Repeatability: May be repeated. Maximum 15 hours.

492 Off-Campus Study (1-15) Repeatability: May be repeated. Maximum 15 hours.

493 Independent Study (1-15) Repeatability: May be repeated. Maximum 15 hours.

Legal Studies (617)

244 Professional Responsibility (3) (See Philosophy 244.) (AH) (OC)

301 The Legal Environment of Business (3) (See Business Law 301.)

330 Law in American Society (3) (See Political Science 330.)

331 Sociological Research (3) (See Sociology 331.)

340 Women, Politics, and the Law (3) (See Women’s Studies 340.)

341 Judicial Process (3) (See Political Science 341.)

362 Roman Law (3) (See Classics 362.)

392 Philosophy of Law (3) (See Philosophy 392.)

393 Global Justice and Human Rights (3) (See Philosophy 393.)

400 Mass Communication Law and Ethics (3) (See Journalism and Electronic Media 400.)

401 Political Analysis (3) (See Political Science 401.)

430 United States Constitutional Law: Sources of Power and Restraint (3) (See Political Science 430.)

431 United States Constitutional Law: Civil Rights and Liberties (3) (See Political Science 431.)

435 Criminal Law and Procedure (3) (See Political Science 435.)

442 Administrative Law (3) (See Political Science 442.)

445 Administration of Justice (3) (See Political Science 445.)

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 (1-3) Repeatability: May be repeated. Maximum 3 hours. Registration Permission: Consent of chair.
494 Internship (3)
Registration Permission: Consent of chair.

496 The Rhetoric of Legal Discourse (3) (See English 496.)

499 Mock Trial (1)
Repeatability: May be repeated. Maximum 8 hours.
Registration Permission: Consent of chair.

Linguistics (623)

200 Language, Linguistics, and Society (3) Introduction to linguistics with focus on language development and use of language by individuals and groups.
(DE) Prerequisite(s): English 102 or 118 or 132.

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)
Repeatability: 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.
Recommended Background: 9 hours of courses (300 or above) required for linguistics concentration.

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)
Repeatability: May be repeated. Maximum 15 hours.

492 Off-Campus Study (1-15)
Repeatability: May be repeated. Maximum 15 hours.

493 Independent Study (1-15)
Repeatability: May be repeated. Maximum 15 hours.

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.
(Re) Prerequisite(s): Business Administration 331.
Registration Restriction(s): Majors in the College of Business Administration.

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.
(Re) Prerequisite(s): 310.
Registration Restriction(s): Majors in the College of Business Administration.

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.
(Re) Prerequisite(s): 310.
(Re) Corequisite(s): 411.
Registration Restriction(s): Majors in the College of Business Administration.

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.
(Re) Prerequisite(s): 310.
(Re) Corequisite(s): 411.
Registration Restriction(s): Majors in the College of Business Administration.

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 management of the business purchasing function, including supplier selection and development, quality control, cost management, and performance measurement.
(Re) Prerequisite(s): 411.
Registration Restriction(s): Majors in the College of Business Administration.

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.
(Re) Prerequisite(s): 411.
Registration Restriction(s): Majors in the College of Business Administration.

492 Logistics Off-Campus Study (1-6)
Grading Restriction: Satisfactory/No Credit grading only.
Repeatability: May be repeated. Maximum 6 hours.
Registration Restriction(s): Logistics major.
Registration Permission: Consent of instructor.

493 Independent Study (1-6) Directed research on subject of mutual interest to student and staff member.
Repeatability: May be repeated. Maximum 6 hours.
Registration Restriction(s): Logistics major.
Registration Permission: Consent of instructor.

Management (625)

300 Organizational Management (3) The study of the theories of organizations and the practice of management within them.
(Re) Prerequisite(s): Business Administration 201.
Comment(s): Not for majors in the College of Business Administration.
Registration Restriction(s): Minimum student level – junior.

331 Developing Managerial Skills (3) Focuses on developing the skills to manage the dynamics of organizational behavior including motivating others, decision-making, using power and influence, resolving conflict, building teams, and leading change.
(Re) Corequisite(s): Business Administration 331 or Business Administration 341.
Registration Restriction(s): Majors in the College of Business Administration.

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.
(Re) Prerequisite(s): Business Administration 353 and Business Law 301.
Comment(s): For seniors.
Registration Restriction(s): Majors in the College of Business Administration.

402 International Business Strategy (3) Provides an understanding of how to design and implement business and corporate strategies that will achieve sustainable competitive advantage in the international arena. Its perspective is that of the general manager who, to be successful, must balance the demands of multiple stakeholders and integrate various organizational activities and business functions into a cohesive unit. Emphasis is placed on the practical application of concepts and theories to real business situations.
Credit Restriction: Students may not receive credit for Management 401 and 402.
(Re) Prerequisite(s): Business Administration 353 and Business Law 301.
Comment(s): Students must be in the international business collateral or dual concentration.
Registration Restriction(s): Majors in the College of Business Administration.

431 Personnel Management (3) Theory, methods, and issues pertaining to successful personnel management. Course content: strategic human resource management planning, job analysis, legal issues recruiting, measurement/decision-making issues, assessing job candidates, human resource development, performance appraisal, compensation development, safety and health, labor relations, and organizational exit.
(Re) Prerequisite(s): 331.
Registration Restriction(s): Majors in the College of Business Administration.

440 Organizational Psychology (3) (See Psychology 440.)

451 Business Planning (3) Integration of various functional disciplines and their application to general management of new ventures within established companies and entrepreneurial enterprises. Focuses on the components necessary for the development of a business plan.
(Re) Corequisite(s): 431.
Registration Restriction(s): Majors in the College of Business Administration.

471 International Management (3) Factors significant to the manager in international business activities.
(Re) Prerequisite(s): Business Administration 361.
Registration Restriction(s): Majors in the College of Business Administration.
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, expatriate employees, and evaluation and compensation of employees in international assignments. (RE) Prerequisite(s): Business Administration 201. Comment(s): For students in language and world business concentration in the College of Arts and Sciences (not for majors in the College of Business Administration).

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: multi-national organizational culture, intercultural communications, intercultural decision-making, managing political risks, and motivation and leadership in cross-cultural settings. (RE) Prerequisite(s): Business Administration 361. Registration Restriction(s): Majors in the College of Business Administration.

492 Management Off-Campus Study (1-6) Grading Restriction: Satisfactory/No Credit grading only. Repeatability: May be repeated. Maximum 6 hours. Registration Restriction(s): Management major. Registration Permission: Consent of instructor.

493 Independent Study (3) Readings, research, and special projects. Repeatability: May be repeated. Maximum 6 hours. Registration Restriction(s): Management major. Registration Permission: Consent of instructor.

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. (RE) Prerequisite(s): Business Administration 201. Comment(s): Not for majors in the College of Business Administration. Registration Restriction(s): Minimum student level – junior.

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. (RE) Prerequisite(s): Business Administration 332. Registration Restriction(s): Majors in the College of Business Administration.

345 Marketing Analytics (2) Develops students’ analytical and decision-making skills through specific exercises and examples that apply various statistical and marketing-specific content. Students learn how to organize data into customer databases and how to analyze those databases through learning of statistical techniques, decision analysis techniques, and spreadsheet analysis techniques. (RE) Prerequisite(s): Business Administration 332. (RE) Corequisite(s): 340. Registration Restriction(s): Majors in the College of Business Administration.

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. (RE) Prerequisite(s): 340. (DE) Prerequisite(s): 345 for marketing majors. Registration Restriction(s): Majors in the College of Business Administration

400 Special Topics in Marketing (3) Topics of current interest in marketing. Topic announced prior to offering. Repeatability: May be repeated if topic differs. Maximum 6 hours. (RE) Prerequisite(s): Business Administration 332. Registration Restriction(s): Majors in the College of Business Administration.

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 service management include service design, service delivery, service quality/productivity, service failure/recovery, and role of technology. (RE) Prerequisite(s): 340. (DE) Prerequisite or (DE) Corequisite: 350 for marketing majors and co-concentration students. Registration Restriction(s): Majors in the College of Business Administration.

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. (RE) Prerequisite(s): 340. (DE) Prerequisite or (DE) Corequisite: 350 for marketing majors and co-concentration students. Registration Restriction(s): Majors in the College of Business Administration.

458 Sales Force Management (2) Examines how organizations communicate 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. (RE) Prerequisite(s): 340. (DE) Prerequisite or (DE) Corequisite: 350 for marketing majors and co-concentration students. Registration Restriction(s): Majors in the College of Business Administration.

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. (RE) Prerequisite(s): 350. (DE) Prerequisite(s): Any two of 452, 456, 458. Registration Restriction(s): Majors in the College of Business Administration.

492 Marketing Off-Campus Study (1-6) Grading Restriction: Satisfactory/No Credit grading only. Repeatability: May be repeated. Maximum 6 hours. Registration Restriction(s): Marketing major. Registration Permission: Consent of instructor.

493 Independent Study (1-6) Directed research on subjects of mutual interest to student and staff member. Repeatability: May be repeated. Maximum 6 hours. Registration Restriction(s): Marketing major. Registration Permission: Consent of instructor.

Materials Science and Engineering (638)

101 Advances in Materials Science and Engineering (1) Review modern advances in materials science and engineering. Exposes students to a variety of materials science and engineering case studies to demonstrate the societal impact of materials science and engineering profession. Grading Restriction: 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. (RE) Prerequisite(s): 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. Contact Hour Distribution: 3 hours lecture and 1 hour lab. (RE) Prerequisite(s): Mathematics 142. (RE) Corequisite(s): 201 and 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; surface energy; elasticity; material defects. (RE) Prerequisite(s): Engineering Fundamentals 152 and Chemistry 130. (DE) Prerequisite(s): Mathematics 142. (RE) Corequisite(s): 201.

290 Materials Seminar (0) Professionalism, ethical considerations, safety, patents, product liability, field trips, industrial speakers, materials science in a global/societal context, teamwork, contemporary issues, life-long learning. Grading Restriction: Satisfactory/No Credit grading only. Repeatability: May be repeated. Maximum 4 times.

291 Materials Seminar (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. Grading Restriction: Satisfactory/No Credit grading only. Repeatability: May be repeated. Maximum 4 hours.
300 Materials Laboratory Procedures (1) Thermometry, sample preparation for microscopic examination; word processing and graphics usage, data analysis, report writing.

(RE) Prerequisite(s): 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 test; mechanics of plastic deformation in crystalline solids; basic strengthening mechanisms; elementary fracture mechanics.

(RE) Prerequisite(s): 201.

304 Principles of Materials Laboratory (1) Laboratory assignments demonstrating fundamental principles of materials science and engineering; analytical techniques.

(RE) Prerequisite(s): 201; (DE) Corequisite(s): 320 and 340.

320 Diffusion and Phase Transformations (3) Introduction to diffusion in solids; the diffusion equations, point defects and atomic mechanisms of diffusion. Thermodynamics of phase equilibrium. Introduction to the kinetics and morphology of phase transformations.

(RE) Prerequisite(s): 201 and 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.

(RE) Prerequisite(s): 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, electrical conduction in metals and semiconductors, classical and quantum mechanical treatments of optical properties, and magnetic phenomena.

(RE) Prerequisite(s): 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.

(RE) Prerequisite(s): 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 techniques, etc.) are studied as examples of processing technologies. Elementary ideas of process measurement and control.

(RE) Prerequisite(s): 201 and 250. (DE) Corequisite(s): 320.

390 Principles of Metallic Materials (3) Property control through composition, mechanical and thermal processing; ferrous and nonferrous alloys; alloy selection.

(RE) Prerequisite(s): 201.

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


(RE) Prerequisite(s): 201 and Physics 232.

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.

(RE) Prerequisite(s): 302.

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.

(RE) Prerequisite(s): 201 and 302.

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, FTIR, etc.

(RE) Prerequisite(s): 201.

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. Recommended for chemical engineering, mechanical engineering, civil engineering, engineering science and mechanics majors.

(RE) Prerequisite(s): 201.

472 Fundamental Principles of Composite Materials (3) Physical principles basic to the design, manufacture, and application of fiber reinforced polymers, metals, and ceramics.

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. Recommended for engineering science and mechanics majors.

(RE) Prerequisite(s): 201.

476 Overview of Intermetallic Compounds and Composites (3) Fabrication and processing, ultrafine-grained materials nanotechnology, thermodynamics and stability, microstructural characterizations, mechanical properties, corrosion and oxidation properties, theoretical modeling, and design and industrial applications of intermetallics and composites. Laboratory demonstrations and group projects.

(RE) Prerequisite(s): 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.

Registration Restriction(s): Minimum student level – junior.

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


Registration Restriction(s): Minimum student level – senior.

494 Special Project Laboratory (1-3) Group or individual investigation of problems related to materials science and engineering. Repeatability: May be repeated. Maximum 6 hours. (RE) Prerequisite(s): 201.


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. This course is designed to prepare students for enrollment in 119, 130, 201, and 202.

Grading Restriction: A, B, C. No Credit grading.

Credit Restriction: Does not count toward the total number of hours required for graduation, nor does it fulfill any mathematics requirement.

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.

Grading Restriction: Satisfactory/No Credit grading only. Repeatability: May be repeated. Maximum 3 hours.

113 Mathematical Reasoning (3) Classical and modern topics in number theory, logic, set theory, probability and statistics without calculus. (QR)

Credit Restriction: Not available for credit to students in the College of Business Administration.

115 Statistical Reasoning (3) An introduction to probability and statistics without calculus. (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. (QR)
Recommended Background: ACT composite score 31 or SAT 1380.

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.
Grading Restriction: A, B, C. No Credit grading only.
Credit Restriction: Students who receive a grade of C or better in any course numbered 123 or higher (except for 251 or 202) may not subsequently receive credit for 119.
Comment(s): Satisfactory placement test score required. This course should not be taken to remove an entrance requirement.

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. (QR)
(DE) Prerequisite(s): 119 or 130 or satisfactory placement score.
Comment(s): Satisfactory placement test score required.

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. (QR)
Credit Restriction: Students who receive a grade of C or better in 141 or 151 may not subsequently receive credit for 125.
(DE) Prerequisite(s): 119 or 130 or satisfactory placement test score.

130 Precalculus I (4) Review of algebraic, logarithmic, exponential, and trigonometric functions.
Grading Restriction: A, B, C. No Credit grading only.
Credit Restriction: Students who receive a grade of C or better in 141 or 151 may not subsequently receive credit for 130.
(DE) Prerequisite(s): 119 or satisfactory placement test score.
Comment(s): For students who satisfy the course prerequisites for 141 or 151, but whose placement test scores indicate additional preparation is necessary. Students who did not study trigonometry in high school may take the non-credit course in trigonometry simultaneously with 130.

141 Calculus I (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. (QR)
(DE) Prerequisite(s): 130 or satisfactory placement test score.

142 Calculus II (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. (QR)
(RE) Prerequisite(s): 141 or 147.

147 Honors Calculus I (4) Honors version of 141 for well-prepared students. (QR)
Credit Restriction(s): Credit will not be given for both 147 and 141 or 152.
Comment(s): Satisfactory placement test score required. Students having 32 Mathematics ACT, 700 Quantitative SAT scores, or permission from the instructor may enroll in 147.

148 Honors Calculus II (4) Honors version of 142 for well-prepared students. (QR)
(DE) Prerequisite(s): 147.
Comment(s): Students having 32 Mathematics ACT, 700 Quantitative SAT and credit for Mathematics 141, an AP Calculus score of 5, or permission of the instructor may enroll in 148.

151 Mathematics for the Life Sciences I (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. (QR)
(RE) Prerequisite(s): 130 or satisfactory placement test score.

152 Mathematics for the Life Sciences II (3) For students majoring in the life sciences. 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. (QR)
Credit Restriction(s): Students who receive a grade of C or better in 141 cannot subsequently receive credit for 152.
(RE) Prerequisite(s): 151.

171 Computer Literacy for Mathematics (3) Introduction to computers, the Internet, mathematical packages and programming for prospective mathematics majors.
(RE) Prerequisite(s): 141.

200 Matrix Computations (1) Introduction to matrix calculations, including determinants, eigenvalues and eigenvectors.
Credit Restriction: Students who have received a grade of C or better in 251 may not subsequently receive credit for 200.
(RE) Prerequisite(s): 241 or 247.
Comment(s): For students in the College of Engineering and statistics majors in the College of Business Administration.

201 Structure of the Number System (3) Problem solving, sets and relations, number systems, integers, elementary number theory, rational numbers and decimals.
Comment(s): Satisfactory placement test score required.

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. (QR)
Comment(s): Satisfactory placement test score required.

231 Differential Equations I (3) First course, emphasizing solution techniques. Includes first-order equations and applications, theory of linear equations, equations with constant coefficients, Laplace transforms, and series solutions.
(RE) Prerequisite(s): 142 or 148.

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

248 Honors: Calculus III (4) (RE) Prerequisite(s): 148.

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.
(RE) Prerequisite(s): 142 or 148.

257 Honors: Matrix Algebra I (3) (RE) Prerequisite(s): 148.

299 Studies in Mathematics (1-3) Repeatability: 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.
(RE) Prerequisite(s): 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.
(RE) Prerequisite(s): 300.
(DE) Prerequisite(s): 241 or 247.

341 Analysis I (3) Introduction to the theory of the real number system, limits of sequences, and functions of a real variable.
(RE) Prerequisite(s): 300.
(DE) Prerequisite(s): 241 or 247.

351 Algebra I (3) Introduction to abstract algebra emphasizing integers and polynomial rings.
(RE) Prerequisite(s): 300.
(RE) Prerequisite(s): 251 or 257.

Credit Restriction: Students may not receive credit for both Mathematics 371 and Computer Science 370.
(RE) Prerequisite(s): 231.
(DE) Prerequisite(s): 251 or 257 or 200 and 241 or 247.
Comment(s): Knowledge of high-level programming language required.

399 Studies in Mathematics (1-3) Repeatability: 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. Includes at least one in-class essay examination and 3,000 words of writing outside the classroom. Writing-emphasis course.
(RE) Prerequisite(s): 300.
(DE) Prerequisite(s): 251 or 257.

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.
Credit Restriction: Does not satisfy requirements for the mathematics major.
(RE) Prerequisite(s): 231 and 241.
Comment(s): Knowledge of high-level programming language required.
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.
(RE) Prerequisite(s): 241 or 247.

405 Models in Biology (3) Difference and differential equation models of biological systems.
(DE) Prerequisite(s): 142 or 148 or 152.

411 Mathematical Modeling (3) Construction and analysis of mathematical models used in science and industry. Projects emphasized. Writing emphasis course.
(RE) Prerequisite(s): 231 and 241.

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.
(RE) Prerequisite(s): 323.

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.
(RE) Prerequisite(s): 323.

424 Probability II (3) Elements of stochastic processes: Random walk, Markov chains and Poisson processes. Other topics as selected by the instructor.
(RE) Prerequisite(s): 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.
(RE) Prerequisite(s): 423.

(RE) Prerequisite(s): 241 or 247.

435 Partial Differential Equations I (3) Separation of variables, Fourier series, solution of Laplace, wave, and heat equations.
(RE) Prerequisite(s): 241 or 247.

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

445 Advanced Calculus I (3) Introduction to the theory of sequences, series, differentiation, and Riemann integration of functions of one or more variables.
(RE) Prerequisite(s): 300. (DE) Prerequisite(s): 241 or 247.

446 Advanced Calculus II (3) Introduction to the theory of sequences, series, differentiation, and Riemann integration of functions of one or more variables.
(RE) Prerequisite(s): 445.

447 Honors: Advanced Calculus I (3) Honors version of 445.
(RE) Prerequisite(s): 341.

448 Honors: Advanced Calculus II (3) Honors version of 446.
(RE) Prerequisite(s): 447.

453 Matrix Algebra II (3) Advanced topics in matrix theory, including the Jordan canonical form.
(RE) Prerequisite(s): 251 or 257.

455 Abstract Algebra I (3) Introduction to algebraic structures such as groups, rings, fields, vector spaces and linear transformations.
(RE) Prerequisite(s): 300. (DE) Prerequisite(s): 251 or 257.

456 Abstract Algebra II (3) Introduction to algebraic structures such as groups, rings, fields, vector spaces and linear transformations.
(RE) Prerequisite(s): 455.

457 Honors: Abstract Algebra I (3) Honors version of 455.
(RE) Prerequisite(s): 351.

458 Honors: Abstract Algebra II (3) Honors version of 456.
(RE) Prerequisite(s): 457.

460 Geometry (3) Axiomatic and historical development of neutral, Euclidean, and hyperbolic geometry stressing proof technique and critical reasoning. Models of Non-Euclidean geometries.
(RE) Prerequisite(s): 300.

461 Topology (3) Includes topology of line and plane, separation properties, compactness, connectedness, continuous functions, homeomorphisms, continua, and topological invariants.
(RE) Prerequisite(s): 300. (DE) Prerequisite(s): 241 or 247.

471 Numerical Analysis (3) Introduction to computation, instabilities, approximation by polynomials and piecewise polynomials. Quadrature and numerical solution of initial and boundary value problems of ordinary differential equations, including stiff systems. (Same as Computer Science 471.)
(RE) Prerequisite(s): 371.

472 Numerical Algebra (3) Direct and iterative methods for systems of linear equations. Solution of a single nonlinear equation and nonlinear systems. Orthogonal decomposition, least squares and the algebraic eigenvalue problem. (Same as Computer Science 472.)
(RE) Prerequisite(s): 371.

475 Industrial Mathematics (3) Modeling, analysis, and computation applied to scientific/technical/industrial problems.
(RE) Prerequisite(s): 455. Recommended Background: Familiarity with operating system and programming language.

490 Readings in Mathematics (1-3) Open to superior students. Independent study with faculty guidance. Repeatability: 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. Repeatability: May be repeated. Maximum 6 hours.
(RE) Prerequisite(s): 300 and 251. (DE) Prerequisite(s): 241.

497 Undergraduate Honors Seminar (2) Forum for presentation of student theses and other undergraduate research projects.
Grading Restriction: Satisfactory/No Credit grading only. Repeatability: May be repeated. Maximum 8 hours.

498 Senior Honors Thesis (1-3) Students in the mathematics honors program work individually under the direction of a faculty member to write an honors thesis. The thesis must be approved by the departmental honors committee.
Repeatability: May be repeated. Maximum 6 hours.

499 Seminar in Mathematics (1-3) Topics vary. Requires out-of-class projects and in-class presentations by students. Students must register for the number of credit hours announced for a particular seminar.
Repeatability: May be repeated. Maximum 9 hours.

Registration Permission: Consent of instructor.

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.
Registration Restriction(s): Qualification — admission to teacher education.

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.
(RE) Prerequisite(s): Engineering Fundamentals 152 and Engineering Fundamentals 202. (DE) Prerequisite(s): Mathematics 142.

321 Mechanics of Materials I (3) Concepts of stress and strain; stress-strain relations; applications including axially loaded members, torsion of circular shafts, bending of beams and column stability.

331 Thermodynamics (3) Energy and laws governing energy transformations; thermodynamic properties; thermodynamic cycles; ideal gas mixtures; application to engineering problems.
(RE) Corequisite(s): Mathematics 241.

344 Heat Transfer (3) Heat transfer by conduction, thermal radiation, free and forced convection.
(RE) Prerequisite(s): 331 and 391. (DE) Prerequisite(s): Aerospace Engineering 341.
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.
(RE) Prerequisite(s): Aerospace Engineering 341 and Electrical and Computer Engineering 301.
(RE) Corequisite(s): 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.
(RE) Corequisite(s): 345 or Biomedical Engineering 430.

365 Mechanisms (3)
Kinematics and dynamics of mechanical linkages, gears and cams. Balancing of multicylinder engines.
(RE) Prerequisite(s): 231.

366 Manufacturing Processes (3)
Processes related to design of machine parts. Casting, hot and cold forming, metal removal and weldments. Manufacturing tolerances and surface finishes.
(RE) Prerequisite(s): Materials Science and Engineering 201.

391 Engineering Analysis (3)
Numerical and analytical techniques are developed for problems arising in mechanical and aerospace engineering. Numerical methods address root finding, direct and indirect techniques for linear and nonlinear systems, interpolation, curve fitting, quadratures, solutions to ordinary- and partial-differential equations. Analytic methods include Fourier series, solutions to linear systems of differential equations, and separation of variables. Computer projects are assigned for reinforcing classroom developments.
(RE) Prerequisite(s): Engineering Fundamentals 152 and Mathematics 231.
(DE) Prerequisite(s): Mathematics 251 or 200 and Engineering Fundamentals 230.

401 Thesis (3)
Research and design problems in mechanical engineering with prior approval of instructor.
Registration Permission: Consent of instructor.

405 Microcomputer-Based Control of Electromechanical Systems (3)
(RE) Prerequisite(s): Electrical and Computer Engineering 301.

406 Product Development, Evaluation, and Selection (3)
Fundamentals of product development and project management. Evaluation of multiple technological products for business potential. Technological feasibility, marketing potential, design and manufacturing requirements.
Registration Permission: Consent of instructor.

410 Professional Development (2)
Topics relating to professional responsibility, communications, and organization. Requires a formal oral presentation by each student on an engineering topic chosen by the student and approved by the instructor.
(OC) Prerequisite(s): English 102.
Registration Restriction(s): Minimum student level - senior.

449 Mechanical Engineering Laboratory (3)
Designing, conducting and reporting results of experimental exercises. Test standards and specifications. Analysis of data and formation of conclusions.
Contact Hour Distribution: 3 hours lab per week.
(RE) Prerequisite(s): 344 and 345.
(DE) Corequisite(s): 475.

450 Mechanical Engineering Design I (1-4)
Design process, synthesis, design studies.
Repeatability: Not repeatable for credit. May be taken once for 1-4 hours.
(RE) Corequisite(s): 344 and 345.

451 Control Systems (3)
Analysis and design of feedback control systems using transient and frequency response techniques, stability analysis in the time and frequency domain.
(RE) Prerequisite(s): 363.

452 Finite Element Analysis (3)
Conversion of fundamental conservation principles in mechanics to simulation form via finite element implementation; applications in heat transfer, solid mechanics, mechanical vibrations, fluid mechanics and heat/mass transport. Extensive computer lab experiments using Material-based and commercial software systems.
(RE) Prerequisite(s): 321 and 344.
(DE) Prerequisite(s): 363.

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.
Registration Permission: 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. Repeatability: Not repeatable for credit. May be taken once for 1-4 hours.
(RE) Prerequisite(s): 450.

463 Mechanical Vibration (3)
(RE) Prerequisite(s): 363.

466 Elements of Machine Design II (3)
Application of strength and properties of materials, design factors, theories of failure to design of machine elements. Mini-design experiences.
(RE) Prerequisite(s): 321 and Materials Science and Engineering 201.

467 Smart Structures and Materials (3)
Fundamentals of electromaterial properties of ferroelectric materials (piezoelectric and electroractive), shape memory alloys, and other electrically and magnetically activated materials, with application. Course includes a semester project.
(RE) Prerequisite(s): 231 and 321.

475 Thermal Engineering (3)
Thermal systems with emphasis on turbo-machinery, heat exchangers, gas-vapor mixtures and psychrometry, fuels and combustion; chemical equilibrium; system analysis and design.
(RE) Prerequisite(s): 344.

480 Introduction to Hybrid Electric Vehicles (3)
 steadystate HEV force and power modeling. Introduction to internal combustion engines, motors, energy storage systems and control strategies. Powertrain design and analysis using various computer simulation tools.
(RE) Corequisite(s): 475.

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

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

494 Selected Topics in Mechanical Engineering (1-4)
Problems and topics related to developments and practice in mechanical engineering. Repeatability: Not repeatable for credit. May be taken once for 1-4 hours.
Registration Permission: Consent of instructor.

495 Selected Topics in Mechanical Engineering (1-4)
Problems and topics related to developments and practice in mechanical engineering. Repeatability: Not repeatable for credit. May be taken once for 1-4 hours.
Registration Permission: Consent of instructor.

Medical Technology (669)

101 Introduction to Clinical Laboratory Science (2)
Introduction to the profession for those investigating a career in clinical laboratory science. Emphasis on the scientific aspects and clinical significance of laboratory procedures, laboratory safety, professionalism, and career opportunities.

110 Microbiology (4)
Laboratory work in bacteriology, mycology, and parasitology. Emphasis on pathogenic bacteria and fungi, their sources, methods of culture, techniques of identification, and evaluation of antibiotic sensitivity. Gross and qualitative chemical examination of feces and methods of identification of protozoa and helminth parasites of man.
Registration Restriction(s): Medical technology major.

411 Microbiology (4)
Laboratory work in bacteriology, mycology, and parasitology. Emphasis on pathogenic bacteria and fungi, their sources, methods of culture, techniques of identification, and evaluation of antibiotic sensitivity. Gross and qualitative chemical examination of feces and methods of identification of protozoa and helminth parasites of man.
Registration Restriction(s): Medical technology major.

420 Clinical Chemistry (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.
Registration Restriction(s): Medical technology major.

421 Clinical Chemistry (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.
Registration Restriction(s): Medical technology major.
430 Hematology and Clinical Microscopy (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. Registration Restriction(s): Medical technology major.

431 Hematology and Clinical Microscopy (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. Registration Restriction(s): Medical technology major.


441 Immunohematology (3) Theory and practice in blood bank operation. Erythrocyte antigens and their normal and abnormal immunology. Standard technical practices used in evaluating blood typing, cross-matching, antibody detection, and preparation of blood components for transfusion. Safety control methods standard to efficient blood bank. Registration Restriction(s): Medical technology major.

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. Registration Restriction(s): Medical technology major.

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. Registration Restriction(s): Medical technology major.

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. Registration Restriction(s): Medical technology major.

Medieval Studies (674)

201 Medieval Civilization (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)

202 Medieval Civilization (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. Writing-emphasis course. (RE) Prerequisite(s): 261.

312 Medieval History (3) (See History 312.)

313 Medieval History (3) (See History 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 treatment of selected topics. Content varies. Writing-emphasis course. Repeatability: May be repeated. Maximum 6 hours.

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.)

417 Medieval Art of the West, 800-1400 (3) (See Art History 431.)

411 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) Repeatability: May be repeated. Maximum 15 hours.

492 Off-Campus Study (1-15) Repeatability: May be repeated. Maximum 15 hours.

493 Independent Study (1-15) Repeatability: May be repeated. Maximum 15 hours.

Microbiology (684)

210 General Microbiology (3) General properties of bacteria and viruses including physiology, metabolism, genetics, applied bacteriology, pathogenesis, and immunity. (NS) Contact Hour Distribution: 2 hours and 2 labs. Credit Restriction: May not be applied toward the microbiology concentration.

310 Introduction to Microbiology (3) Introduction to bacteria and viruses including physiology, metabolism, and genetics of bacteria and replication and expression of viruses; bacterial and viral pathogenicity; mechanisms of resistance to disease. (RE) Prerequisite(s): Biology 140. (RE) Corequisite(s): Biology 240.

319 Introductory Microbiology Laboratory (2) Basic techniques for the examination, cultivation, and identification of microorganisms. (RE) Prerequisite(s): 310.

320 Advanced Microbiology (3) Cell and molecular biology of microorganisms, principles and applications in modern technological society. Intended for students in the microbiology concentration. (RE) Prerequisite(s): 310.

329 Advanced Microbiology Laboratory (2) Laboratory exercises designed to accompany 320. (RE) Prerequisite(s): 319.

400 Laboratory Problems in Microbiology (2-4) Research projects under the direction of a faculty member. Grading Restriction: Satisfactory/No Credit grading only. Repeatability: May be repeated. Maximum 9 hours. Credit Restriction: May not be applied toward the major. Registration Permission: Consent of instructor and department head.

401 Undergraduate Research in Microbiology (3) Research experience in laboratory of faculty member with faculty committee guidance. (DE) Prerequisite(s): 310, 319, 320, and 329. Registration Restriction(s): Minimum student level – junior. Registration Permission: Consent of instructor and department head.

402 Advanced Undergraduate Research in Microbiology (4) Supervised research. May be taken to satisfy honors thesis. (DE) Prerequisite(s): 401. Registration Restriction(s): Minimum student level – junior. Registration Permission: Consent of instructor and department head.

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

411 Bacterial Genetics (3) Transmission and expression of genetic information by bacteria. (RE) Prerequisite(s): 310.

420 Medical Microbiology (3) Disease-producing microorganisms including bacteria, rickettsia, chlamydia, and fungi. (RE) Prerequisite(s): 310.

429 Medical Microbiology Laboratory (2) Laboratory exercises in medically important areas of microbiology including microorganisms, pathogenesis, and immunity. (RE) Prerequisite(s): 319 and 430. (RE) Corequisite(s): 420.

430 Immunology (3) Principles of inflammation and immunity; immunoglobulin structure and theories of formation and diversity; complement, hypersensitivities, cell cooperation and recognition in immune mechanisms; soluble factors. (RE) Prerequisite(s): Biology 240.
440 Virology (3) Pathogenesis and molecular biology of viruses. 
(RE) Prerequisite(s): 310.

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

480 Genomics and Bioinformatics (3) Fundamentals of a new scientific discipline based on sequencing genomes (entire DNA) of individual organisms. Greats, principles and types of genome analysis are covered in a traditional lecture course. Computational tools for genome analysis (bioinformatics) are presented in both lecture and hands-on (computer laboratory) settings. 
Credit Restriction: Students may not receive credit for both 480 and 540. 
(RE) Prerequisite(s): Biology 240.

491 Foreign Study (1-9) Repeatability: May be repeated. Maximum 9 hours.

492 Off-Campus Study (1-9) Repeatability: May be repeated. Maximum 9 hours.

493 Independent Study (1-9) Repeatability: May be repeated. Maximum 9 hours.

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 and sociological functions of the future, and the basis of moral and ethical judgments. Written reports are required. A capstone course. 
Repeatability: May be repeated. Maximum 6 hours. 
Credit Restriction(s): Maximum of 3 hours may be applied toward the major. 
(RE) Prerequisite(s): 320. 
Registration Restriction(s): Minimum student level – senior.

Military Science and Leadership (689)

101 Foundations of Officership (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. 
Grading Restriction: Letter grade only.

102 Basic Leadership (2) Develops basic skills that underline 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. 
Grading Restriction: Letter grade only.

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. 
Repeatability: 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, and military problem-solving decision-making. 
Grading Restriction: Letter grade only. 

201 Individual Leadership Studies (3) Develops knowledge of self, self-confidence, and individual leadership skills. Concentrates on problem-solving and critical thinking skills. Emphasizes communication skills such as feedback and conflict resolution. Adventure training skills lab introduces land navigation, rifle marksmanship, mountaineering, and optional field training exercises. 
Grading Restriction: Letter grade only.

202 Leadership and Teamwork (3) Focuses on self-development through understanding of self and group processes. Examines leadership through a group project. Primary evaluation is the Army Physical Fitness Test which consists of pushups, sit-ups and a two-mile run. 
Repeatability: May be repeated. Maximum 8 hours. 
Credit Restriction: May be taken as elective credit by any student except those registered for 310, 320.

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 practice concentrates on competency in land navigation, rifle marksmanship, and small unit operations. Requires 3 or more years of JROTC participation or completion of basic training. 
Contact Hour Distribution: 3 hours and 1 lab. 
Grading Restriction: Letter grade only. 
(RE) Prerequisite(s): 101 and 102. 
(DE) Prerequisite(s): 201, 202, or 200. 
Registration Restriction(s): 2.0 GPA.

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 practice concentrates on preparation for Military Science and Leadership 400 National Advanced Leaders Camp. Emphasis on land navigation, rifle marksmanship, and small unit operations. 
Grading Restriction: Letter grade only. 
(RE) Prerequisite(s): 301.

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. 
Grading Restriction: Letter grade only.

400 National Advanced Leaders 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. 
(RE) Prerequisite(s): 301 and 302.

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. 
Contact Hour Distribution: 3 hours and 1-hour lab. 
Grading Restriction: Letter grade only. 
(RE) Prerequisite(s): 301 and 302. 
(DE) Prerequisite(s): 401.

402 Officerhood (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. 
Contact Hour Distribution: 3 hours and 1-hour lab. 
Grading Restriction: Letter grade only. 
(RE) Prerequisite(s): 301 and 302. 
(DE) Prerequisite(s): 401.

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. 
Grading Restriction: Letter grade only. 
Repeatability: May be repeated. Maximum 4 hours. 
Registration Permission: Consent of instructor.

Modern Foreign Languages and Literatures (686)

199 Language and World Business (2) Examines the importance of foreign trade at the local, state, and national levels. Interdisciplinary faculty and students from the Colleges of Business Administration and Arts and Sciences provide an overview of the value of language study and international cultural awareness in the program in world business. See Director for further information.

482 Special Topics in Global Cinema (3) Content varies. Focus from global perspectives on directors, stars, film genres, national and regional cinematic movements or other topics. Taught in English. 
Writing emphasis course. (Same as Cinema Studies 482; Global Studies 482.) 
Repeatability: May be repeated. Maximum 6 hours.

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. 
Grading Restriction: Letter grade only. 
Repeatability: May be repeated. Maximum 3 hours. 
Credit Restriction: May be taken as elective credit by any student except those registered for 310, 320.

201 Field Experience in General Music (1) Observing and assisting in an approved elementary or middle school classroom. 
Grading Restriction: Satisfactory/No Credit grading only. 
Repeatability: May be repeated. Maximum 3 hours.

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. 
Grading Restriction: 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. Grading Restriction: 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. Grading Restriction: 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. Grading Restriction: Letter grade only.

221 Class Brass Methods II (1) Structure, use, techniques of playing, care and repair of the lower 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. Grading Restriction: Letter grade only.

230 Class Percussion Methods I (1) Structure, use, techniques of playing, care and repair of principal percussion instruments in school instrumental organizations. Emphasis on techniques necessary for basic understanding and effective teaching of the instruments. Practical use of current instructional materials. Grading Restriction: 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. Grading Restriction: 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. Grading Restriction: 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. Grading Restriction: 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. Repeatability: May be repeated. Maximum 2 hours.

251 Functional Piano for Teachers II (1) Application of skills and techniques acquired in Music Education 250 to playing and transposing familiar school songs, choral accompaniments and open scores. Creation of accompaniments for singing and movement exercises, listening activities, and playing instruments in various styles. (RE) Prerequisite(s): 250.

260 Eurhythmics (1) Principles and practice of eurhythmics, as developed by Emile Jaques-Dalcroze. Grading Restriction: Letter grade only. Repeatability: May be repeated. Maximum 2 hours.

300 Music for Elementary Teachers (2) Singing, rhythmic activities, instrumental activities, listening, music reading, and creative activities appropriate for the elementary grades. Grading Restriction: Letter grade only. Registration Restriction(s): Qualification — admission to teacher education.

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. Grading Restriction: Letter grade only. (RE) Prerequisite(s): Music Theory 220.

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. Grading Restriction: Letter grade only. (RE) Prerequisite(s): 310.

322 Chamber Choir (1) Prerequisite(s): Music Theory 220. Registration Restriction(s): Qualification — admission to teacher education.

323 Music Methods for the Elementary School (3) Methods and materials for teaching music in the elementary grades. Grading Restriction: Letter grade only. Registration Restriction(s): Qualification — admission to teacher education.

340 General/Vocal Music Methods (3) School methods and materials for teaching music in the elementary, middle, and high schools. Grading Restriction: Letter grade only. Registration Restriction(s): Qualification — admission to teacher education.

350 Field Experience in Music Education (1) Grading Restriction: Satisfactory/No Credit grading only. Repeatability: May be repeated. Maximum 3 hours. Registration Restriction(s): Qualification — admission to teacher education. Registration Permission: Consent of instructor.

400 Student Teaching in Music (12) Full-time teaching practicum in an approved public school. (RE) Corequisite(s): 401. Recommended Background: Completion of all music education courses required for the Bachelor of Music — music major/music education concentration (4-year alternative). Registration Permission: Consent of instructor.

401 Senior Seminar (0) Issues related to the music teaching profession as experienced in student teaching. (RE) Corequisite(s): 400. Registration Permission: Consent of instructor.

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. Grading Restriction: Letter grade only. Registration Restriction(s): Qualification — admission to teacher education. Registration Restriction(s): Qualification — admission to teacher education.

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. (WC) Grading Restriction: Letter grade only. Registration Permission: Consent of instructor. Registration Restriction(s): Qualification — admission to teacher education.

440 Marching Band Techniques (2) Functions, organization, and direction of a school marching band. Grading Restriction: Letter grade only. Registration Restriction(s): Qualification — admission to teacher education.

441 String Orchestra Pedagogy and Rehearsal Techniques (2) Function, organization and direction of a school orchestra program. Grading Restriction: Letter grade only. Registration Restriction(s): Qualification — admission to teacher education.

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. Grading Restriction: Satisfactory/No Credit grading only. Registration Permission: Consent of instructor.

490 Special Topics in Music Education (1-3) Grading Restriction: Letter grade only. Repeatability: May be repeated. Maximum 9 hours. Registration Permission: Consent of instructor.

493 Independent Study in Music Education (1-5) Grading Restriction: Letter grade only. Repeatability: May be repeated. Maximum 9 hours. Registration Permission: Consent of instructor.

Music Ensemble (708)

301 Woodwind Choir (1) Repeatability: May be repeated. Maximum 14 hours. Comment(s): Audition or consent of instructor required.

302 Jazz-Saxophone Ensemble (1) Repeatability: May be repeated. Maximum 4 hours. Comment(s): Audition or consent of instructor required.

303 Small Jazz Ensemble (1) Repeatability: May be repeated. Maximum 12 hours. Comment(s): Audition or consent of instructor required.

304 Jazz Ensemble (1) Repeatability: May be repeated. Maximum 14 hours. Comment(s): Audition or consent of instructor required.

305 Studio Orchestra (1) Repeatability: May be repeated. Maximum 12 hours. Comment(s): Audition or consent of instructor required.

306 Trombone Choir (1) Repeatability: May be repeated. Maximum 14 hours. Comment(s): Audition or consent of instructor required.
309 Tuba Ensemble (1)
Repeatability: May be repeated. Maximum 14 hours.
Comment(s): Audition or consent of instructor required.

310 Percussion Ensemble (1)
Repeatability: May be repeated. Maximum 14 hours.
Comment(s): Audition or consent of instructor required.

311 Marimba Choir (1)
Repeatability: May be repeated. Maximum 14 hours.
Comment(s): Audition or consent of instructor required.

315 Chamber Music Ensemble (1)
Repeatability: May be repeated. Maximum 14 hours.
Comment(s): Audition or consent of instructor required.

320 UT Singers (1)
Repeatability: May be repeated. Maximum 14 hours.
Comment(s): Audition or consent of instructor required.

330 Chamber Singers (1)
Repeatability: May be repeated. Maximum 14 hours.
Comment(s): Audition or consent of instructor required.

334 Saxophone Choir (1)
Repeatability: May be repeated. Maximum 14 hours.
Comment(s): Audition or consent of instructor required.

340 Opera Theatre (1)
Repeatability: May be repeated. Maximum 14 hours.
Comment(s): Audition or consent of instructor required.

350 Concert Band (1)
Repeatability: May be repeated. Maximum 14 hours.
Comment(s): Audition or consent of instructor required.

352 Symphonic Band (1)
Repeatability: May be repeated. Maximum 14 hours.
Comment(s): Audition or consent of instructor required.

353 Wind Ensemble (1)
Repeatability: May be repeated. Maximum 14 hours.
Comment(s): Audition or consent of instructor required.

354 Pep Band (1)
Repeatability: May be repeated. Maximum 14 hours.
Comment(s): Audition or consent of instructor required.

359 Marching Band (1)
Repeatability: May be repeated. Maximum 14 hours.
Comment(s): Audition or consent of instructor required.

370 Symphony Orchestra (1)
Repeatability: May be repeated. Maximum 14 hours.
Comment(s): Audition or consent of instructor required.

380 Concert Choir (1)
Repeatability: May be repeated. Maximum 14 hours.
Comment(s): Audition or consent of instructor required.

383 Men’s Chorale (1)
Repeatability: May be repeated. Maximum 14 hours.
Comment(s): Audition or consent of instructor required.

389 Women’s Chorale (1)
Repeatability: May be repeated. Maximum 14 hours.
Comment(s): Audition or consent of instructor required.

399 Accompanying (1)
Repeatability: May be repeated. Maximum 14 hours.
Comment(s): Audition or consent of instructor required.

Music General (698)

101 Fundamentals of Performance (1-2)
Private instrumental or vocal study, one or two half lessons per week. This course is designed to prepare students for enrollment in Music Performance 103-195. Requires payment of applied music fees.
Grading Restriction: A, B, C. No Credit grading.

120 Analysis of Jazz Styles (2)
Individual improvisatory styles through analysis of their transcribed solos. Training and function of the ear in music. Transcription of solos from recordings and preparation of analysis.
(Re)Prerequisite(s): Music Theory 120 and Musicology 200.

130 Jazz Piano I (1)
Harmonic language of jazz. Interpretation of chord symbols, formulae for voicing chords, chord progressions, and fundamental melody-playing and improvisation for right hand.
(Re)Prerequisite(s): Music Theory 120 and Musicology 200.

140 Jazz Piano II (1)
Harmonic language of jazz. Interpretation of chord symbols, formulae for voicing chords, chord progressions, and construction of bass lines.
(Re)Prerequisite(s): 130.

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 Jazz Improvisation I (2)
Study of application and principles of improvisation, including nomenclature, chord progressions, chord scales, patterns, melodic development, and tune styles.
(Re)Prerequisite(s): 110.
<table>
<thead>
<tr>
<th>Course ID</th>
<th>Course Title</th>
<th>Description</th>
<th>Registration Restriction</th>
<th>Prerequisite(s)</th>
<th>Permission</th>
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<tr>
<td>220</td>
<td>Jazz Improvisation II (2)</td>
<td>Study of application and principles of improvisation, including nomenclature, chord progressions, chord scales, patterns, melodic development, and solo transcription.</td>
<td>Bachelor of Music – music major</td>
<td>(-) Corequisite(s): 210.</td>
<td>Consent of instructor.</td>
<td>Not repeatable for credit.</td>
<td>Bachelor of Music – music major or Bachelor of Arts – music major.</td>
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<tr>
<td>310</td>
<td>Jazz Composition and Arranging (2)</td>
<td>Composing and arranging in the jazz idiom.</td>
<td>Consent of instructor.</td>
<td>(-) Prerequisite(s):</td>
<td>Consent of instructor.</td>
<td>Not repeatable for credit.</td>
<td>Bachelor of Music – music major or Bachelor of Arts – music major.</td>
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<tr>
<td>320</td>
<td>Jazz Band Arranging (2)</td>
<td>Arranging and scoring for the Big Jazz Band.</td>
<td>Consent of instructor.</td>
<td>(-) Prerequisite(s): 300.</td>
<td>Consent of instructor.</td>
<td>Not repeatable for credit.</td>
<td>Bachelor of Music – music major or Bachelor of Arts – music major.</td>
</tr>
<tr>
<td>410</td>
<td>Advanced Improvisation (3)</td>
<td>Development of individual skills and solving individual problems in jazz improvisation.</td>
<td>Bachelor of Music – music major/studio music and jazz concentration</td>
<td>(-) Prerequisite(s): 310.</td>
<td>Consent of instructor.</td>
<td>Not repeatable for credit.</td>
<td>Bachelor of Music – music major or Bachelor of Arts – music major.</td>
</tr>
<tr>
<td>420</td>
<td>Jazz Pedagogy (1)</td>
<td>Methods and materials relating to teaching of jazz, designing and administering jazz programs, and rehearsal techniques for jazz ensembles.</td>
<td>Bachelor of Music – music major/studio music and jazz concentration</td>
<td>(-) Prerequisite(s):</td>
<td>Consent of instructor.</td>
<td>Not repeatable for credit.</td>
<td>Bachelor of Music – music major or Bachelor of Arts – music major.</td>
</tr>
<tr>
<td></td>
<td><strong>Music Keyboard (712)</strong></td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td>Bachelor of Music – music major or Bachelor of Arts – music major.</td>
</tr>
<tr>
<td>110</td>
<td>Class Piano I (1)</td>
<td>Development of keyboard skills in keyboard reading, improvisation, harmonization, transposition, technique, and repertoire.</td>
<td>Bachelor of Music – music major or Bachelor of Arts – music major.</td>
<td>(-) Prerequisite(s): 110.</td>
<td>Consent of instructor.</td>
<td>Not repeatable for credit.</td>
<td>Bachelor of Music – music major or Bachelor of Arts – music major.</td>
</tr>
<tr>
<td>120</td>
<td>Class Piano II (1)</td>
<td>Keyboard skills in reading two keyboard textures, improvisation, harmonization, transposition, technique, accompaniments for major instrument.</td>
<td>Bachelor of Music – music major or Bachelor of Arts – music major.</td>
<td>(-) Prerequisite(s): 120.</td>
<td>Consent of instructor.</td>
<td>Not repeatable for credit.</td>
<td>Bachelor of Music – music major or Bachelor of Arts – music major.</td>
</tr>
<tr>
<td>210</td>
<td>Class Piano III (1)</td>
<td>Keyboard skills in reading hymn text, improvisation, harmonizing with secondary dominants, transposition, accompaniments for advanced instrument.</td>
<td>Bachelor of Music – music major or Bachelor of Arts – music major.</td>
<td>(-) Prerequisite(s): 210.</td>
<td>Consent of instructor.</td>
<td>Not repeatable for credit.</td>
<td>Bachelor of Music – music major or Bachelor of Arts – music major.</td>
</tr>
<tr>
<td>220</td>
<td>Class Piano IV (1)</td>
<td>Completes the piano competency requirement.</td>
<td>Bachelor of Music – music major or Bachelor of Arts – music major.</td>
<td>(-) Prerequisite(s): 220.</td>
<td>Consent of instructor.</td>
<td>Not repeatable for credit.</td>
<td>Bachelor of Music – music major or Bachelor of Arts – music major.</td>
</tr>
<tr>
<td>230</td>
<td>Keyboard Harmony (1)</td>
<td>Melody harmonization, figured bass realization, and improvisation.</td>
<td>Bachelor of Music – music major or Bachelor of Arts – music major.</td>
<td>(-) Prerequisite(s): 230.</td>
<td>Consent of instructor.</td>
<td>Not repeatable for credit.</td>
<td>Bachelor of Music – music major or Bachelor of Arts – music major.</td>
</tr>
<tr>
<td>260</td>
<td>Early Keyboard Instruments (1)</td>
<td>An introduction to the harpsichord, clavichord, and baroque organ.</td>
<td>Bachelor of Music – music major or Bachelor of Arts – music major.</td>
<td>(-) Prerequisite(s): 260.</td>
<td>Consent of instructor.</td>
<td>Not repeatable for credit.</td>
<td>Bachelor of Music – music major or Bachelor of Arts – music major.</td>
</tr>
<tr>
<td>340</td>
<td>Piano Pedagogy I (3)</td>
<td>Survey of elementary pedagogical methods and materials with emphasis on learning styles for motivation and reading both lead sheet and notation systems; collaborative teaching experience.</td>
<td>Bachelor of Music – music major or Bachelor of Arts – music major.</td>
<td>(-) Prerequisite(s): 340.</td>
<td>Consent of instructor.</td>
<td>Not repeatable for credit.</td>
<td>Bachelor of Music – music major or Bachelor of Arts – music major.</td>
</tr>
<tr>
<td>350</td>
<td>Piano Pedagogy II (3)</td>
<td>Survey of intermediate pedagogical materials and methods with emphasis on how to empower the student to play musically, to improvise, and to read in several keyboard texts; collaborative teaching experience.</td>
<td>Bachelor of Music – music major or Bachelor of Arts – music major.</td>
<td>(-) Prerequisite(s): 350.</td>
<td>Consent of instructor.</td>
<td>Not repeatable for credit.</td>
<td>Bachelor of Music – music major or Bachelor of Arts – music major.</td>
</tr>
<tr>
<td>360</td>
<td>Piano Pedagogy III (3)</td>
<td>Intermediate to advanced methods and materials related to the development of principals of learning.</td>
<td>Bachelor of Music – music major or Bachelor of Arts – music major.</td>
<td>(-) Prerequisite(s): 360.</td>
<td>Consent of instructor.</td>
<td>Not repeatable for credit.</td>
<td>Bachelor of Music – music major or Bachelor of Arts – music major.</td>
</tr>
<tr>
<td>370</td>
<td>Piano Pedagogy IV (3)</td>
<td>Discussion of problems and experiences in practicing. Observation of teaching of all ages. Overview of the business aspects of private teaching.</td>
<td>Bachelor of Music – music major or Bachelor of Arts – music major.</td>
<td>(-) Prerequisite(s): 370.</td>
<td>Consent of instructor.</td>
<td>Not repeatable for credit.</td>
<td>Bachelor of Music – music major or Bachelor of Arts – music major.</td>
</tr>
<tr>
<td>410</td>
<td>Organ Practicum (1)</td>
<td>Improvisation, hymn playing, and accompanying on the organ.</td>
<td>Bachelor of Music – music major or Bachelor of Arts – music major.</td>
<td>(-) Prerequisite(s): 410.</td>
<td>Consent of instructor.</td>
<td>Not repeatable for credit.</td>
<td>Bachelor of Music – music major or Bachelor of Arts – music major.</td>
</tr>
<tr>
<td>420</td>
<td>Piano Literature I (3)</td>
<td>From 1750 to the middle 19th century.</td>
<td>Bachelor of Music – music major or Bachelor of Arts – music major.</td>
<td>(-) Prerequisite(s): 420.</td>
<td>Consent of instructor.</td>
<td>Not repeatable for credit.</td>
<td>Bachelor of Music – music major or Bachelor of Arts – music major.</td>
</tr>
<tr>
<td>460</td>
<td>The Organ and Its Literature I (3)</td>
<td>Development of the organ and organ literature from the Middle Ages to approximately 1750; problems of style and interpretation; pedagogical literature and methods.</td>
<td>Bachelor of Music – music major or Bachelor of Arts – music major.</td>
<td>(-) Prerequisite(s): 460.</td>
<td>Consent of instructor.</td>
<td>Not repeatable for credit.</td>
<td>Bachelor of Music – music major or Bachelor of Arts – music major.</td>
</tr>
<tr>
<td>470</td>
<td>The Organ and Its Literature II (3)</td>
<td>Development of the organ and organ literature from 1750 to the present; problems of style and interpretation; pedagogical literature and methods.</td>
<td>Bachelor of Music – music major or Bachelor of Arts – music major.</td>
<td>(-) Prerequisite(s): 470.</td>
<td>Consent of instructor.</td>
<td>Not repeatable for credit.</td>
<td>Bachelor of Music – music major or Bachelor of Arts – music major.</td>
</tr>
<tr>
<td>480</td>
<td>Teaching Class Piano (3)</td>
<td>Historical survey and evaluation of teaching materials and methodology for college and/or adult beginning piano classes, with collateral teaching experience.</td>
<td>Bachelor of Music – music major or Bachelor of Arts – music major.</td>
<td>(-) Prerequisite(s): 480.</td>
<td>Consent of instructor.</td>
<td>Not repeatable for credit.</td>
<td>Bachelor of Music – music major or Bachelor of Arts – music major.</td>
</tr>
<tr>
<td>485</td>
<td>Suzuki Piano Method I (2)</td>
<td>Study of the philosophy, procedures, and literature of the Suzuki Piano Method Books 1 and 2.</td>
<td>Bachelor of Music – music major or Bachelor of Arts – music major.</td>
<td>(-) Prerequisite(s): 485.</td>
<td>Consent of instructor.</td>
<td>Not repeatable for credit.</td>
<td>Bachelor of Music – music major or Bachelor of Arts – music major.</td>
</tr>
<tr>
<td>490</td>
<td>Internship (2)</td>
<td>Opportunity for pedagogy students to gain experience in teaching beginning students under the supervision of experienced instructors.</td>
<td>Bachelor of Music – music major or Bachelor of Arts – music major.</td>
<td>(-) Prerequisite(s): 490.</td>
<td>Consent of instructor.</td>
<td>Not repeatable for credit.</td>
<td>Bachelor of Music – music major or Bachelor of Arts – music major.</td>
</tr>
<tr>
<td>495</td>
<td>Suzuki Piano Method II (2)</td>
<td>Study of procedures, and literature of the Suzuki Piano Method Books 3 and above.</td>
<td>Bachelor of Music – music major or Bachelor of Arts – music major.</td>
<td>(-) Prerequisite(s): 495.</td>
<td>Consent of instructor.</td>
<td>Not repeatable for credit.</td>
<td>Bachelor of Music – music major or Bachelor of Arts – music major.</td>
</tr>
<tr>
<td>103</td>
<td>Flute (1-3)</td>
<td>Repeatability: Not repeatable for credit. May be taken once for 1-3 hours.</td>
<td>Bachelor of Music – music major or Bachelor of Arts – music major.</td>
<td>(-) Prerequisite(s): 103.</td>
<td>Consent of instructor.</td>
<td>Not repeatable for credit.</td>
<td>Bachelor of Music – music major or Bachelor of Arts – music major.</td>
</tr>
<tr>
<td>104</td>
<td>Flute (1-3)</td>
<td>Repeatability: Not repeatable for credit. May be taken once for 1-3 hours.</td>
<td>Bachelor of Music – music major or Bachelor of Arts – music major.</td>
<td>(-) Prerequisite(s): 104.</td>
<td>Consent of instructor.</td>
<td>Not repeatable for credit.</td>
<td>Bachelor of Music – music major or Bachelor of Arts – music major.</td>
</tr>
<tr>
<td>105</td>
<td>Oboe (1-3)</td>
<td>Repeatability: Not repeatable for credit. May be taken once for 1-3 hours.</td>
<td>Bachelor of Music – music major or Bachelor of Arts – music major.</td>
<td>(-) Prerequisite(s): 105.</td>
<td>Consent of instructor.</td>
<td>Not repeatable for credit.</td>
<td>Bachelor of Music – music major or Bachelor of Arts – music major.</td>
</tr>
<tr>
<td>110</td>
<td>Bassoon (1-3)</td>
<td>Repeatability: Not repeatable for credit. May be taken once for 1-3 hours.</td>
<td>Bachelor of Music – music major or Bachelor of Arts – music major.</td>
<td>(-) Prerequisite(s): 110.</td>
<td>Consent of instructor.</td>
<td>Not repeatable for credit.</td>
<td>Bachelor of Music – music major or Bachelor of Arts – music major.</td>
</tr>
<tr>
<td>111</td>
<td>Bassoon (1-3)</td>
<td>Repeatability: Not repeatable for credit. May be taken once for 1-3 hours.</td>
<td>Bachelor of Music – music major or Bachelor of Arts – music major.</td>
<td>(-) Prerequisite(s): 111.</td>
<td>Consent of instructor.</td>
<td>Not repeatable for credit.</td>
<td>Bachelor of Music – music major or Bachelor of Arts – music major.</td>
</tr>
<tr>
<td>115</td>
<td>Clarinet (1-3)</td>
<td>Repeatability: Not repeatable for credit. May be taken once for 1-3 hours.</td>
<td>Bachelor of Music – music major or Bachelor of Arts – music major.</td>
<td>(-) Prerequisite(s): 115.</td>
<td>Consent of instructor.</td>
<td>Not repeatable for credit.</td>
<td>Bachelor of Music – music major or Bachelor of Arts – music major.</td>
</tr>
</tbody>
</table>
116 Clarinet (1-3)
Repeatability: Not repeatable for credit. May be taken once for 1-3 hours.
(RE) Prerequisite(s): 115.
(RE) Corequisite(s): Music General 200.
Comment(s): Requires audition, registration for ensemble appropriate to degree program, and C or higher in 115.
Registration Restriction(s): Bachelor of Music – music major or Bachelor of Arts – music major.

120 Saxophone (1-3)
Repeatability: Not repeatable for credit. May be taken once for 1-3 hours.
(DE) Prerequisite(s): Music General 101.
(RE) Corequisite(s): Music General 200.
Comment(s): Requires audition and registration for ensemble appropriate to degree program.
Registration Restriction(s): Bachelor of Music – music major or Bachelor of Arts – music major.

121 Saxophone (1-3)
Repeatability: Not repeatable for credit. May be taken once for 1-3 hours.
(RE) Prerequisite(s): 120.
(RE) Corequisite(s): Music General 200.
Comment(s): Requires audition, registration for ensemble appropriate to degree program, and C or higher in 120.
Registration Restriction(s): Bachelor of Music – music major or Bachelor of Arts – music major.

125 Horn (1-3)
Repeatability: Not repeatable for credit. May be taken once for 1-3 hours.
(DE) Prerequisite(s): Music General 101.
(RE) Corequisite(s): Music General 200.
Comment(s): Requires audition and registration for ensemble appropriate to degree program.
Registration Restriction(s): Bachelor of Music – music major or Bachelor of Arts – music major.

126 Horn (1-3)
Repeatability: Not repeatable for credit. May be taken once for 1-3 hours.
(RE) Prerequisite(s): 125.
(RE) Corequisite(s): Music General 200.
Comment(s): Requires audition, registration for ensemble appropriate to degree program, and C or higher in 125.
Registration Restriction(s): Bachelor of Music – music major or Bachelor of Arts – music major.

130 Trumpet (1-3)
Repeatability: Not repeatable for credit. May be taken once for 1-3 hours.
(DE) Prerequisite(s): Music General 101.
(RE) Corequisite(s): Music General 200.
Comment(s): Requires audition and registration for ensemble appropriate to degree program.
Registration Restriction(s): Bachelor of Music – music major or Bachelor of Arts – music major.

131 Trumpet (1-3)
Repeatability: Not repeatable for credit. May be taken once for 1-3 hours.
(RE) Prerequisite(s): 130.
(RE) Corequisite(s): Music General 200.
Comment(s): Requires audition, registration for ensemble appropriate to degree program, and C or higher in 130.
Registration Restriction(s): Bachelor of Music – music major or Bachelor of Arts – music major.

135 Trombone (1-3)
Repeatability: Not repeatable for credit. May be taken once for 1-3 hours.
(DE) Prerequisite(s): Music General 101.
(RE) Corequisite(s): Music General 200.
Comment(s): Requires audition, registration for ensemble appropriate to degree program.
Registration Restriction(s): Bachelor of Music – music major or Bachelor of Arts – music major.

136 Trombone (1-3)
Repeatability: Not repeatable for credit. May be taken once for 1-3 hours.
(RE) Prerequisite(s): 135.
(RE) Corequisite(s): Music General 200.
Comment(s): Requires audition, registration for ensemble appropriate to degree program, and C or higher in 135.
Registration Restriction(s): Bachelor of Music – music major or Bachelor of Arts – music major.

140 Baritone (1-3)
Repeatability: Not repeatable for credit. May be taken once for 1-3 hours.
(DE) Prerequisite(s): Music General 101.
(RE) Corequisite(s): Music General 200.
Comment(s): Requires audition and registration for ensemble appropriate to degree program.
Registration Restriction(s): Bachelor of Music – music major or Bachelor of Arts – music major.

141 Baritone (1-3)
Repeatability: Not repeatable for credit. May be taken once for 1-3 hours.
(RE) Prerequisite(s): 140.
(RE) Corequisite(s): Music General 200.
Comment(s): Requires audition, registration for ensemble appropriate to degree program, and C or higher in 140.
Registration Restriction(s): Bachelor of Music – music major or Bachelor of Arts – music major.

145 Tuba (1-3)
Repeatability: Not repeatable for credit. May be taken once for 1-3 hours.
(DE) Prerequisite(s): Music General 101.
(RE) Corequisite(s): Music General 200.
Comment(s): Requires audition and registration for ensemble appropriate to degree program.
Registration Restriction(s): Bachelor of Music – music major or Bachelor of Arts – music major.

146 Tuba (1-3)
Repeatability: Not repeatable for credit. May be taken once for 1-3 hours.
(RE) Prerequisite(s): 145.
(RE) Corequisite(s): Music General 200.
Comment(s): Requires audition, registration for ensemble appropriate to degree program, and C or higher in 145.
Registration Restriction(s): Bachelor of Music – music major or Bachelor of Arts – music major.

150 Percussion (1-3)
Repeatability: Not repeatable for credit. May be taken once for 1-3 hours.
(DE) Prerequisite(s): Music General 101.
(RE) Corequisite(s): Music General 200.
Comment(s): Requires audition and registration for ensemble appropriate to degree program.
Registration Restriction(s): Bachelor of Music – music major or Bachelor of Arts – music major.

151 Percussion (1-3)
Repeatability: Not repeatable for credit. May be taken once for 1-3 hours.
(RE) Prerequisite(s): 150.
(RE) Corequisite(s): Music General 200.
Comment(s): Requires audition, registration for ensemble appropriate to degree program, and C or higher in 150.
Registration Restriction(s): Bachelor of Music – music major or Bachelor of Arts – music major.

155 Voice (1-3)
Repeatability: Not repeatable for credit. May be taken once for 1-3 hours.
(DE) Prerequisite(s): Music General 101.
(RE) Corequisite(s): Music General 200.
Comment(s): Requires audition and registration for ensemble appropriate to degree program.
Registration Restriction(s): Bachelor of Music – music major or Bachelor of Arts – music major.

156 Voice (1-3)
Repeatability: Not repeatable for credit. May be taken once for 1-3 hours.
(RE) Prerequisite(s): 155.
(RE) Corequisite(s): Music General 200.
Comment(s): Requires audition, registration for ensemble appropriate to degree program, and C or higher in 155.
Registration Restriction(s): Bachelor of Music – music major or Bachelor of Arts – music major.

160 Violin (1-3)
Repeatability: Not repeatable for credit. May be taken once for 1-3 hours.
(DE) Prerequisite(s): Music General 200.
Comment(s): Requires audition and registration for ensemble appropriate to degree program.
Registration Restriction(s): Bachelor of Music – music major or Bachelor of Arts – music major.

161 Violin (1-3)
Repeatability: Not repeatable for credit. May be taken once for 1-3 hours.
(RE) Prerequisite(s): 160.
(RE) Corequisite(s): Music General 200.
Comment(s): Requires audition and registration for ensemble appropriate to degree program.
Registration Restriction(s): Bachelor of Music – music major or Bachelor of Arts – music major.

165 Viola (1-3)
Repeatability: Not repeatable for credit. May be taken once for 1-3 hours.
(DE) Prerequisite(s): Music General 101.
(RE) Corequisite(s): Music General 200.
Comment(s): Requires audition and registration for ensemble appropriate to degree program.
Registration Restriction(s): Bachelor of Music – music major or Bachelor of Arts – music major.
166 Viola (1-3)
Repeatability: Not repeatable for credit. May be taken once for 1-3 hours.
(RE) Prerequisite(s): 183.
(RE) Corequisite(s): Music General 200.
Comment(s): Requires audition, registration for ensemble appropriate to degree program, and C or higher in 185.
Registration Restriction(s): Bachelor of Music – music major or Bachelor of Arts – music major.

170 Cello (1-3)
Repeatability: Not repeatable for credit. May be taken once for 1-3 hours.
(DE) Prerequisite(s): Music General 101.
(RE) Corequisite(s): Music General 200.
Comment(s): Requires audition and registration for ensemble appropriate to degree program.
Registration Restriction(s): Bachelor of Music – music major or Bachelor of Arts – music major.

171 Cello (1-3)
Repeatability: Not repeatable for credit. May be taken once for 1-3 hours.
(RE) Prerequisite(s): 170.
(RE) Corequisite(s): Music General 200.
Comment(s): Requires audition, registration for ensemble appropriate to degree program, and C or higher in 170.
Registration Restriction(s): Bachelor of Music – music major or Bachelor of Arts – music major.

172 Electric Bass (1-3)
Repeatability: Not repeatable for credit. May be taken once for 1-3 hours.
(DE) Prerequisite(s): Music General 101.
(RE) Corequisite(s): Music General 200.
Comment(s): Requires audition and registration for ensemble appropriate to degree program.
Registration Restriction(s): Bachelor of Music – music major or Bachelor of Arts – music major.

173 Electric Bass (1-3)
Repeatability: Not repeatable for credit. May be taken once for 1-3 hours.
(RE) Prerequisite(s): Music General 101.
(RE) Corequisite(s): Music General 200.
Comment(s): Requires audition, registration for ensemble appropriate to degree program, and C or higher in 172.
Registration Restriction(s): Bachelor of Music – music major or Bachelor of Arts – music major.

174 String Bass (1-3)
Repeatability: Not repeatable for credit. May be taken once for 1-3 hours.
(DE) Prerequisite(s): Music General 101.
(RE) Corequisite(s): Music General 200.
Comment(s): Requires audition and registration for ensemble appropriate to degree program.
Registration Restriction(s): Bachelor of Music – music major or Bachelor of Arts – music major.

180 Piano (1-3)
Repeatability: Not repeatable for credit. May be taken once for 1-3 hours.
(RE) Prerequisite(s): Music General 200.
Comment(s): Requires audition and registration for ensemble appropriate to degree program.

181 Piano (1-3)
Repeatability: Not repeatable for credit. May be taken once for 1-3 hours.
(RE) Prerequisite(s): 180.
(RE) Corequisite(s): Music General 200.
Comment(s): Requires audition, registration for ensemble appropriate to degree program, and C or higher in 180.

183 Guitar (1-3)
Repeatability: Not repeatable for credit. May be taken once for 1-3 hours.
(DE) Prerequisite(s): Music General 101.
(RE) Corequisite(s): Music General 200.
Comment(s): Requires audition and registration for ensemble appropriate to degree program.
Registration Restriction(s): Bachelor of Music – music major/studio music and jazz concentration.

184 Guitar (1-3)
Repeatability: Not repeatable for credit. May be taken once for 1-3 hours.
(RE) Prerequisite(s): 183.
(RE) Corequisite(s): Music General 200.
Comment(s): Requires audition, registration for ensemble appropriate to degree program, and C or higher in 183.
Registration Restriction(s): Bachelor of Music – music major/studio music and jazz concentration.

185 Harpsichord (1-3)
Repeatability: Not repeatable for credit. May be taken once for 1-3 hours.
(DE) Prerequisite(s): Music General 101.
(RE) Corequisite(s): Music General 200.
Comment(s): Requires audition and registration for ensemble appropriate to degree program.
Registration Restriction(s): Bachelor of Music – music major or Bachelor of Arts – music major.

186 Harpsichord (1-3)
Repeatability: Not repeatable for credit. May be taken once for 1-3 hours.
(RE) Prerequisite(s): 185.
(RE) Corequisite(s): Music General 200.
Comment(s): Requires audition, registration for ensemble appropriate to degree program, and C or higher in 185.
Registration Restriction(s): Bachelor of Music – music major or Bachelor of Arts – music major.

189 Organ (1-3)
Repeatability: Not repeatable for credit. May be taken once for 1-3 hours.
(Re) Prerequisite(s): Music General 101.
(RE) Corequisite(s): Music General 200.
Comment(s): Requires audition and registration for ensemble appropriate to degree program.
Registration Restriction(s): Bachelor of Music – music major or Bachelor of Arts – music major.

203 Flute (1-3)
Repeatability: May be repeated by non-BM students. Maximum 8 hours.
(RE) Prerequisite(s): 104.
(RE) Corequisite(s): Music General 200.
Comment(s): Requires audition, registration for ensemble appropriate to degree program, and C or higher in 104.
Registration Restriction(s): Bachelor of Music – music major or Bachelor of Arts – music major.

204 Flute (1-3)
Repeatability: May be repeated by non-BM students. Maximum 8 hours.
(RE) Prerequisite(s): 203.
(RE) Corequisite(s): Music General 200.
Comment(s): Requires audition, registration for ensemble appropriate to degree program, and C or higher in 203.
Registration Restriction(s): Bachelor of Music – music major or Bachelor of Arts – music major.

205 Oboe (1-3)
Repeatability: May be repeated by non-BM students. Maximum 8 hours.
(RE) Prerequisite(s): 205.
(RE) Corequisite(s): Music General 200.
Comment(s): Requires audition, registration for ensemble appropriate to degree program, and C or higher in 205.
Registration Restriction(s): Bachelor of Music – music major or Bachelor of Arts – music major.

210 Bassoon (1-3)
Repeatability: May be repeated by non-BM students. Maximum 8 hours.
(RE) Prerequisite(s): 111.
(RE) Corequisite(s): Music General 200.
Comment(s): Requires audition, registration for ensemble appropriate to degree program, and C or higher in 111.
Registration Restriction(s): Bachelor of Music – music major or Bachelor of Arts – music major.
211 Bassoon (1-3)
Repeatability: May be repeated by non-BM students. Maximum 8 hours.
(RE) Prerequisite(s): 210.
(RE) Corequisite(s): Music General 200.
Comment(s): Requires audition, registration for ensemble appropriate to degree program, and C or higher in 210.
Registration Restriction(s): Bachelor of Music – music major or Bachelor of Arts – music major.

215 Clarinet (1-3)
Repeatability: May be repeated by non-BM students. Maximum 8 hours.
(RE) Prerequisite(s): 116.
(RE) Corequisite(s): Music General 200.
Comment(s): Requires audition, registration for ensemble appropriate to degree program, and C or higher in 116.
Registration Restriction(s): Bachelor of Music – music major or Bachelor of Arts – music major.

216 Clarinet (1-3)
Repeatability: May be repeated by non-BM students. Maximum 8 hours.
(RE) Prerequisite(s): 215.
(RE) Corequisite(s): Music General 200.
Comment(s): Requires audition, registration for ensemble appropriate to degree program, and C or higher in 215.
Registration Restriction(s): Bachelor of Music – music major or Bachelor of Arts – music major.

220 Saxophone (1-3)
Repeatability: May be repeated by non-BM students. Maximum 8 hours.
(RE) Prerequisite(s): 121.
(RE) Corequisite(s): Music General 200.
Comment(s): Requires audition, registration for ensemble appropriate to degree program, and C or higher in 121.
Registration Restriction(s): Bachelor of Music – music major or Bachelor of Arts – music major.

221 Saxophone (1-3)
Repeatability: May be repeated by non-BM students. Maximum 8 hours.
(RE) Prerequisite(s): 220.
(RE) Corequisite(s): Music General 200.
Comment(s): Requires audition, registration for ensemble appropriate to degree program, and C or higher in 220.
Registration Restriction(s): Bachelor of Music – music major or Bachelor of Arts – music major.

225 Horn (1-3)
Repeatability: May be repeated by non-BM students. Maximum 8 hours.
(RE) Prerequisite(s): 126.
(RE) Corequisite(s): Music General 200.
Comment(s): Requires audition, registration for ensemble appropriate to degree program, and C or higher in 126.
Registration Restriction(s): Bachelor of Music – music major or Bachelor of Arts – music major.

230 Trumpet (1-3)
Repeatability: May be repeated by non-BM students. Maximum 8 hours.
(RE) Prerequisite(s): 225.
(RE) Corequisite(s): Music General 200.
Comment(s): Requires audition, registration for ensemble appropriate to degree program, and C or higher in 225.
Registration Restriction(s): Bachelor of Music – music major or Bachelor of Arts – music major.

231 Trumpet (1-3)
Repeatability: May be repeated by non-BM students. Maximum 8 hours.
(RE) Prerequisite(s): 230.
(RE) Corequisite(s): Music General 200.
Comment(s): Requires audition, registration for ensemble appropriate to degree program, and C or higher in 230.
Registration Restriction(s): Bachelor of Music – music major or Bachelor of Arts – music major.

235 Trombone (1-3)
Repeatability: May be repeated by non-BM students. Maximum 8 hours.
(RE) Prerequisite(s): 136.
(RE) Corequisite(s): Music General 200.
Comment(s): Requires audition, registration for ensemble appropriate to degree program, and C or higher in 136.
Registration Restriction(s): Bachelor of Music – music major or Bachelor of Arts – music major.

236 Trombone (1-3)
Repeatability: May be repeated by non-BM students. Maximum 8 hours.
(RE) Prerequisite(s): 235.
(RE) Corequisite(s): Music General 200.
Comment(s): Requires audition, registration for ensemble appropriate to degree program, and C or higher in 235.
Registration Restriction(s): Bachelor of Music – music major or Bachelor of Arts – music major.

240 Baritone (1-3)
Repeatability: May be repeated by non-BM students. Maximum 8 hours.
(RE) Prerequisite(s): 230.
(RE) Corequisite(s): Music General 200.
Comment(s): Requires audition, registration for ensemble appropriate to degree program, and C or higher in 230.
Registration Restriction(s): Bachelor of Music – music major or Bachelor of Arts – music major.

241 Baritone (1-3)
Repeatability: May be repeated by non-BM students. Maximum 8 hours.
(RE) Prerequisite(s): 240.
(RE) Corequisite(s): Music General 200.
Comment(s): Requires audition, registration for ensemble appropriate to degree program, and C or higher in 240.
Registration Restriction(s): Bachelor of Music – music major or Bachelor of Arts – music major.

245 Tuba (1-3)
Repeatability: May be repeated by non-BM students. Maximum 8 hours.
(RE) Prerequisite(s): 245.
(RE) Corequisite(s): Music General 200.
Comment(s): Requires audition, registration for ensemble appropriate to degree program, and C or higher in 245.
Registration Restriction(s): Bachelor of Music – music major or Bachelor of Arts – music major.

250 Percussion (1-3)
Repeatability: May be repeated by non-BM students. Maximum 8 hours.
(RE) Prerequisite(s): 156.
(RE) Corequisite(s): Music General 200.
Comment(s): Requires audition, registration for ensemble appropriate to degree program, and C or higher in 156.
Registration Restriction(s): Bachelor of Music – music major or Bachelor of Arts – music major.

251 Percussion (1-3)
Repeatability: May be repeated by non-BM students. Maximum 8 hours.
(RE) Prerequisite(s): 251.
(RE) Corequisite(s): Music General 200.
Comment(s): Requires audition, registration for ensemble appropriate to degree program, and C or higher in 251.
Registration Restriction(s): Bachelor of Music – music major or Bachelor of Arts – music major.

255 Voice (1-3)
Repeatability: May be repeated by non-BM students. Maximum 8 hours.
(RE) Prerequisite(s): 255.
(RE) Corequisite(s): Music General 200.
Comment(s): Requires audition, registration for ensemble appropriate to degree program, and C or higher in 156.
Registration Restriction(s): Bachelor of Music – music major or Bachelor of Arts – music major.

256 Voice (1-3)
Repeatability: May be repeated by non-BM students. Maximum 8 hours.
(RE) Prerequisite(s): 256.
(RE) Corequisite(s): Music General 200.
Comment(s): Requires audition, registration for ensemble appropriate to degree program, and C or higher in 255.
Registration Restriction(s): Bachelor of Music – music major or Bachelor of Arts – music major.

260 Violin (1-3)
Repeatability: May be repeated by non-BM students. Maximum 8 hours.
(RE) Prerequisite(s): 161.
(RE) Corequisite(s): Music General 200.
Comment(s): Requires audition, registration for ensemble appropriate to degree program, and C or higher in 161.
Registration Restriction(s): Bachelor of Music – music major or Bachelor of Arts – music major.
<table>
<thead>
<tr>
<th>Course</th>
<th>Description</th>
<th>Prerequisites</th>
<th>Corequisites</th>
<th>Repeatability</th>
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<tbody>
<tr>
<td>260 Piano (1-3)</td>
<td>Repeatability: May be repeated by non-BM students. Maximum 8 hours.</td>
<td>(RE) Prerequisite(s): 280.</td>
<td>(RE) Corequisite(s): Music General 200.</td>
<td>Comment(s): Requires audition, registration for ensemble appropriate to degree program, and C or higher in 280.</td>
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<tr>
<td>260 Guitar (1-3)</td>
<td>Repeatability: May be repeated by non-BM students. Maximum 8 hours.</td>
<td>(RE) Prerequisite(s): 283.</td>
<td>(RE) Corequisite(s): Music General 200.</td>
<td>Comment(s): Requires audition, registration for ensemble appropriate to degree program, and C or higher in 283.</td>
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<tr>
<td>260 Harpsichord (1-3)</td>
<td>Repeatability: May be repeated by non-BM students. Maximum 8 hours.</td>
<td>(RE) Prerequisite(s): 285.</td>
<td>(RE) Corequisite(s): Music General 200.</td>
<td>Comment(s): Requires audition, registration for ensemble appropriate to degree program, and C or higher in 285.</td>
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<tr>
<td>260 Organ (1-3)</td>
<td>Repeatability: May be repeated by non-BM students. Maximum 8 hours.</td>
<td>(RE) Prerequisite(s): 190.</td>
<td>(RE) Corequisite(s): Music General 200.</td>
<td>Comment(s): Requires audition, registration for ensemble appropriate to degree program, and C or higher in 190.</td>
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<tr>
<td>260 Composition (1-3)</td>
<td>Repeatability: Not repeatable for credit. May be taken once for 1-3 hours.</td>
<td>(RE) Prerequisite(s): Music Theory 210 and Music Theory 230.</td>
<td>(RE) Corequisite(s): Music General 200.</td>
<td>Registration Restriction(s): Bachelor of Music – music major or Bachelor of Arts – music major.</td>
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<tr>
<td>260 Composition (1-3)</td>
<td>Repeatability: Not repeatable for credit. May be taken once for 1-3 hours.</td>
<td>(RE) Prerequisite(s): 294.</td>
<td>(RE) Corequisite(s): Music General 200.</td>
<td>Registration Restriction(s): Bachelor of Music – music major or Bachelor of Arts – music major.</td>
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<td>300 Flute (1-3)</td>
<td>Repeatability: May be repeated. Maximum 8 hours.</td>
<td>(RE) Prerequisite(s): 204.</td>
<td>(RE) Corequisite(s): Music General 200.</td>
<td>Comment(s): Requires audition, registration for ensemble appropriate to degree program, and C or higher in 204.</td>
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**Registration Restriction(s):** Bachelor of Music – music major or Bachelor of Arts – music major.
304 Flute (1-3)
Repeatability: May be repeated. Maximum 8 hours.
(RE) Prerequisite(s): 303.
(RE) Corequisite(s): Music General 200.
Comment(s): Requires audition, registration for ensemble appropriate to degree program, and C or higher in 303.
Registration Restriction(s): Bachelor of Music – music major or Bachelor of Arts – music major.

305 Oboe (1-3)
Repeatability: May be repeated. Maximum 8 hours.
(RE) Prerequisite(s): 206.
(RE) Corequisite(s): Music General 200.
Comment(s): Requires audition, registration for ensemble appropriate to degree program, and C or higher in 206.
Registration Restriction(s): Bachelor of Music – music major or Bachelor of Arts – music major.

306 Oboe (1-3)
Repeatability: May be repeated. Maximum 8 hours.
(RE) Prerequisite(s): 305.
(RE) Corequisite(s): Music General 200.
Comment(s): Requires audition, registration for ensemble appropriate to degree program, and C or higher in 305.
Registration Restriction(s): Bachelor of Music – music major or Bachelor of Arts – music major.

310 Bassoon (1-3)
Repeatability: May be repeated. Maximum 8 hours.
(RE) Prerequisite(s): 211.
(RE) Corequisite(s): Music General 200.
Comment(s): Requires audition, registration for ensemble appropriate to degree program, and C or higher in 211.
Registration Restriction(s): Bachelor of Music – music major or Bachelor of Arts – music major.

311 Bassoon (1-3)
Repeatability: May be repeated. Maximum 8 hours.
(RE) Prerequisite(s): 310.
(RE) Corequisite(s): Music General 200.
Comment(s): Requires audition, registration for ensemble appropriate to degree program, and C or higher in 310.
Registration Restriction(s): Bachelor of Music – music major or Bachelor of Arts – music major.

315 Clarinet (1-3)
Repeatability: May be repeated. Maximum 8 hours.
(RE) Prerequisite(s): 216.
(RE) Corequisite(s): Music General 200.
Comment(s): Requires audition, registration for ensemble appropriate to degree program, and C or higher in 216.
Registration Restriction(s): Bachelor of Music – music major or Bachelor of Arts – music major.

316 Clarinet (1-3)
Repeatability: May be repeated. Maximum 8 hours.
(RE) Prerequisite(s): 315.
(RE) Corequisite(s): Music General 200.
Comment(s): Requires audition, registration for ensemble appropriate to degree program, and C or higher in 315.
Registration Restriction(s): Bachelor of Music – music major or Bachelor of Arts – music major.

320 Saxophone (1-3)
Repeatability: May be repeated. Maximum 8 hours.
(RE) Prerequisite(s): 320.
(RE) Corequisite(s): Music General 200.
Comment(s): Requires audition, registration for ensemble appropriate to degree program, and C or higher in 320.
Registration Restriction(s): Bachelor of Music – music major or Bachelor of Arts – music major.

321 Saxophone (1-3)
Repeatability: May be repeated. Maximum 8 hours.
(RE) Prerequisite(s): 320.
(RE) Corequisite(s): Music General 200.
Comment(s): Requires audition, registration for ensemble appropriate to degree program, and C or higher in 321.
Registration Restriction(s): Bachelor of Music – music major or Bachelor of Arts – music major.

325 Horn (1-3)
Repeatability: May be repeated. Maximum 8 hours.
(RE) Prerequisite(s): 226.
(RE) Corequisite(s): Music General 200.
Comment(s): Requires audition, registration for ensemble appropriate to degree program, and C or higher in 226.
Registration Restriction(s): Bachelor of Music – music major or Bachelor of Arts – music major.

326 Horn (1-3)
Repeatability: May be repeated. Maximum 8 hours.
(RE) Prerequisite(s): 325.
(RE) Corequisite(s): Music General 200.
Comment(s): Requires audition, registration for ensemble appropriate to degree program, and C or higher in 325.
Registration Restriction(s): Bachelor of Music – music major or Bachelor of Arts – music major.

330 Trumpet (1-3)
Repeatability: May be repeated. Maximum 8 hours.
(RE) Prerequisite(s): 231.
(RE) Corequisite(s): Music General 200.
Comment(s): Requires audition, registration for ensemble appropriate to degree program, and C or higher in 231.
Registration Restriction(s): Bachelor of Music – music major or Bachelor of Arts – music major.

331 Trumpet (1-3)
Repeatability: May be repeated. Maximum 8 hours.
(RE) Prerequisite(s): 330.
(RE) Corequisite(s): Music General 200.
Comment(s): Requires audition, registration for ensemble appropriate to degree program, and C or higher in 330.
Registration Restriction(s): Bachelor of Music – music major or Bachelor of Arts – music major.

335 Trombone (1-3)
Repeatability: May be repeated. Maximum 8 hours.
(RE) Prerequisite(s): 335.
(RE) Corequisite(s): Music General 200.
Comment(s): Requires audition, registration for ensemble appropriate to degree program, and C or higher in 335.
Registration Restriction(s): Bachelor of Music – music major or Bachelor of Arts – music major.

340 Baritone (1-3)
Repeatability: May be repeated. Maximum 8 hours.
(RE) Prerequisite(s): 241.
(RE) Corequisite(s): Music General 200.
Comment(s): Requires audition, registration for ensemble appropriate to degree program, and C or higher in 241.
Registration Restriction(s): Bachelor of Music – music major or Bachelor of Arts – music major.

341 Baritone (1-3)
Repeatability: May be repeated. Maximum 8 hours.
(RE) Prerequisite(s): 340.
(RE) Corequisite(s): Music General 200.
Comment(s): Requires audition, registration for ensemble appropriate to degree program, and C or higher in 340.
Registration Restriction(s): Bachelor of Music – music major or Bachelor of Arts – music major.

345 Tuba (1-3)
Repeatability: May be repeated. Maximum 8 hours.
(RE) Prerequisite(s): 345.
(RE) Corequisite(s): Music General 200.
Comment(s): Requires audition, registration for ensemble appropriate to degree program, and C or higher in 246.
Registration Restriction(s): Bachelor of Music – music major or Bachelor of Arts – music major.

346 Tuba (1-3)
Repeatability: May be repeated. Maximum 8 hours.
(RE) Prerequisite(s): 345.
(RE) Corequisite(s): Music General 200.
Comment(s): Requires audition, registration for ensemble appropriate to degree program, and C or higher in 345.
Registration Restriction(s): Bachelor of Music – music major or Bachelor of Arts – music major.

350 Percussion (1-3)
Repeatability: May be repeated. Maximum 8 hours.
(RE) Prerequisite(s): 251.
(RE) Corequisite(s): Music General 200.
Comment(s): Requires audition, registration for ensemble appropriate to degree program, and C or higher in 251.
Registration Restriction(s): Bachelor of Music – music major or Bachelor of Arts – music major.
<table>
<thead>
<tr>
<th>Course Code</th>
<th>Title</th>
<th>Repeatability</th>
<th>Prerequisites</th>
<th>Corequisites</th>
<th>Comment</th>
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</thead>
<tbody>
<tr>
<td>351</td>
<td>Percussion (1-3)</td>
<td>May be repeated. Maximum 8 hours.</td>
<td>(RE) Prerequisite(s): 350.</td>
<td>(RE) Corequisite(s): Music General 200.</td>
<td>Requires audition, registration for ensemble appropriate to degree program, and C or higher in 350. Registration Restriction(s): Bachelor of Music – music major or Bachelor of Arts – music major.</td>
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<td>355</td>
<td>Voice (1-3)</td>
<td>May be repeated. Maximum 8 hours.</td>
<td>(RE) Prerequisite(s): 255.</td>
<td>(RE) Corequisite(s): Music General 200.</td>
<td>Requires audition, registration for ensemble appropriate to degree program, and C or higher in 256. Registration Restriction(s): Bachelor of Music – music major or Bachelor of Arts – music major.</td>
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<td>356</td>
<td>Violin (1-3)</td>
<td>May be repeated. Maximum 8 hours.</td>
<td>(RE) Prerequisite(s): 261.</td>
<td>(RE) Corequisite(s): Music General 200.</td>
<td>Requires audition, registration for ensemble appropriate to degree program, and C or higher in 261. Registration Restriction(s): Bachelor of Music – music major or Bachelor of Arts – music major.</td>
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<td>357</td>
<td>Viola (1-3)</td>
<td>May be repeated. Maximum 8 hours.</td>
<td>(RE) Prerequisite(s): 265.</td>
<td>(RE) Corequisite(s): Music General 200.</td>
<td>Requires audition, registration for ensemble appropriate to degree program, and C or higher in 266. Registration Restriction(s): Bachelor of Music – music major or Bachelor of Arts – music major.</td>
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<tr>
<td>360</td>
<td>Electric Bass (1-3)</td>
<td>May be repeated. Maximum 8 hours.</td>
<td>(RE) Prerequisite(s): 273.</td>
<td>(RE) Corequisite(s): Music General 200.</td>
<td>Requires audition, registration for ensemble appropriate to degree program, and C or higher in 273. Registration Restriction(s): Bachelor of Music – music major or Bachelor of Arts – music major.</td>
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<tr>
<td>375</td>
<td>String Bass (1-3)</td>
<td>May be repeated. Maximum 8 hours.</td>
<td>(RE) Prerequisite(s): 275.</td>
<td>(RE) Corequisite(s): Music General 200.</td>
<td>Requires audition, registration for ensemble appropriate to degree program, and C or higher in 275. Registration Restriction(s): Bachelor of Music – music major or Bachelor of Arts – music major.</td>
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<tr>
<td>380</td>
<td>Piano (1-3)</td>
<td>May be repeated. Maximum 8 hours.</td>
<td>(RE) Prerequisite(s): 281.</td>
<td>(RE) Corequisite(s): Music General 200.</td>
<td>Requires audition, registration for ensemble appropriate to degree program, and C or higher in 281. Registration Restriction(s): Bachelor of Music – music major or Bachelor of Arts – music major.</td>
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<tr>
<td>383</td>
<td>Guitar (1-3)</td>
<td>May be repeated. Maximum 8 hours.</td>
<td>(RE) Prerequisite(s): 284.</td>
<td>(RE) Corequisite(s): Music General 200.</td>
<td>Requires audition, registration for ensemble appropriate to degree program, and C or higher in 284. Registration Restriction(s): Bachelor of Music – music major or Bachelor of Arts – music major.</td>
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<td>386</td>
<td>Harpsichord (1-3)</td>
<td>May be repeated. Maximum 8 hours.</td>
<td>(RE) Prerequisite(s): 286.</td>
<td>(RE) Corequisite(s): Music General 200.</td>
<td>Requires audition, registration for ensemble appropriate to degree program, and C or higher in 286. Registration Restriction(s): Bachelor of Music – music major or Bachelor of Arts – music major.</td>
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<td>389</td>
<td>Organ (1-3)</td>
<td>May be repeated. Maximum 8 hours.</td>
<td>(RE) Prerequisite(s): 290.</td>
<td>(RE) Corequisite(s): Music General 200.</td>
<td>Requires audition, registration for ensemble appropriate to degree program, and C or higher in 290. Registration Restriction(s): Bachelor of Music – music major or Bachelor of Arts – music major.</td>
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</table>
390 Organ (1-3)
Repeatability: May be repeated. Maximum 8 hours.
(RE) Prerequisite(s): 395.
(RE) Corequisite(s): Music General 200.
Comment(s): Requires audition, registration for ensemble appropriate to degree program, and C or higher in 395.
Registration Restriction(s): Bachelor of Music – music major or Bachelor of Arts – music major.

394 Composition (1-3)
Repeatability: May be repeated. Maximum 8 hours.
(RE) Prerequisite(s): 295.
(RE) Corequisite(s): Music General 200.
Comment(s): Requires audition, registration for ensemble appropriate to degree program, and C or higher in 295.
Registration Restriction(s): Bachelor of Music – music major or Bachelor of Arts – music major.

395 Composition (1-3)
Repeatability: May be repeated. Maximum 8 hours.
(RE) Prerequisite(s): 394.
(RE) Corequisite(s): Music General 200.
Comment(s): Requires audition, registration for ensemble appropriate to degree program, and C or higher in 394.
Registration Restriction(s): Bachelor of Music – music major or Bachelor of Arts – music major.

396 Composition with Electronic Media
Repeatability: May be repeated. Maximum 8 hours.
(RE) Prerequisite(s): Music Theory 210 and Music Theory 230.
(RE) Corequisite(s): Music General 200.
Comment(s): Requires audition, registration for ensemble appropriate to degree program, and C or higher in 304.
Registration Restriction(s): Bachelor of Music – music major or Bachelor of Arts – music major.

403 Flute (1-3)
Repeatability: May be repeated. Maximum 8 hours.
(RE) Prerequisite(s): 403.
(RE) Corequisite(s): Music General 200.
Comment(s): Requires audition, registration for ensemble appropriate to degree program, and C or higher in 403.
Registration Restriction(s): Bachelor of Music – music major or Bachelor of Arts – music major.

404 Flute (1-3)
Repeatability: May be repeated. Maximum 8 hours.
(RE) Prerequisite(s): 403.
(RE) Corequisite(s): Music General 200.
Comment(s): Requires audition, registration for ensemble appropriate to degree program, and C or higher in 403.
Registration Restriction(s): Bachelor of Music – music major or Bachelor of Arts – music major.

405 Oboe (1-3)
Repeatability: May be repeated. Maximum 8 hours.
(RE) Prerequisite(s): 306.
(RE) Corequisite(s): Music General 200.
Comment(s): Requires audition, registration for ensemble appropriate to degree program, and C or higher in 306.
Registration Restriction(s): Bachelor of Music – music major or Bachelor of Arts – music major.

406 Oboe (1-3)
Repeatability: May be repeated. Maximum 8 hours.
(RE) Prerequisite(s): 306.
(RE) Corequisite(s): Music General 200.
Comment(s): Requires audition, registration for ensemble appropriate to degree program, and C or higher in 405.
Registration Restriction(s): Bachelor of Music – music major or Bachelor of Arts – music major.

410 Bassoon (1-3)
Repeatability: May be repeated. Maximum 8 hours.
(RE) Prerequisite(s): 311.
(RE) Corequisite(s): Music General 200.
Comment(s): Requires audition, registration for ensemble appropriate to degree program, and C or higher in 311.
Registration Restriction(s): Bachelor of Music – music major or Bachelor of Arts – music major.

411 Bassoon (1-3)
Repeatability: May be repeated. Maximum 8 hours.
(RE) Prerequisite(s): 410.
(RE) Corequisite(s): Music General 200.
Comment(s): Requires audition, registration for ensemble appropriate to degree program, and C or higher in 410.
Registration Restriction(s): Bachelor of Music – music major or Bachelor of Arts – music major.

415 Clarinet (1-3)
Repeatability: May be repeated. Maximum 8 hours.
(RE) Prerequisite(s): 316.
(RE) Corequisite(s): Music General 200.
Comment(s): Requires audition, registration for ensemble appropriate to degree program, and C or higher in 316.
Registration Restriction(s): Bachelor of Music – music major or Bachelor of Arts – music major.

416 Clarinet (1-3)
Repeatability: May be repeated. Maximum 8 hours.
(RE) Prerequisite(s): 415.
(RE) Corequisite(s): Music General 200.
Comment(s): Requires audition, registration for ensemble appropriate to degree program, and C or higher in 415.
Registration Restriction(s): Bachelor of Music – music major or Bachelor of Arts – music major.

420 Saxophone (1-3)
Repeatability: May be repeated. Maximum 8 hours.
(RE) Prerequisite(s): 321.
(RE) Corequisite(s): Music General 200.
Comment(s): Requires audition, registration for ensemble appropriate to degree program, and C or higher in 321.
Registration Restriction(s): Bachelor of Music – music major or Bachelor of Arts – music major.

421 Saxophone (1-3)
Repeatability: May be repeated. Maximum 8 hours.
(RE) Prerequisite(s): 420.
(RE) Corequisite(s): Music General 200.
Comment(s): Requires audition, registration for ensemble appropriate to degree program, and C or higher in 420.
Registration Restriction(s): Bachelor of Music – music major or Bachelor of Arts – music major.

425 Horn (1-3)
Repeatability: May be repeated. Maximum 8 hours.
(RE) Prerequisite(s): 326.
(RE) Corequisite(s): Music General 200.
Comment(s): Requires audition, registration for ensemble appropriate to degree program, and C or higher in 326.
Registration Restriction(s): Bachelor of Music – music major or Bachelor of Arts – music major.

426 Horn (1-3)
Repeatability: May be repeated. Maximum 8 hours.
(RE) Prerequisite(s): 425.
(RE) Corequisite(s): Music General 200.
Comment(s): Requires audition, registration for ensemble appropriate to degree program, and C or higher in 425.
Registration Restriction(s): Bachelor of Music – music major or Bachelor of Arts – music major.

430 Trumpet (1-3)
Repeatability: May be repeated. Maximum 8 hours.
(RE) Prerequisite(s): 331.
(RE) Corequisite(s): Music General 200.
Comment(s): Requires audition, registration for ensemble appropriate to degree program, and C or higher in 331.
Registration Restriction(s): Bachelor of Music – music major or Bachelor of Arts – music major.

431 Trumpet (1-3)
Repeatability: May be repeated. Maximum 8 hours.
(RE) Prerequisite(s): 430.
(RE) Corequisite(s): Music General 200.
Comment(s): Requires audition, registration for ensemble appropriate to degree program, and C or higher in 430.
Registration Restriction(s): Bachelor of Music – music major or Bachelor of Arts – music major.

435 Trombone (1-3)
Repeatability: May be repeated. Maximum 8 hours.
(RE) Prerequisite(s): 336.
(RE) Corequisite(s): Music General 200.
Comment(s): Requires audition, registration for ensemble appropriate to degree program, and C or higher in 336.
Registration Restriction(s): Bachelor of Music – music major or Bachelor of Arts – music major.

436 Trombone (1-3)
Repeatability: May be repeated. Maximum 8 hours.
(RE) Prerequisite(s): 435.
(RE) Corequisite(s): Music General 200.
Comment(s): Requires audition, registration for ensemble appropriate to degree program, and C or higher in 435.
Registration Restriction(s): Bachelor of Music – music major or Bachelor of Arts – music major.
### COURSES OF INSTRUCTION

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<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Repeatability</th>
<th>Prerequisite(s)</th>
<th>Corequisite(s)</th>
<th>Comments</th>
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<td>440 Baritone</td>
<td>(1-3)</td>
<td>May be repeated. Maximum 8 hours.</td>
<td>(RE) Prerequisite(s): 341.</td>
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<td>441 Baritone</td>
<td>(1-3)</td>
<td>May be repeated. Maximum 8 hours.</td>
<td>(RE) Prerequisite(s): 440.</td>
<td>(RE) Corequisite(s): Music General 200.</td>
<td>Registration Restriction(s): Bachelor of Music – music major or Bachelor of Arts – music major.</td>
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<td>445 Tuba</td>
<td>(1-3)</td>
<td>May be repeated. Maximum 8 hours.</td>
<td>(RE) Prerequisite(s): 346.</td>
<td>(RE) Corequisite(s): Music General 200.</td>
<td>Registration Restriction(s): Bachelor of Music – music major or Bachelor of Arts – music major.</td>
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<td>446 Tuba</td>
<td>(1-3)</td>
<td>May be repeated. Maximum 8 hours.</td>
<td>(RE) Prerequisite(s): 445.</td>
<td>(RE) Corequisite(s): Music General 200.</td>
<td>Registration Restriction(s): Bachelor of Music – music major or Bachelor of Arts – music major.</td>
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<td>450 Percussion</td>
<td>(1-3)</td>
<td>May be repeated. Maximum 8 hours.</td>
<td>(RE) Prerequisite(s): 351.</td>
<td>(RE) Corequisite(s): Music General 200.</td>
<td>Registration Restriction(s): Bachelor of Music – music major or Bachelor of Arts – music major.</td>
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<tr>
<td>451 Percussion</td>
<td>(1-3)</td>
<td>May be repeated. Maximum 8 hours.</td>
<td>(RE) Prerequisite(s): 450.</td>
<td>(RE) Corequisite(s): Music General 200.</td>
<td>Registration Restriction(s): Bachelor of Music – music major or Bachelor of Arts – music major.</td>
</tr>
<tr>
<td>455 Voice</td>
<td>(1-3)</td>
<td>May be repeated. Maximum 8 hours.</td>
<td>(RE) Prerequisite(s): 356.</td>
<td>(RE) Corequisite(s): Music General 200.</td>
<td>Registration Restriction(s): Bachelor of Music – music major or Bachelor of Arts – music major.</td>
</tr>
<tr>
<td>460 Violin</td>
<td>(1-3)</td>
<td>May be repeated. Maximum 8 hours.</td>
<td>(RE) Prerequisite(s): 361.</td>
<td>(RE) Corequisite(s): Music General 200.</td>
<td>Registration Restriction(s): Bachelor of Music – music major or Bachelor of Arts – music major.</td>
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<tr>
<td>461 Violin</td>
<td>(1-3)</td>
<td>May be repeated. Maximum 8 hours.</td>
<td>(RE) Prerequisite(s): 460.</td>
<td>(RE) Corequisite(s): Music General 200.</td>
<td>Registration Restriction(s): Bachelor of Music – music major or Bachelor of Arts – music major.</td>
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<tr>
<td>465 Viola</td>
<td>(1-3)</td>
<td>May be repeated. Maximum 8 hours.</td>
<td>(RE) Prerequisite(s): 366.</td>
<td>(RE) Corequisite(s): Music General 200.</td>
<td>Registration Restriction(s): Bachelor of Music – music major or Bachelor of Arts – music major.</td>
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<tr>
<td>466 Viola</td>
<td>(1-3)</td>
<td>May be repeated. Maximum 8 hours.</td>
<td>(RE) Prerequisite(s): 465.</td>
<td>(RE) Corequisite(s): Music General 200.</td>
<td>Registration Restriction(s): Bachelor of Music – music major or Bachelor of Arts – music major.</td>
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<tr>
<td>470 Cello</td>
<td>(1-3)</td>
<td>May be repeated. Maximum 8 hours.</td>
<td>(RE) Prerequisite(s): 371.</td>
<td>(RE) Corequisite(s): Music General 200.</td>
<td>Registration Restriction(s): Bachelor of Music – music major or Bachelor of Arts – music major.</td>
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<tr>
<td>471 Cello</td>
<td>(1-3)</td>
<td>May be repeated. Maximum 8 hours.</td>
<td>(RE) Prerequisite(s): 472.</td>
<td>(RE) Corequisite(s): Music General 200.</td>
<td>Registration Restriction(s): Bachelor of Music – music major or Bachelor of Arts – music major.</td>
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<tr>
<td>472 Electric Bass</td>
<td>(1-3)</td>
<td>May be repeated. Maximum 8 hours.</td>
<td>(RE) Prerequisite(s): 373.</td>
<td>(RE) Corequisite(s): Music General 200.</td>
<td>Registration Restriction(s): Bachelor of Music – music major or Bachelor of Arts – music major.</td>
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<tr>
<td>473 Electric Bass</td>
<td>(1-3)</td>
<td>May be repeated. Maximum 8 hours.</td>
<td>(RE) Prerequisite(s): 472.</td>
<td>(RE) Corequisite(s): Music General 200.</td>
<td>Registration Restriction(s): Bachelor of Music – music major or Bachelor of Arts – music major.</td>
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<tr>
<td>474 String Bass</td>
<td>(1-3)</td>
<td>May be repeated. Maximum 8 hours.</td>
<td>(RE) Prerequisite(s): 375.</td>
<td>(RE) Corequisite(s): Music General 200.</td>
<td>Registration Restriction(s): Bachelor of Music – music major or Bachelor of Arts – music major.</td>
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<tr>
<td>475 String Bass</td>
<td>(1-3)</td>
<td>May be repeated. Maximum 8 hours.</td>
<td>(RE) Prerequisite(s): 374.</td>
<td>(RE) Corequisite(s): Music General 200.</td>
<td>Registration Restriction(s): Bachelor of Music – music major or Bachelor of Arts – music major.</td>
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<tr>
<td>480 Piano</td>
<td>(1-3)</td>
<td>May be repeated. Maximum 8 hours.</td>
<td>(RE) Prerequisite(s): 381.</td>
<td>(RE) Corequisite(s): Music General 200.</td>
<td>Registration Restriction(s): Bachelor of Music – music major or Bachelor of Arts – music major.</td>
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<tr>
<td>481 Piano</td>
<td>(1-3)</td>
<td>May be repeated. Maximum 8 hours.</td>
<td>(RE) Prerequisite(s): 480.</td>
<td>(RE) Corequisite(s): Music General 200.</td>
<td>Registration Restriction(s): Bachelor of Music – music major or Bachelor of Arts – music major.</td>
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</tbody>
</table>
483 Guitar (1-3)
Repeatability: May be repeated. Maximum 8 hours.
(RE) Prerequisite(s): 384.
(RE) Corequisite(s): Music General 200.
Comment(s): Requires audition, registration for ensemble appropriate to degree program, and C or higher in 384.
Registration Restriction(s): Bachelor of Music – music major/studio music and jazz concentration.

484 Guitar (1-3)
Repeatability: May be repeated. Maximum 8 hours.
(RE) Prerequisite(s): 483.
(RE) Corequisite(s): Music General 200.
Comment(s): Requires audition, registration for ensemble appropriate to degree program, and C or higher in 483.
Registration Restriction(s): Bachelor of Music – music major/studio music and jazz concentration.

485 Harpsichord (1-3)
Repeatability: May be repeated. Maximum 8 hours.
(RE) Prerequisite(s): 386.
(RE) Corequisite(s): Music General 200.
Comment(s): Requires audition, registration for ensemble appropriate to degree program, and C or higher in 386.
Registration Restriction(s): Bachelor of Music – music major or Bachelor of Arts – music major.

486 Harpsichord (1-3)
Repeatability: May be repeated. Maximum 8 hours.
(RE) Prerequisite(s): 485.
(RE) Corequisite(s): Music General 200.
Comment(s): Requires audition, registration for ensemble appropriate to degree program, and C or higher in 485.
Registration Restriction(s): Bachelor of Music – music major or Bachelor of Arts – music major.

489 Organ (1-3)
Repeatability: May be repeated. Maximum 8 hours.
(RE) Prerequisite(s): 390.
(RE) Corequisite(s): Music General 200.
Comment(s): Requires audition, registration for ensemble appropriate to degree program, and C or higher in 390.
Registration Restriction(s): Bachelor of Music – music major or Bachelor of Arts – music major.

490 Organ (1-3)
Repeatability: May be repeated. Maximum 8 hours.
(RE) Prerequisite(s): 489.
(RE) Corequisite(s): Music General 200.
Comment(s): Requires audition, registration for ensemble appropriate to degree program, and C or higher in 489.
Registration Restriction(s): Bachelor of Music – music major or Bachelor of Arts – music major.

494 Composition (1-3)
Repeatability: May be repeated. Maximum 8 hours.
(RE) Prerequisite(s): 394.
(RE) Corequisite(s): Music General 200.
Comment(s): Requires audition, registration for ensemble appropriate to degree program, and C or higher in 394.
Registration Restriction(s): Bachelor of Music – music major or Bachelor of Arts – music major.

495 Composition (1-3)
Repeatability: May be repeated. Maximum 8 hours.
(RE) Prerequisite(s): 395.
(RE) Corequisite(s): Music General 200.
Comment(s): Requires audition, registration for ensemble appropriate to degree program, and C or higher in 395.
Registration Restriction(s): Bachelor of Music – music major or Bachelor of Arts – music major.

496 Composition with Electronic Media (1-3)
Repeatability: May be repeated. Maximum 8 hours.
(RE) Prerequisite(s): 396.
(RE) Corequisite(s): Music General 200.
Comment(s): Requires audition, registration for ensemble appropriate to degree program, and C or higher in 396.
Registration Restriction(s): Bachelor of Music – music major or Bachelor of Arts – music major.

498 Improvisation (1-2)
Repeatability: May be repeated. Maximum 4 times.
Credit Restriction(s): May not be used to satisfy applied music requirement.
Registration Permission: Consent of instructor.
Registration Restriction(s): Bachelor of Music – music major or Bachelor of Arts – music major.

Music Technology (717)
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)
340 Introduction to Computer Music Transcription (3) Exercise in notation, playback and publishing incorporating elements of word processing, graphic design, sequencing and page layout. Study of Music Instrument Digital Interface protocol as it applies to computer music work station design.
Registration Permission: Consent of instructor.
390 Sound Synthesis Techniques (3) Studio and real-time applications of synthesizers. Historical background, theoretical concepts, equipment interface and usage, analysis of sounds and compositions.
(DE) Prerequisite(s): 290.

Music Theory (714)
100 Fundamentals of Music (3) Theory and practice of basic elements of music.
Comment(s): Grade of C or higher in 100 is required.

105 Introduction to Music Theory (3) Materials of music including scales and modes, key signatures, intervals, triads, diatonic analysis, and an introduction to part-writing.
Registration Restriction(s): Bachelor of Music – music major or Bachelor of Arts – music major.

110 Theory I (3) Materials of music including basic elements through non-chord tones and 6/4 chords. Exercises in analysis, composition, and improvisation of music with emphasis on common practice.
Recommended Background: Successful completion of music theory placement test.

120 Theory II (3) Materials of music through secondary dominants and modulation. Exercises in analysis, composition, and improvisation of music with emphasis on common practice.
(RE) Prerequisite(s): 110.
Comment(s): Grade of C or higher in 110 is required.

130 Ear Training I (1) Development of proficiency in sight singing short melodies and identifying melodic intervals, scales, triads and the dictation of short diatonic melodic models.
Contact Hour Distribution: Includes lab hours.
Graduating Restriction: A, B, C, No Credit grading.
(RE) Prerequisite(s): 100 or 105.
Comment(s): Grade of C or higher in 100 or 105 is required.

140 Ear Training II (1) Development of proficiency in sight singing longer melodies and identifying harmonic intervals, triads, cadence types and the dictation of longer diatonic melodic models.
Contact Hour Distribution: Includes lab hours.
(RE) Prerequisite(s): 130.
Comment(s): Grade of C or higher in 130 is required.

210 Theory III (3) Materials of music through chromatic harmony and modulation. Exercises in analysis, composition, and improvisation of music with emphasis on common practice.
(RE) Prerequisite(s): 120.
Comment(s): Grade of C or higher in 120 is required.

220 Theory IV (3) Materials of music from the dissolution of functional harmony to contemporary compositional techniques. Exercises in analysis, composition, and improvisation of music.
(RE) Prerequisite(s): 210.
Comment(s): Grade of C or higher in 210 is required.

230 Advanced Ear Training III (1) Development of proficiency in sight singing melodies, identifying seventh chords, dictation of diatonic harmonic progressions and diatonic melodic models.
Contact Hour Distribution: Includes lab hours.
(RE) Prerequisite(s): 140.
Comment(s): Grade of C or higher in 140 is required.

240 Advanced Ear Training IV (1) Development of proficiency in sight singing melodies, dictation of diatonic harmonic progressions and melodic models.
Contact Hour Distribution: Includes lab hours.
(RE) Prerequisite(s): 230.
Comment(s): Grade of C or higher in 230 is required.

310 Form and Analysis (3) Study and practice in analysis of forms of music from smallest structural units to large compound forms.
(RE) Prerequisite(s): 210 and 240.
320 Instrumentation (2) Basic techniques in scoring for voice, brass, woodwind and string choirs and percussion. 
(Re) Prerequisite(s): 210 and 230. 
Comment(s): For students in the studio music and jazz and music education concentrations.

Comment(s): Recommended as a review course for graduate students. 
Registration Permission: Consent of instructor.

410 Ear Training Review (1) Review and application of harmonic and melodic dictation skills. 
Grading Restriction: Satisfactory/No Credit grading only. 
Recommended Background: 240. 
Comment(s): For graduate and advanced undergraduate students. 
Registration Permission: Consent of instructor.

420 Orchestration (3) Advanced techniques in instrumental writing with emphasis on scoring for the concert orchestra. 
(Re) Prerequisite(s): 210 and 230. 
Comment(s): For students in the theory/composition concentration.

430 Counterpoint I (3) Study of species counterpoint in modal and tonal styles with emphasis on works of Palestrina and J.S. Bach. 
(Re) Prerequisite(s): 210 and 230.

440 Counterpoint II (3) Writing of contrapuntal forms of the 18th century and fugue analysis of works from the 18th through the 20th centuries. 
(Re) Prerequisite(s): 430.

450 Choral Arranging (2) Analysis of scores and writing of arrangements for choruses. 
(Re) Prerequisite(s): 210 and 240.

493 Independent Study in Music Theory (1-15) 
Repeatability: May be repeated. Maximum 15 hours. 
Registration Permission: Consent of department head.

Music Voice (715)

110 Class Voice I (1) Development of basic vocal skills. 
Repeatability: May be repeated. Maximum 2 hours. 
Registration Permission: Consent of instructor.

230 Acting for Singers (1) Advanced work on song presentation and interpretation; scene study and characterization. 
Repeatability: May be repeated. Maximum 4 hours. 
Registration Permission: Consent of instructor.

240 Diction I (2) Sounds by phonetic symbols. Opera and art songs used for examples. Emphasis placed on Italian, English, and Spanish diction. 
Performance practice.

250 Diction II (2) Sounds by phonetic symbols. Opera and art songs used for examples. Emphasis placed on German, French, and Latin diction. 
Performance practice.

330 Opera Production (1-3) Supervised work on opera productions. 
Repeatability: May be repeated. Maximum 12 hours. 
Registration Permission: Consent of instructor.

410 Song Literature I (2) German songs.

420 Song Literature II (2) French, Italian, Russian, Scandinavian, Czechoslovakian, British, and American art songs.

425 Functional Diction for Singers (3) Comprehensive 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. 
Comment(s): For students in sacred music (voice) and music education/vocal concentrations.

450 Pedagogy I (2) Concepts and approaches to teaching singing past and present for all ages of voices. 
Registration Permission: Consent of instructor.

460 Pedagogy II (1) Vocal teaching materials: includes collateral teaching experiences. 
(Re) Prerequisite(s): 450.

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 articulately. Writing-emphasis course. (AH)
Credit Restriction: Students who receive a grade of C or better in 200 may not receive credit for 110.

115 Music in the United States (3) Explores musical traditions of the United States. Writing-emphasis course. (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. (AH)

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

210 History of Western Music, Ancient to the Baroque (3) Historical study of musical styles, practices, theories and context of European art music to 1750. Develops skills in independent research, critical thinking and expository writing. Writing-emphasis course. (AH) (WC) 
(Re) Prerequisite(s): 110. 
Registration Permission: Consent of instructor.

220 History of Western Music, Classical to the Present (3) Historical study of musical styles, practices, theories and context of European art music from 1750 to present. Develops skills in independent research, critical thinking and expository writing. Writing-emphasis course. (AH) 
(Re) Prerequisite(s): 110. 
Registration Permission: Consent of instructor.

290 Soundscapes: Exploring Music in a Changing World (3) An introduction to music within expressive culture and as a part of peoples’ daily lives around the world. Focuses on music as sound, its role in conceptions of identity, migration and global social processes, personal and community memory, politics and power. (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 Africana Studies 310.)

330 Women in Music (3) Interdisciplinary survey of music as a gendered construct in varying cultural contexts, including Western European art music, American popular music, and others. Explores gendered roles in composition, performance, and social and musical institutions from the point of view of historical, cultural, feminist, and queer interpretations. (Same as Women’s Studies 330.) (WC)

340 Contemporary Trends in American Church Music I (2) The history and analysis of popular, contemporary sacred music, with an emphasis on composition and arranging. 
(Re) Prerequisite(s): Music Theory 220.

341 Contemporary Trends in American Church Music II (2) Continuation of the history and analysis of popular, contemporary sacred music, with an emphasis on composition and arranging. 
(Re) Prerequisite(s): 340.

350 History of Jazz (3) Origin, development, and styles of jazz music and its exponents. Cultivation of special listening techniques. Writing emphasis course.

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. (WC) 
(Re) Prerequisite(s): 220.

400 Music History Survey (3) Condensed survey of the history of western church music traditions from the medieval era to the present, including socio-political events that shape musical practice. Explores musical genres and styles, as well as key themes in musicological research. 
Recommended Background: 100-level musicology course.
Comment(s): Recommended as a review course for graduate students. Does not count for graduate credit.

410 Studies in Genre (3) Historical, cultural, analytical, and musicological issues related to a single musical genre, style, or repertory. Topics vary. 
Repeatability: May be repeated. Maximum 6 hours. 
Recommended Background: 100-level musicology course.

420 History of Opera (3) The development of opera from its inception to the present. Readings and discussion focus on an understanding of the historical trajectory of opera, both as a music-theatrical work and as a cultural practice. 
Recommended Background: 100-level musicology course. 
Registration Permission: Consent of instructor.

430 History of the Symphony (3) Overview of orchestral repertories from 1600 to the present. 
Recommended Background: 100-level musicology course. 
Registration Permission: Consent of instructor.

450 Composer Seminar (3) Biographical, historical, and cultural study of a composer, or a group of related composers. Topics vary. 
Repeatability: May be repeated. Maximum 6 hours. 
Recommended Background: 100-level musicology course.
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.  
   Recommended Background: 100-level musicology course.

480 Music in Christian Worship (3) Hymnody, liturgies, and liturgical music. Recommended Background: 100-level musicology course.

441 Independent Study (1-15) Repeatability: May be repeated. Maximum 15 hours. Registration Permission: Consent of department head.

Nuclear Engineering (716)
200 Introduction to Nuclear and Radiological Engineering (1) Topics related to nuclear and radiological engineering. 
   Grading Restriction: Satisfactory/No Credit grading only.

203 Thermodynamics I (3) First law analysis of open and closed systems. Properties of ideal gases and real fluids. Introduction to second law and concept of entropy. Rankine cycle. 
   (RE) Prerequisite(s): Mathematics 142.

301 Fundamentals of Nuclear and Radiological Engineering (3) Nuclear systems, radiation interactions and decay, health physics, cross sections, basic nuclear reactor theory concepts, introduction to FORTRAN programming. 
   (RE) Prerequisite(s): Physics 232 and Mathematics 231.

304 Nuclear and Radiological Engineering Laboratory I (3) Radiation detection and counting instrumentation, counting statistics, half-life and decay schemes, gamma spectrum, heat transfer experiments. (WC) 
   (DE) Prerequisite(s): 342. 
   (RE) Corequisite(s): 470.

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. 
   (DE) Prerequisite(s): 203 or Mechanical Engineering 331.

351 Nuclear System Dynamics and Control (3) System modeling and time-domain response, transfer functions, frequency-domain response, stability, noise reduction methods, and control design. Nuclear reactor kinetics, nodal modeling of core heat transfer, reactor control systems, and nuclear plant transient response are discussed. System simulation and control using PC-based software and toolboxes. 
   (RE) Prerequisite(s): 301.

360 Reactor Systems and Safety (3) Safety and operating limits of nuclear steam supply system components; NRC regulations, accident analysis and mitigation. 
   (RE) Prerequisite(s): 342.

400 Senior Seminar (1) Current topics related to nuclear and radiological engineering including ethics, contemporary issues, and commitment to life-long learning. 
   (OC) 
   Grading Restriction: Satisfactory/No Credit grading only. 
   Registration Restriction(s): Minimum student level – senior.

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. (WC) 
   (RE) Prerequisite(s): 304.

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. 
   (RE) Prerequisite(s): 470.

406 Radiation Shielding (3) Types of radiation sources, fundamentals of gamma ray and neutron attenuation, biological effects, approximate methods of shield design, discrete ordinates, and Monte Carlo. 
   (RE) Prerequisite(s): Physics 232.

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. 
   Registration Restriction(s): Pre-professional programs major/nuclear medicine technology concentration.

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. 
   Registration Restriction(s): Pre-professional programs major/nuclear medicine technology concentration.

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 somatic 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. 
   Registration Restriction(s): Pre-professional programs major/nuclear medicine technology concentration.

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. 
   (RE) Prerequisite(s): 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. 
   (RE) Prerequisite(s): 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. (Same as Chemical Engineering 483; Industrial Engineering 483; Mechanical Engineering 483.) 
   Registration Restriction(s): Minimum student level – senior.

484 Introduction to Maintainability Engineering (3) Principles of maintenance and reliability engineering, and maintenance management. Topics include information extraction from machinery measurements,rotor dynamics, machinery diagnostics, nondestructive testing, life prediction, failure models, lubrication oil analysis, establishing a predictive maintenance program, and computerized maintenance management systems. (Same as Chemical Engineering 484; Industrial Engineering 484; Materials Science and Engineering 484; Mechanical Engineering 484.) 
   Registration Restriction(s): Minimum student level – senior. 
   Registration Permission: Consent of instructor.

494 Special Topics in Nuclear Engineering (3) Problems related to recent developments and practice. 
   Repeatability: May be repeated. 
   Registration Restriction(s): Minimum student level – senior. 
   Registration Permission: Consent of instructor.

495 Special Topics in Radiological Engineering (3) Problems related to recent developments and practice. 
   Repeatability: May be repeated. 
   Registration Restriction(s): Minimum student level – senior.

498 Research (1-3) Research related to recent developments in nuclear and radiological engineering. 
   Grading Restriction: Satisfactory/No Credit grading only. 
   Repeatability: May be repeated. 
   Maximum 3 hours.

Nuclear Medicine Technology (718)
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 nuclide 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. 
   Comment(s): May not be substituted for Physics 471 or 472. 
   Registration Restriction(s): Pre-professional programs major/nuclear medicine technology concentration.

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. 
   Registration Restriction(s): Pre-professional programs major/nuclear medicine technology concentration.

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. 
   Registration Restriction(s): Pre-professional programs major/nuclear medicine technology concentration.

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 somatic 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. 
   Registration Restriction(s): Pre-professional programs major/nuclear medicine technology concentration.
420 Clinical Nuclear Medicine I (4) Theories and applications of nuclear medicine methodologies. Patient care, central nervous system, endocrine system, respiratory system and digestive system. Registration Restriction(s): Pre-professional programs major/nuclear medicine technology concentration.

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. Registration Restriction(s): Pre-professional programs major/nuclear medicine technology concentration.

430 Clinical Nuclear Medicine II (4) Theories and applications of nuclear medicine methodologies. Hepatic and hepatobiliary system, genitourinary system, musculoskeletal system, non organ/inflammatory imaging, cardiovascular imaging, non-imaging nuclear medicine. Registration Restriction(s): Pre-professional programs major/nuclear medicine technology concentration.

440 Clinical Nuclear Medicine III (4) Theories and applications of nuclear medicine methodologies. Single photon emission tomography, positron emission tomography, clinical quality assurance, pediatric nuclear medicine, radionuclide therapy, and management and administration of nuclear medicine programs. Registration Restriction(s): Pre-professional programs major/nuclear medicine technology concentration.

450 Clinical Practicum I (4) 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, radionuclide therapy, and basic administrative and management procedures. Registration Restriction(s): Pre-professional programs major/nuclear medicine technology concentration.

460 Clinical Practicum II (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, radionuclide therapy, and basic administrative and management procedures. Registration Restriction(s): Pre-professional programs major/nuclear medicine technology concentration.

470 Clinical Practicum III (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, radionuclide therapy, and basic administrative and management procedures. Registration Restriction(s): Pre-professional programs major/nuclear medicine technology concentration.

475 Nuclear Medicine Registry Review (2) Preparation for National Registry Examination with special emphasis on film interpretation and reporting in technical critique sessions. Registration Restriction(s): Pre-professional programs major/nuclear medicine technology concentration.

Nursing (720)

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. Contact Hour Distribution: 2 lecture and 1 lab. Registration Restriction(s): Bachelor of Science in Nursing – nursing major; minimum student level – sophomore.

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. Comment(s): This course has no prerequisites and is open to all 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. Contact Hour Distribution: 3 lecture and 1 lab. Comment(s): For RNs only.

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. Contact Hour Distribution: 2 lecture and 3 lab. (RE) Prerequisite(s): 201. (RE) Corequisite(s): 319 and 333. (DE) Corequisite(s): 341. Registration Restriction(s): Bachelor of Science in Nursing – nursing major or Master of Science in Nursing – nursing major; minimum student level – junior.

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. Comment(s): Open to all undergraduate students.

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. Registration Restriction(s): Bachelor of Science in Nursing – nursing major or Master of Science in Nursing – nursing major; minimum student level – junior.

333 Health Assessment (3) Theory and laboratory practice in the systematic assessment of health status including history taking and performance of physical assessment skills. Contact Hour Distribution: 2 lecture and 1 lab. Comment(s): For RNs, this course is prerequisite to any clinical course beyond 305. Registration Restriction(s): Bachelor of Science in Nursing – nursing major or Master of Science in Nursing – nursing major; minimum student level – junior.

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. (OC) Registration Restriction(s): Bachelor of Science in Nursing – nursing major or Master of Science in Nursing – nursing major; minimum student level – junior.

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. (RE) Prerequisite(s): Chemistry 100 and Chemistry 110. Comment(s): 6 hours of anatomy and physiology are required.

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. Contact Hour Distribution: 3 lecture and 2 lab. (RE) Prerequisite(s): 311 and 319. (DE) Prerequisite(s): 333. (RE) Corequisite(s): 351. Comment(s): RNs are exempt from 311.

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.

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. Contact Hour Distribution: 3 lecture and 2 lab. (RE) Prerequisite(s): 311 and 319. (DE) Prerequisite(s): 333. (RE) Corequisite(s): 351 and 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. Comment(s): Open to undergraduate students in all colleges.

402 Gerontology Practicum (3) Off-campus supervised experience in gerontology. Offered as part of the gerontology minor. Comment(s): Open to students in all colleges. Registration Permission: Consent of instructor.
403 Health Promotion and Maintenance in Childbearing Families (5)  
Nursing practice for promotion, maintenance, and restoration of reproduc-
tive health. Emphasis on therapeutic relationships with childbearing
families for long-term positive impact on health care and lifestyle. (WIC)  
Contact Hour Distribution: 3 lecture and 2 lab.  
(RE) Prerequisite(s): 361 and 382.

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 com-
munity and acute care facilities.  
Contact Hour Distribution: 3 lecture and 2 lab.  
(RE) Prerequisite(s): 361 and 382.

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.  
(RE) Prerequisite(s): 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 disability. Strategies for building collaborative partnerships to effect
health advocacy for vulnerable populations.  
Registration Restriction(s): Bachelor of Science in Nursing – nursing major or
Master of Science in Nursing – nursing major; minimum student level – junior.

415 Nursing the Childbearing Family (4) 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.  
Contact Hour Distribution: 2 lecture and 2 lab.  
Comment(s): For non-nurse MSN students.  
Registration Restriction(s): Master of Science in Nursing – nursing major.

421 Mental Health Maintenance and Restoration (5) Nursing to sup-
port and care for persons with mental health needs. Emphasis on use of
self as therapeutic agent with individuals, groups and families and devel-
oping nursing strategies for mental health maintenance and restoration.  
Contact Hour Distribution: 3 lecture and 2 lab.  
(RE) Prerequisite(s): 361 and 382.

432 Health Promotion, Maintenance, and Restoration in the
Community (3) Focus on nursing care of at risk individuals, communi-
ties, and populations. Assessment of sociocultural values, environmental
factors, health education, and community resources. Design of interven-
tions to promote, maintain, and restore health through the use of the epi-
demiological process. Clinical practice in a community health setting.  
Contact Hour Distribution: 2 lecture and 1 lab.  
Comment(s): For non-nurse MSN students only or permission of instructor.  
Registration Restriction(s): Master of Science in Nursing – nursing major.

444 Care of Children, Adolescents, and their Families (3) 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.  
Contact Hour Distribution: 2 lecture and 1 lab.  
(RE) Prerequisite(s): 361.  
Comment(s): For non-nurse MSN students only.  
Registration Restriction(s): Master of Science in Nursing – nursing major.

451 Interpersonal Management Skills in Nursing (2) Focus on con-
cepts and strategies for leadership as a professional nurse. Application of
common workplace issues that affect nursing practice.  
(RE) Prerequisite(s): 381.  
Registration Restriction(s): Bachelor of Science in Nursing – nursing major; min-
imum student level – senior.

452 Professional and Workplace Issues (1) Focus on nursing ethics
and moral development, using scenarios from everyday practice.  
(RE) Prerequisite(s): 451.  
Registration Restriction(s): Bachelor of Science in Nursing – nursing major; min-
imum student level – senior.

454 Professional Leadership Issues (2) 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 per-
sonal development and interpersonal skills. (OC)  
Recommended Background: RN status or MSN.

461 Health Restoration: Adult (4) Focus on nursing practice for health
restoration of adults with acute, complex health needs. Emphasis on quality of
care, coordination of care, and end of life care.  
Contact Hour Distribution: 2 lecture and 2 lab.  
(RE) Prerequisite(s): 361 and 382.

470 Special Topics (1-3) In-depth study of selected nursing topics, prob-
lems, or issues not covered in other courses. Topics determined by fac-
ulty and student interest.  
Registration Permission: 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.  
Comment(s): Also open to RNs.  
Registration Restriction(s): Bachelor of Science in Nursing – nursing major; min-
imum student level – senior.

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 elec-
tronic communication, word processing, spreadsheet, database, presen-
tation and computer-assisted-instruction programs. Students will also be
exposed to nursing documentation, flowcharting, and authoring software.  
Contact Hour Distribution: 2 lecture and 1 lab.  
Registration Restriction(s): Bachelor of Science in Nursing – nursing major.

490 Specialty Preceptorship (4) In-depth practicum to develop knowledge
and skill in a selected specialty area under direct guidance of clinical precep-
tor. Knowledge development in specialty area under guidance of faculty.  
Contact Hour Distribution: 1 lecture and 3 lab.  
(RE) Prerequisite(s): 406 and 451.  
(DE) Prerequisite(s) or (DE) Corequisite(s): 403, 404, 421, and 461.

491 International Studies (1-3) Participation in selected health and
nursing care in foreign countries.  
Registration Permission: Consent of instructor.

493 Independent Study (1-3) Nursing or health-related topic not cov-
ered in other nursing courses.  
Registration Permission: Consent of instructor.  
Registration Restriction(s): Minimum student level – senior.

Nutrition (726)

100 Introductory Nutrition (3) Nutritional concepts; current consumer
issues in nutrition; nutritional needs through life cycle; international nutri-
tion concerns and/or issues. (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.

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.  
(RE) Prerequisite(s): 100.

303 Foodservice Systems Management (3) Assessment of manageri-
al, 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 interrela-
relationships among vitamins and minerals as they apply to human nutrition.
(R) Prerequisite(s): Chemistry 350 and Biochemistry and Cellular and Molecular
Biology 310.

314 Energy Metabolism and Metabolic Integration (3) Integration of
carbohydrate, fat and protein metabolism as applied to nutrient utilization
and requirements in humans.  
(RE) Prerequisite(s): Biochemistry and Cellular and Molecular Biology 310 and
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.  
Registration Restriction(s): Minimum student level – senior.

412 Food and Nutrition in the Community (3) Influence of health char-
acteristics, geographic, social, economic, educational and cultural factors
on food and nutrition programming; relationship of community food
and nutrition problems to programs and services for families and communities
with particular attention to disease prevention; public policy. (WC)  
(RE) Prerequisite(s) or (DE) Corequisite(s): 302 and 415.

415 Clinical Nutrition I (3) Pathophysiological basis and nutritional
assessment and intervention in chronic diseases in humans.  
(RE) Prerequisite(s): 313 and 314.
416 Clinical Nutrition II (3) Pathophysiological basis and nutritional assessment and intervention in acute disease and other critical care conditions.  
(RE) Prerequisite(s): 415.

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.  
(RE) Prerequisite(s): 160 and Biochemistry and Cellular and Molecular Biology 310.

450 Special Topics: Nutrition (1-3) Developments, issues and problems in Nutrition; topics variable.  
Repeatability: May be repeated. Maximum 3 hours.  
Registration Restriction(s): Nutrition major; minimum student level – junior.  
Registration Permission: Consent of instructor.

490 Introduction to the Dietetic Internship (3) Applications of clinical, food service, and management theories to dietetic practice.  
Comment(s): Restricted to dietetic intern students.

492 Field Experience: Nutrition (1-3)  
Grading Restriction: Satisfactory/No Credit grading only.  
Registration Permission: Consent of instructor.

493 Directed Study: Nutrition (1-3) Individual student: faculty experience.  
Grading Restriction: Letter grade only.  
Registration Permission: Consent of instructor.

Operations and Management Science (738)

341 Operations Management I (3) Design of operations systems. Process and methods analysis and measurement, location and layout, project management, operational forecasting.  
(RE) Prerequisite(s): Business Administration 341.  
Registration Restriction(s): Majors in the College of Business Administration.

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.  
(RE) Prerequisite(s): 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.  
(RE) Prerequisite(s): Business Administration 341.  
Registration Restriction(s): Majors in the College of Business Administration.

441 Operations Management II (3) Planning and control of operations systems. Aggregate planning, scheduling systems, materials management.  
(RE) Prerequisite(s): 341.  
Registration Restriction(s): Majors in the College of Business Administration.

Persian (744)

161 Elementary Persian I (4) (See Asian Studies 161.)

162 Elementary Persian II (4) (See Asian Studies 162.)

261 Intermediate Persian I (4) (See Asian Studies 261.) (CC)

262 Intermediate Persian II (4) (See Asian Studies 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. Writing-emphasis course. (AH)  
Comment(s): May be taken before 110.

117 Honors: Introduction to Philosophy I (3) Honors version of 110. (AH)  
118 Honors: Introduction to Philosophy II (3) Honors version of 111. (AH)  
Comment(s): May be taken before 117.

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)  
Repeatability: May be repeated if topic differs. Maximum 6 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) (OC)

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)  
Repeatability: 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 Occam. Secondary and primary sources. Writing-emphasis course. (Same as Judeic 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) Repeatability: May be repeated if topic differs. 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-20th century. Repeatability: May be repeated if topic differs. Maximum 9 hours. Recommended Background: 6 hours of philosophy courses.

435 Intermediate Formal Logic (3) Metatheory of formal logic and philosophy of logic. (RE) Prerequisite(s): 135.

440 Contemporary Ethical Theory (3) Topics in meta-ethics or ethics. Recommended Background: 6 hours of philosophy courses.

443 Advanced Business Ethics (3) Advanced topics in business ethics. Repeatability: May be repeated if topic differs. Maximum 6 hours. (DE) Prerequisite(s): One of the following – 241, 242, 243, 244, 245, 246, 340.

445 Advanced Environmental Ethics (3) Advanced topics in environmental ethics. Repeatability: May be repeated if topic differs. Maximum 6 hours. (DE) Prerequisite(s): One of the following – 241, 242, 243, 244, 245, 246, 340.

446 Advanced Bioethics (3) Advanced topics in bioethics. Repeatability: May be repeated if topic differs. Maximum 6 hours. (DE) Prerequisite(s): One of the following – 241, 242, 243, 244, 245, 246, 340.

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. Recommended Background: Upper-division coursework in philosophy or biology.

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? Recommended Background: Three 200-level or above philosophy courses.

473 Philosophy of Mind (3) Problems of mind and body in relation to consciousness and personal identity. Recommended Background: 6 hours of philosophy courses.

491 Foreign Study (1-15) Repeatability: May be repeated. Maximum 15 hours.

492 Off-Campus Study (1-15) Repeatability: May be repeated. Maximum 15 hours.

493 Independent Study (1-15) Repeatability: May be repeated. Maximum 15 hours.

**Physical Education (764)**

200 Special Topics (1-2) Selected topics in various activities not covered in the regular program. Repeatability: May be repeated if topic differs. 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. Grading Restriction: Satisfactory/No Credit grading only.

216 Martial Arts (Special Topics) (2) Selected topics in various forms of martial arts, including but not limited to judo, karate, and tai chi. Repeatability: May be repeated if topic differs. 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. Grading Restriction: 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.

259 Snow Skiing (1) Development of skills necessary to balance, walk and slide while on skis. Learn ski etiquette and skier’s responsibility code. Grading Restriction: 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. Grading Restriction: Satisfactory/No Credit grading only.

**Physics (773)**

101 How Things Work I (3) Examines familiar objects of everyday experience and leads to an understanding of the physical principles that make them work. Laws of motion, mechanical objects, fluids, and heat. (NS) Comment(s): For students with majors outside science.

102 How Things Work II (3) Examines familiar objects of everyday experience and leads to an understanding of the physical principles that make them work. Electric and magnetic forces, electronics, lights and optics, and an introduction to modern physics. (NS) Comment(s): For students with majors outside science. Physics 101 is not a prerequisite for Physics 102.

135 Introduction to Physics for Physical Science and Mathematics Majors I (4) Calculus-based physics of mechanics and waves. (NS) Contact Hour Distribution: 3 hours lecture and 2 hours lab. (RE) Corequisite(s): Mathematics 141. Comment(s): Alternative to 137 for physics majors.
136 Introduction to Physics for Physical Science and Mathematics Majors II (4) Calculus-based physics of thermodynamics, electricity, magnetism, and optics. (NS) Contact Hour Distribution: 3 hours lecture and 2 hours lab. (RE) Corequisite(s): Mathematics 142.

137 Honors: Fundamentals of Physics for Physics Majors I (5) Calculus-based physics of mechanics, sound, waves and thermodynamics. (NS) Contact Hour Distribution: 3 hours lecture and 3 hours lab. (RE) Corequisite(s): Mathematics 141.

138 Honors: Fundamentals of Physics for Physics Majors II (5) Calculus-based physics of electricity, magnetism, and optics. (NS) Contact Hour Distribution: 3 hours lecture and 3 hours lab. (RE) Corequisite(s): Mathematics 142.

Electronic devices and instrumentation

321 Thermal Physics (3) Concepts of temperature and heat; laws of thermodynamics; elementary statistical mechanics; applications to atomic, nuclear, and condensed matter physics. (NS) Contact Hour Distribution: 3 hours lecture and 3 hours lab. (RE) Corequisite(s): Mathematics 130 or Mathematics 141.

322 Elements of Physics (4) Basic physical principles and applications required in premedical, pre-dental, pre-pharmacy and pre-veterinary programs. Mechanics, heat, wave motion, and optics. (NS) Contact Hour Distribution: 3 hours lecture and 3 hours lab. (RE) Prerequisite(s): Mathematics 130 or Mathematics 141. Comments: Any calculus course is also an appropriate prerequisite.

324 Modern Optics (4) Transmission of light in uniform, isotropic media, reflection and transmission at interfaces; mathematics of wave motion and interference effects. Rudiments of Fourier optics and holography. Contact Hour Distribution: 3 hours lecture and 3 hours lab. (DE) Prerequisite(s): 138 or 136 or 431 or 232. Registration Permission: Consent of instructor.

341 Introduction to Nuclear Physics (3) Introductory theoretical nuclear physics with emphasis on applied aspects. Primarily for nuclear engineering majors. (RE) Prerequisite(s): 232 or 240.

342 Structure of Matter (3) Physics of molecules and condensed matter. (RE) Prerequisite(s): 240 or 232.

361 Electronics Laboratory (3) Electronic devices and instrumentation techniques in the physics laboratory. 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. Contact Hour Distribution: 1 hour lab per week. (DE) Prerequisite(s): 138 or 136 or 232.

362 Electronics Laboratory (3) Electronic devices and instrumentation techniques in the physics laboratory. Advanced instrumentation techniques applied to the study of electronic circuits as dynamic physical systems, feedback and stability, noise, discrete sampling, Fourier analysis and synthesis, nonlinear circuit dynamics. Contact Hour Distribution: 6 hours lab per week. (DE) Prerequisite(s): 138 or 136 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 modern 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. Registration Restriction(s): Physics major; minimum student level – senior. Registration Permission: Consent of instructor.

411 Introduction to Quantum Mechanics (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. (RE) Prerequisite(s): 240 and Mathematics 435.

412 Introduction to Quantum Mechanics (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. (RE) Prerequisite(s): 411.

421 Modern Optics (4) Electrostatics, magnetostatics, coupled electric and magnetic fields, Maxwell’s Equations, electromagnetic waves and radiation. (DE) Prerequisite(s): 138 or 136 or 431 or 232. Registration Permission: Consent of instructor.

431 Electricity and Magnetism (3) Electromagnetism, quantum mechanics, quantum electrodynamics, lasers, quantum fluids. (DE) Prerequisite(s): 240 and 312.

441 Contemporary Physics I (3) An introduction to the major fields of contemporary physics – quantum mechanics, atomic and molecular physics, electromagnetic radiation, lasers, quantum fluids. (RE) Prerequisite(s): 240 and 312.

442 Contemporary Physics II (3) An introduction to the major fields of contemporary physics – solid state physics, magnetism, nuclear physics, medical imaging, particle physics, cosmology. (RE) Prerequisite(s): 441.

453 Team Research Project I (3) Student teams will choose the topic in consultation with the instructor and develop a plan for the project. Each team will carry out the project with regular oral and written progress reports, culminating in a final report. (RE) Prerequisite(s): 361 and 461.

454 Team Research Project II (3) Student teams will carry out major experimental or computational projects planned and begun in 453, producing regular oral and written progress reports, culminating in a final report. (RE) Prerequisite(s): 453.

461 Modern Physics Laboratory (3) Introduction to fundamental and modern techniques in experimental physics, and to the theory and practice of measurement and data analysis. Selected experiments in nuclear, atomic, molecular and solid state physics, and modern optics. Contact Hour Distribution: 6 hours lab per week. (RE) Prerequisite(s): 361 or 461. (DE) Prerequisite(s): 240 or 411.

462 Modern Physics Laboratory (3) Advanced experiments and experimental techniques in modern physics; experimental team work. Thorough quantum mechanical interpretation of the results and preparation of scientific reports. Contact Hour Distribution: 6 hours lab per week. (RE) Prerequisite(s): 461.

490 Senior Seminar (1-3) Topics of current interest. Repeatability: May be repeated with consent of department. Maximum 6 hours.
Plant Sciences (791)

120 Introduction to Plant Sciences (2) Survey of the disciplines and professions addressed by the department's four academic undergraduate concentrations: landscape design and construction; turfgrass science and management; public horticulture; plant science, biotechnology and horticulture.

Registration Requirement(s): Not open to junior and senior plant sciences majors.

210 Horticulture: Principles and Practices (2) An introduction to the biology and horticultural practices of plants, their use and production of horticultural crops and landscape plants. Structure, growth and development of horticultural plants from a practical and scientific approach, environmental effects, basic principles of propagation, greenhouse and outdoor production, nutrition, pruning and chemical control of growth, pest control and branches of horticulture.

(RE) Prerequisite(s): Biology 111 and Biology 112.

220 Basic Landscape Plants (3) Identification, classification, adaptation, culture and landscape design uses of basic ornamental trees, shrubs, and vines.

Contact Hour Distribution: 2 hours and 1 lab.

226 Public Horticulture (2) Study of the public horticulture profession. Attention given to the diversity of public horticulture institutions, career opportunities, and research. Discussion of current topics and issues.

320 Interior Plantscaping (3) History and introduction of the interior plantscaping industry. Identification, culture, propagation, and use of plants for the commercial interior plantscape. Management of the interior environment including light, humidity, growing media, insects, and diseases. Commercial use of containers, planters, water features, and artificial plants.

340 Turfgrass Management (2) Practical turfgrass management; nutrient selection, identification, and establishment; basic fertility programs, mowing, irrigation practices, and thatch removal and compaction control; pest identification and basic controls.

Contact Hour Distribution: 2 hours lecture.

Comment(s): Students in turfgrass science and management concentration must also register for 241.

341 Turfgrass Management Lab (1) Laboratory addressing topics presented in 240.

Contact Hour Distribution: 2-hour lab.

(RE) Corequisite(s): 240.

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 landscape materials and planting design.

Contact Hour Distribution: 1 hour and 2 labs.

290 Fall Herbaceous Ornamental Plants (3) Identification, culture, and landscape use of late summer and fall herbaceous ornamental plants including annuals, perennials, herbs, and ornamental grasses. Basic gardening practices and design elements using such herbaceous ornamental plants.

(RE) Corequisite(s): 210.

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.

(RE) Corequisite(s): 210.


(RE) Prerequisite(s): 226.

329 Horticultural Interpretation: Educational Programming for Adults and Children (1) Strategic planning, programming and budgeting for adult and youth education within a public garden.

(RE) Prerequisite(s): 226.

330 Plant Propagation (2) Physiology, methodology, and environmental requirements for propagation.

Contact Hour Distribution: 2 hours and 1 lab.

(RE) Prerequisite(s): 210 and Biology 112.

(DE) Prerequisite(s): Biology 111.

331 Interpreting Research Findings (1) Basic statistical concepts required for understanding and evaluating research findings.

Recommended Background: 2 mathematics courses.

Registration Requirement(s): Minimum student level – junior.

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.

(RE) Prerequisite(s): Biology 112 or Biology 110.

(DE) Prerequisite(s): Biology 111 or Biology 110.

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.

(RE) Prerequisite(s): 240 and Biology 112.

(DE) Prerequisite(s): Biology 111.

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.

(RE) Prerequisite(s): 240 and Biology 112.

(DE) Prerequisite(s): Biology 111.

348 Landscape Plant Physiology (2) Physiological principles as they relate to landscape design and construction, turfgrass management, and plant health: photosynthesis and transpiration, respiration, water and hormonal relations, mineral nutrition, plant development, and response to the environment.

(RE) Prerequisite(s): 240 and Biology 112.

(DE) Prerequisite(s): Biology 111.

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.

Contact Hour Distribution: 2 hours and 1 lab.

(RE) Prerequisite(s): 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.

( RE) Prerequisite(s): Biology 111 and Biology 112.

360 Practicum in Landscape Construction (3) Practical experience in implementation of landscape development projects. Directed lab and field instruction in planting operations and basic landscape construction including interpreting and implementing landscape design drawings and specifications.

Contact Hour Distribution: Two 3-hour labs.

(RE) Corequisite(s): 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.

Contact Hour Distribution: 2 hours and 1 lab.

(RE) Prerequisite(s): 210.

380 Supplemental Landscape Design Graphics (3) Refinement of graphic skills. Sketches, elevations, sections, isometric projections, and perspectives. Lettering, plan graphics, color rendering, and other visual presentation media.

Contact Hour Distribution: Two 2-hour labs.

(RE) Prerequisite(s): 280.

410 Nursery Management and Production (3) Management methods as applied to retail and wholesale nurseries and landscape contracting firms. Methods of producing liners, container and field-grown woody ornamental plants.

( RE) Prerequisite(s): 330 and Environmental and Soil Sciences 210.

( DE) Prerequisite(s): 220.

421 Native Plants in the Landscape (3) Native plants and plant communities as a basis for landscaping and environmental restoration. Weekly lecture coupled with either an outing or service practicum of invasive exotic plant removals or planting of natives. Study and work sites will primarily be demonstration projects of the University of Tennessee Environmental Landscape Design Lab. They include local schoolyard habitats, greenways, wetlands, streambanks, and shorelines.

( RE) Prerequisite(s): 220 or Ecology and Evolutionary Biology 330.

( DE) Prerequisite(s): 210.
427 Management and Administration of Public Horticulture Institutions (2) Management of resources in non-profit institutions, support organizations and communities. Theoretical framework and institutional mission; strategic planning and programming; financial accounting and budgeting; development and fund raising; personnel policies; volunteer development; marketing and publicity; legal issues; relationships between staff and governing boards; the use of information technology in management and governance systems; and conservation/preservation roles in community development.

(RE) Prerequisite(s): 226 and 210.

429 Field Study of Public Horticulture Institutions (2) Extended 10-12 day field study of various public horticulture institutions such as botanical gardens, arboretas, historical grounds, zoos, conservatories, cemeteries, and nature preserves. Application and travel fee required.

(RE) Prerequisite(s): 226 and 210.


Contact Hour Distribution: 2 hours lecture and one 2-hour lab.

(RE) Prerequisite(s): Agriculture and Natural Resources 290 or Computer Science 100.

434 Fruit and Vegetable Crops (3) Botanical description, geographical distribution, general cultural practices of warm and cool season vegetables, small fruits, and deciduous tree fruits. A Saturday field trip is required.

Contact Hour Distribution: 2 hours lecture and one 2-hour lab.

(RE) Prerequisite(s): 210 and Biology 112.

435 Field and Forage Crops (2) Agronomic principles of crop production and management. Crop improvement, cropping systems, tillage, fertilization, pest management, harvest and utilization of major field and forage crops.

Contact Hour Distribution: 2 hours and 1 lab.

436 Plant and Garden Photography (2) Principles and techniques of photography as they relate to plants and gardens. Study of equipment options and field shooting under various weather conditions and in different seasons.

Registration Restriction(s): Minimum student level – senior.

437 Public Garden Operations and Management (2) An analysis of year-round operations and management of public gardens. Case studies involving time and labor management, budget development and management, implementation of volunteer programs, information dissemination methods for public outreach, management of grounds and facilities using the University of Tennessee Institute of Agriculture Gardens as a model.

(RE) Prerequisite(s): 226 and 210.

441 Advanced Turfgrass Management (2) Principles and scientific basis of turfgrass culture; adaptation, ecology, physiology, climatic influences on grass culture; clipping and water management; design.

Contact Hour Distribution: 1-hour lecture and one 1-hour lab.

(RE) Prerequisite(s): 240 and Biology 112.

442 Turf Root-zone Construction (2) Construction and management of root-zones for home lawns, golf courses and athletic fields.

(RE) Prerequisite(s): 240 and Biology 112.

445 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, genetic techniques.

Contact Hour Distribution: 1 hour and one 3-hour lab.

(RE) Prerequisite(s): 353 or Biology 240.

457 Weed Management (2) Principles of weed interference, integrated weed management, herbicide selectivity and behavior, specific recommendations for various crop and non-crop situations.

(RE) Prerequisite(s): Environmental and Soil Sciences 210.

458 Turf Weed Management Lab (1) Laboratory addressing practices and principles presented in 457, from the standpoint of turf.

(RE) Prerequisite(s): Environmental and Soil Sciences 210.

459 Agromony Weed Management Lab (1) Laboratory addressing practices and principles presented in 457, from the standpoint of agronomy.

(RE) Prerequisite(s): Environmental and Soil Sciences 210.


(RE) Prerequisite(s): 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.

Credit Restriction: Students may not receive credit for both 461 and 561.

(RE) Prerequisite(s): Mathematics 125 or Mathematics 152.


(RE) Prerequisite(s): 210.

(DE) Prerequisite(s): 226 or 230 or 240.

Registration Restriction(s): Minimum student level – senior.

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.

Contact Hour Distribution: Two 3-hour labs.

(RE) Prerequisite(s): 280 and 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.

(RE) Prerequisite(s): 380 and Computer Science 100.

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.

Grading Restriction: Satisfactory/No Credit grading only.

Repeatability: May be repeated. Maximum 6 hours.

Registration Restriction(s): 2.25 GPA.

Registration Permission: Consent of instructor.

493 Problems in Horticultural and Plant Sciences (1-3) Supervised individual problems relating to the plant sciences or landscape design.

Repeatability: May be repeated. Maximum 6 hours.

Registration Permission: Consent of instructor.

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.

Registration Restriction(s): Minimum student level – senior.

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.

Repeatability: May be repeated. Maximum 6 hours.

(RE) Restriction(s): Restriction(s): 3.00 GPA.

Registration Permission: Consent of instructor.
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. Comment(s): 3.25 GPA required for current students; 29 ACT composite or 1250 SAT composite required for incoming students.

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 Tennessee Government and Politics (3) Major elements in Tennessee government and politics.

320 State Government and Politics (3) Setting, institutions, and processes of government in the fifty states; generalizations and comparisons, with emphasis on federalism and intergovernmental relations.


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 Junior Honors Seminar (3) Required of students in honors concentration. Registration Permission: Consent of department.

388 Junior Honors Seminar (3) Required of students in honors concentration. Registration Permission: 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.)

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 Marsilio of Padua. (Same as Medieval Studies 475.)

476 Modern Political Thought (3) Major western political thinkers from Machiavelli to Marx.

487 Senior Honors: Thesis and Seminar (3) Required of students in honors concentration.
   Registration Permission: Consent of department.

488 Senior Honors: Thesis and Seminar (3) Required of students in honors concentration.
   Registration Permission: Consent of department.

491 Foreign Study (1-15)
   Repeatability: May be repeated. Maximum 15 hours.

492 Off-Campus Study (1-15)
   Repeatability: May be repeated. Maximum 15 hours.

493 Independent Study (1-15)
   Repeatability: May be repeated. Maximum 15 hours.

494 Internship (1-6)
   Grading Restriction: Satisfactory/No Credit grading only.
   Repeatability: May be repeated. Maximum 6 hours.
   Credit Restriction: May not be applied toward the political science major.

Portuguese (811)

111 Elementary Portuguese (3) Introduction to Portuguese. Language laboratory required.

112 Elementary Portuguese (3) Introduction to Portuguese. Language laboratory required.
   (RE) Prerequisite(s): 111.

211 Intermediate Portuguese (3) Stresses reading, writing, listening, and speaking of Portuguese to prepare for upper-division courses in the language. Language laboratory required. (CC)
   (RE) Prerequisite(s): 112.

212 Intermediate Portuguese (3) Stresses reading, writing, listening, and speaking of Portuguese to prepare for upper-division courses in the language. Language laboratory required. (CC)
   (RE) Prerequisite(s): 211.

301 Literature, Culture, and Civilization of the Portuguese-Speaking World (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.
   (RE) Prerequisite(s): 212 or 400.

302 Literature, Culture, and Civilization of the Portuguese-Speaking World (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.
   (RE) Prerequisite(s): 212 or 400.

309 Intermediate Conversation and Composition (3) Designed to improve proficiency in oral and written communication in Portuguese.
   (RE) Prerequisite(s): 212 or 400.

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. Writing-emphasis course. (Same as Latin American Studies 315.)
   Repeatability: May be repeated if topic differs. Maximum 6 hours.
   (RE) Prerequisite(s): 212.

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. Films will be shown in Portuguese with English subtitles. Writing-emphasis course. (Same as Cinema Studies 316; Latin American Studies 316.)
   Comment(s): Open to non-majors.

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.
   Recommended Background: 3 hours at the 300 level in another Romance language.

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.
   Recommended Background: 3 hours at the 300 level in Portuguese.

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. (Same as Latin American Studies 431.)
   Repeatability: May be repeated. Maximum 12 hours.

432 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. (Same as Latin American Studies 432.)
   Repeatability: May be repeated. Maximum 12 hours.

490 Internship (1-15) Career-related experiences in the United States or abroad.
   Grading Restriction: Satisfactory/No Credit grading only.
   Repeatability: May be repeated. Maximum 15 hours.
   Registration Restriction(s): Language and world business (Portuguese) concentration.

491 Foreign Study (1-15)
   Repeatability: May be repeated. Maximum 15 hours.

493 Independent Study (1-15)
   Repeatability: May be repeated. Maximum 15 hours.

494 Internship (1-6)
   Grading Restriction: Satisfactory/No Credit grading only.
   Repeatability: May be repeated. Maximum 6 hours.
   Credit Restriction: May not be applied toward the political science major.

Psychology (830)

110 General Psychology (3) Introduction to primary approaches to the study of human behavior and experience. (SS)

117 Honors: General Psychology (3) (SS)
   Recommended Background: Chancellor’s Honors Program participant.
   Registration Permission: Consent of instructor.

210 Biological Basis of Behavior (3) Survey of theories and research concerning the role of genetic factors, nervous and endocrine systems, and other biological influences on behavior.
   (RE) Prerequisite(s): 110 or 117.

220 Behavior and Experience: Humanistic Psychology (3) Behavioral and phenomenological analysis of individuals and their development in natural environments.
   (RE) Prerequisite(s): 110 or 117.

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 a major in psychology.
   (RE) Prerequisite(s): 110 or 117.

300 Child Psychology (3) The normal child from conception through infancy, childhood, and adolescence. Physical, cognitive, social, and emotional development.
   (RE) Prerequisite(s): 110 or 117.

310 Learning and Thinking (3) Survey of theory and findings of research concerning both humans and nonhumans.
   (RE) Prerequisite(s): 110 or 117.

320 Motivation (3) Survey of theories and related research; discussion of applications.
   (RE) Prerequisite(s): 110 or 117.

   (RE) Prerequisite(s): 110 or 117.

347 Honors Seminar (1) Classic works in psychology; professional and ethical issues in psychology; presentations of faculty scholarship and honors students' projects. Meets weekly.
   Repeatability: May be repeated. Maximum 8 hours.
   (RE) Prerequisite(s): 110 or 117.

360 Social Psychology (3) Theories, methods, and findings of research concerning individual behavior in a social context.
   (RE) Prerequisite(s): 110 or 117.

367 Psychology Honors Project (3) Independent studies course which leads to the honors thesis. Student must have plan of study approved by mentor prior to enrollment.
   Grading Restriction: Satisfactory/No Credit grading only.
   Repeatability: May be repeated. Maximum 15 hours.
   (RE) Prerequisite(s): 110 or 117.

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. Registration Restriction: Minimum student level – junior. (RE) Prerequisite(s): 110 or 117.

385 Statistics in Psychology (3) Descriptive statistics; logic of hypothesis-testing and statistical inference. Basic parametric and nonparametric tests. (RE) Prerequisite(s): 110 or 117.

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. (RE) Prerequisite(s): 385 or Mathematics 115.

399 Supervised Research and Field Work (1-3) Field experience in community-based research and service settings. Registration Restriction(s): Minimum student level – junior. (RE) Prerequisite(s): 110 or 117.


409 Group Facilitation (3) Study of theory and technique through supervised experience in small groups. Registration Restriction(s): Minimum student level – junior. (RE) Prerequisite(s): 110 or 117.

410 Sensory Processes and Perception (3) Physiological and psychological theories of perception. Emphasis on audition and vision. (RE) Prerequisite(s): 110 or 117.

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. (Same as Religious Studies 415.) (RE) Prerequisite(s): 110 or 117.

420 History and Systems of Psychology (3) History of psychological thought. Classical approaches and recent developments. (RE) Prerequisite(s): 110 or 117.

424 Psychology and the Law (3) Psychological aspects of legal systems. (RE) Prerequisite(s): 110 or 117.

430 Health Psychology (3) Psychological factors related to health and illness, including stress, personality, and environment. Applications of psychological treatments to physical illness. (RE) Prerequisite(s): 110 or 117.

431 Psychology of Adjustment (3) Current psychosocial trends and their influence on personal adjustment and mental health. From scientist-practitioner perspectives of theory, research, and application. (RE) Prerequisite(s): 110 or 117.

434 Psychology of Gender (3) Biological, psychological, and social factors in gender. Importance of gender roles and stereotypes for behavior and experience. (Same as Women’s Studies 434.) (RE) Prerequisite(s): 110 or 117.

440 Organizational Psychology (3) Social-psychological analysis of organizations, emphasizing role-theory and systems theory. (Same as Management 440.) (RE) Prerequisite(s): 110 or 117.


446 Advanced Measurement and Testing (3) Emphasis on mental test theories including classical test and item response theories. (RE) Prerequisite(s): 110 or 117.

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. (RE) Prerequisite(s): 110 or 117.

467 Psychology Honors Thesis (3) Independent study for writing and oral defense of honors thesis. Grading Restriction: Satisfactory/No Credit grading only.

470 Theories of Personality (3) Major theories of human personality and their development. (RE) Prerequisite(s): 110 or 117.

475 Adolescent Development (3) Theoretical perspectives and empirical research findings pertinent to adolescent development. (RE) Prerequisite(s): 110 or 117.

480 Theories of Learning (3) Classical and current approaches to learning and cognition. (RE) Prerequisite(s): 110 or 117.

482 Topics in Psychology (3) Intensive analysis of special topics, such as African-American psychology or evaluation of programs in the community. Repeatability: May be repeated. Maximum 6 hours. Credit Restriction: No more than 6 hours of 382, 482 may be applied toward the major. An additional 6 hours of 382, 482 may count as electives. (RE) Prerequisite(s): 110 or 117.

489 Supervised Research (1-9) Repeatability: May be repeated. Maximum 12 hours. Credit Restriction: Any combination of 6 hours of 399, 489, 491, 492, or 493 may be used in major. An additional 6 hours may be used as electives. (RE) Prerequisite(s): 110 or 117.

491 Foreign Study (1-15) Repeatability: May be repeated. Maximum 15 hours. Credit Restriction: 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. (RE) Prerequisite(s): 110 or 117.

492 Off-Campus Study (1-15) Repeatability: May be repeated. Maximum 15 hours. Credit Restriction: 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. (RE) Prerequisite(s): 110 or 117.

493 Independent Study (1-15) Repeatability: May be repeated. Maximum 15 hours. Credit Restriction: 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. (RE) Prerequisite(s): 110 or 117.

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. (RE) Prerequisite(s): 110 or 117.

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. (RE) Prerequisite(s): Biochemistry and Cellular and Molecular 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.)
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.

Registration Restriction(s): Recreation and leisure studies major; 2.3 GPA; minimum student level – junior.

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.

Registration Restriction(s): 2.5 GPA.

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.

Registration Restriction(s): 2.3 GPA.

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.

Grading Restriction: Satisfactory/No Credit grading only.

(RE) Prerequisite(s): 270 and 310.

Registration Restriction(s): Public relations major.

400 Special Topics (3) Topics vary.

Repeatability: May be repeated. Maximum 6 hours.

(RE) Prerequisite(s): 320.

Registration Restriction(s): Public relations major.

410 Management Concepts of Recreation, Leisure, and Sport Programs (3) Principles for operationalization of recreation, leisure and sport related programs. Units address utilizing research as a management tool, assessing program cost, facility utilization and evaluation and contemporary management concepts.

(TE) Prerequisite(s): 310 or Sport Management 350.

Registration Restriction(s): Recreation and leisure studies major; 2.3 GPA.

415 Development of Recreation, Leisure, and Athletic Facilities (3) Principles of designing, planning, equipping, and operating various facilities. Elements of risk management and safety are incorporated into the design process.

(TE) Prerequisite(s): 310 or Sport Management 350.

Registration Restriction(s): Recreation and leisure studies major; 2.3 GPA.

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.

(TE) Prerequisite(s): 320 or 425.

Registration Restriction(s): Recreation and leisure studies major; 2.3 GPA.

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.

Contact Hour Distribution: Includes lab.

Registration Restriction(s): Recreation and leisure studies major; 2.3 GPA.

430 Organization and Administration of Leisure Services (3) Principles of administration applied to provision of leisure services offered by public, private, non-profit, and/or commercial enterprises. Organizational structures, human resource management, diversity, evaluation, legal authority, introduction to budgeting and fiscal procedures, professional responsibility and career management.

(TE) Prerequisite(s): 310 or Sport Management 280.

Registration Restriction(s): Recreation and leisure studies major; 2.3 GPA.

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.

Registration Restriction(s): Minimum student level – junior.

450 Special Topics in Recreation and Leisure Studies (1-6) Development of special topics in recreation/therapeutic recreation and leisure.

Repeatability: May be repeated.

Registration Restriction(s): 2.3 GPA.

470 Tourism and Leisure Industries (3) An examination of the symbolic 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.

Registration Restriction(s): 2.3 GPA.
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.

Grading Restriction: Satisfactory/No Credit grading only.
(REA) Prerequisite(s): 290 and 390.
Registration Restriction(s): Recreation and leisure studies major; 2.5 GPA; minimum student level—senior.

493 Directed Independent Studies in Recreation and Leisure Studies (1-3)
Repeatability: May be repeated.
Registration Restriction(s): 2.3 GPA.

Religious Studies (863)

101 World Religions in History (3) Introduction to religion in culture and society, including examination of religious traditions from India, China, 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 (cults, tribes, sects, monastic orders, denominations, familial, etc.) have sought to reject, reinforce, transform, ignore, or dominate their cultural and social contexts. (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 religion.

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. Repeatability: May be repeated. Maximum 6 hours.

309 Elementary Classical Hebrew (3) Basic elements of Hebrew phonology, script, morphology and syntax. Introduction to basic elements of text, form, and literary criticism.

310 Elementary Classical Hebrew (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, Daviddic 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 concerns to the 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 religious traditions have liberated or 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 CE to the twentieth century within the context of the cultural milieu which gave birth to each. Extensive use of slides, video material, recordings, and literature.

329 Intermediate Classical Hebrew (3) Readings in narrative material from the Hebrew Bible.

330 Intermediate Classical Hebrew (3) Readings in poetic and prophetic material from the Hebrew Bible.

(DE) Prerequisite(s): 329.

332 Classical Islam (3) Content limited to events prior to 1773 CE, focusing on the Qur’an, the Prophetic Tradition, Islamic law, Sunnism, Shi’ism, and Sufism. Writing-emphasis course. (Same as Asian Studies 332.)

333 Islam in the Modern World (3) Beginning with the Wahhabist revolution (c. 1773 CE), this course examines movements of revival and reform in modern Islam, as well as worldwide missionary activity and the growth of the Islamic community in the U.S. Writing-emphasis course. (Same as Asian Studies 333.)

(DE) Prerequisite(s): 332.

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 profile of religion in the United States, organized around selected focal themes or problems. Writing-emphasis course.

352 African-American Religion in the 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 Africana Studies 352.)

353 Topics in African-American Religion (3) Selected figures, themes, movements, or problems in the African-American religious tradition. Variable content. (Same as Africana Studies 353.) Repeatability: May be repeated. Maximum 6 hours.

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. (Same as American Studies 355.) Repeatability: May be repeated. Maximum 6 hours.

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 Africana 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 Buddhist monasteries 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 offshore traditions in North America.

381 Introduction to Judaism (3) History, traditions, philosophy and religion of the Jewish people grounded in the ancient period, but includes post-Biblical Judaism and Greco-Roman culture and philosophy on early Christianity. Variety of early Christian teachings and texts, and the formation of the New Testament. Survey of the early history of Christianity up to its adoption by the emperor Constantine. 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 contempo-
rary expressions of religion in Japan with attention to relationships of per-
sons 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: 376 or 379 or 383.

385 Contemporary Jewish Thinkers (3) Renewal trends in 19th and 20th-
century Judaism. Writing-emphasis course. (Same as Judaic Studies 385.)
Repeatability: May be repeated. Maximum 6 hours.

386 Voices of the Holocaust (3) Historical underpinnings of Nazi geno-
cides 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 19th-cen-
tury German idealists. (Same as Philosophy 411.)

415 Psychology of Religion (3) (See Psychology 415.)

425 Seminar in Western Religions (3) Selected figures, themes, move-
ments, and problems.
Repeatability: May be repeated. Maximum 6 hours.
Registration Permission: Consent of instructor.

430 Seminar in American Religion (3) Selected figures, themes, move-
ments, and problems.
Repeatability: May be repeated. Maximum 6 hours.
Registration Permission: Consent of instructor.

440 Seminar in Comparative Religion (3) Selected figures, themes,
movements, and problems.
Repeatability: May be repeated. Maximum 6 hours.
Repeatability: May be repeated. Maximum 6 hours.
Repeatability: 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 independ-
ent 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, secular-
ism, and politics in independent India; and religion and caste in the new
India. Writing-emphasis course.
(Re) Corequisite(s): 374.

490 Readings and Research in Religious Studies (3)
Repeatability: May be repeated. Maximum 6 hours.
Registration Permission: Consent of instructor.

491 Foreign Study (1-15)
Repeatability: May be repeated. Maximum 15 hours.

492 Off-Campus Study (1-15)
Repeatability: May be repeated. Maximum 15 hours.

493 Independent Study (1-15)
Repeatability: May be repeated. Maximum 15 hours.

499 Proseminar in Religious Studies (3) For advanced students in reli-
gious 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.
Repeatability: May be repeated. Maximum 6 hours.
Registration Permission: Consent of instructor or 376 or 379 or 383.

Retail and Consumer Sciences (865)

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.
482 Professional Experience in Retailing II (6) Supervised professional experience in selected retail operations that build upon first professional experience.
(RE) Prerequisite(s): 410 and 422.

484 International Retail Industry Study Tour (3) Group study abroad involving academic research and field investigation. Repeatability: May be repeated. Maximum 6 hours.
Recommended Background: 210.
Registration Permission: Consent of instructor.

493 Directed Study (1-3) Individual problems for junior and senior students with special interests in retail and consumer sciences.
Recommended Background: Minimum student level – junior.
Registration Permission: Consent of instructor.

495 Special Topics (3) Topics in retail and consumer sciences.
Repeatability: May be repeated. Maximum 9 hours
Recommended Background: Minimum student level – junior.
Registration Permission: Consent of instructor.

497 Honors: Retail and Consumer Sciences (1-3) Individual problems for junior and senior students showing special ability and interest in retail and consumer sciences.
Recommended Background: Minimum student level – junior.
Registration Permission: Consent of instructor.

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.
Recommended Background: Minimum student level – junior.
Registration Permission: Consent of instructor.

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.

Russian (886)
101 Elementary Russian (4)
102 Elementary Russian (4)
(RE) Prerequisite(s): 101.

201 Intermediate Russian (4) (CC)
(RE) Prerequisite(s): 102.

202 Intermediate Russian (4) (CC)
(RE) Prerequisite(s): 201.

221 Rebels, Dreamers, and Fools: The Outcast in 19th Century Russian Literature (3) Texts in English translation. Writing-emphasis course.
(AH) (WC)
Credit Restriction: No foreign language credit.

271 Heaven or Hell: Utopias and Dystopias in 20th Century Russian Literature (3) Texts in English translation. Writing-emphasis course.
(AH)
Credit Restriction: No foreign language credit.

311 Russian Composition and Conversation (3) Practice in writing and speaking; grammar review and vocabulary building.
(RE) Prerequisite(s): 202.

312 Russian Composition and Conversation (3) Practice in writing and speaking; grammar review and vocabulary building.
(RE) Prerequisite(s): 311.

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 Literature: 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.

372 Modern Russian Culture through Readings and Dramatic Production (3) A survey of Russian culture from the era of great reforms of the 1860s through modern times, supplemented by participation in a dramatic production. Texts in English translation; some texts in Russian for Russian majors. Writing-emphasis course.

401 Advanced Grammar, Conversation, and Composition (3)
(RE) Prerequisite(s): 312.

402 Advanced Grammar, Conversation, and Composition (3)
(RE) Prerequisite(s): 401.

424 Nabokov’s Novels and Stories (3) An intensive course covering several novels and stories, the memoir, and some scientific writings of the prolific Russian-American author. Particular attention given to the author’s philosophical views and the contact between his science and his art. In English; readings in Russian for majors. Writing-emphasis course.

425 Introduction to Descriptive Linguistics (3) (See French 425.)

426 Methods of Historical Linguistics (3) (See German 426.)

430 Selected Topics in Russian Literature (3) Writing-emphasis course.
Repeatability: May be repeated if topic differs. Maximum 9 hours.

451 Senior Seminar (3) Intensive study of language, literary style, and literary criticism based on selected major novels.
(RE) Prerequisite(s): 312.
Comment(s): For students majoring in Russian; minors admitted at the discretion of the instructor.

452 Senior Seminar (3) Intensive study of language, literary style, and literary criticism based on selected major novels.
(RE) Prerequisite(s): 312.
Comment(s): For students majoring in Russian; minors admitted at the discretion of the instructor.

490 Internship (1-15) Career-related experiences in the United States or abroad.
Grading Restriction: Satisfactory/No Credit grading only.
Repeatability: May be repeated. Maximum 15 hours.
Registration Restriction(s): Russian major/language and world business concentration.

491 Foreign Study (1-15)
Repeatability: May be repeated. Maximum 15 hours.

493 Independent Study (1-15)
Repeatability: May be repeated. Maximum 15 hours.

Safety (890)
400 Directed Independent Study (1-3) Individual identification and study of safety or safety education problem/issue. Specific proposal must be made to instructor before registration.
Repeatability: May be repeated. Maximum 12 hours.

406 Death, Dying and Bereavement (3) (See Health 406.)

443 Sports and Recreational Safety (3) Accident prevention and injury control in sports activities; philosophy of sports safety; human environmental factors and interrelationship in sports injury and control; risk-taking and decision solution strategies; and contributions of sports medicine to safety.
Contact Hour Distribution: 3 hours and 2 labs.

452 Safety Principles and Practices (3) An introduction to the general principles, practices, and procedures in occupational and community safety. Provides the knowledge and skills necessary to develop, implement, and manage a comprehensive fire safety program. Incorporates basic fire risk management concepts, interpretation of codes, and an exposure to basic fire analysis techniques.
Registration Restriction(s): Minimum student level – senior.

Science Education (899)
496 Teaching Science Grades 7-12 (3) Methods, materials, recent trends in science and environmental education programs for secondary schools.
Registration Restriction(s): Qualification – admission to teacher education.

Social Science Education (900)
454 Teaching Strategies and Issues in Social Studies Education (3) Goals, objectives, techniques, materials, and evaluation; directed observation in public schools; preparation of teaching plans and materials; simulated teaching experiences.
Registration Restriction(s): Qualification – admission to teacher education.

Social Work (905)
200 Introduction to Social Work (3) Emergence of the social work profession; professional mission; knowledge, skills, and values; practice settings; client groups; helping services; career patterns; practice methods. Designed to assist students to consider their ability for careers in social work.
250 Social Welfare (3) Development, structure and function of the social welfare institution. Analysis of social welfare programs and impact of the institution on society.

310 Social Work Research (3) Scientific method and research strategies to evaluate one’s practice and/or social service delivery. Knowledge of statistical techniques required.

312 Social Work Practice I (3) Knowledge, values, and skills for entry level generalist practice in a variety of settings. The social work problem solving process, different size client systems, ethic-sensitive assumptions, and the worker's regard for person-environment configuration. Concurrent skills laboratory.

313 Social Work Practice II (3) In-depth study of generalist practice with individuals and families. Practice roles, value dilemmas, and working with people of diverse backgrounds. Concurrent skills laboratory.

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.

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.

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.

412 Social Work Practice III (3) Generalist practice with emphasis on groups and communities, including treatment theories, techniques, and issues.


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.

461 Child Welfare 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.

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.

480 Field Practice in Social Work II (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.

481 Field Practice in Social Work III (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.

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

492 Off-Campus Study (1-15) Repeatability: May be repeated. Maximum 15 hours. Registration Permission: Consent of instructor.

493 Independent Study (1-15) Repeatability: May be repeated. Maximum 15 hours. Registration Permission: Consent of instructor.

Sociology (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) (SS) Comment(s): 3.0 GPA required for first-year students; 28 ACT composite or 1200 SAT required for incoming students.

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) (SS) Comment(s): 3.0 GPA required for first-year students; 28 ACT composite or 1200 SAT required for incoming students.

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)

260 Introduction to the Study of Environmental Issues (2) Examination of selected environmental issues and their significance in contemporary societies. Demonstrates the utility of combining sociological and humanistic perspectives of the environment with the more traditional biophysical perspectives. Writing-emphasis course.

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. (RE) Prerequisite(s): 110 or 120. Comment(s): C or higher in 110 or 120 required.

331 Sociological Research (3) Selected issues in philosophy of social science, research design, sampling, methods of data collection, and interpretation. Requires written research report. (Same as Legal Studies 331.) (RE) Prerequisite(s): Statistics 201. Comment(s): C or higher in 110 or 120 required.


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 Africana 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.

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 Africana Studies 442.)

446 The Modern World System (3) Critical examination of the capitalist world-system as a social system, its coherence, boundaries, regions, member group, 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 impacts. (Same as Legal Studies 451.) Recommended Background: Completion of 350.

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.

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. Writing-emphasis course. (RE) Prerequisite(s): 110 or 120.

491 Foreign Study (1-15) Repeatability: May be repeated. Maximum 15 hours.

492 Off-Campus Study (1-15) Repeatability: May be repeated. Maximum 15 hours.

493 Independent Study (1-15) Repeatability: 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.

Comment(s): For sociology majors with senior standing.

Spanish (924)

111 Elementary Spanish (3) Language laboratory required. Credit Restriction: Not available to students eligible for 150.

112 Elementary Spanish (3) Language laboratory required. Credit Restriction: Not available to students eligible for 150. (RE) Prerequisite(s): 111.

150 Intermediate Spanish Transition (3) This course is designed to prepare students for enrollment in 211. Credit Restriction: 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 6 hours of elementary language credit awarded through placement examination. Recommended Background: Two years of high school Spanish or placement score below level required for 211.

211 Intermediate Spanish (3) (CC) (DE) Prerequisite(s): 112 or 150 or departmental placement exam.

Comment(s): Students who place in 200-level courses from high school will receive 6 hours of elementary Spanish credit.

212 Intermediate Spanish (3) (CC) (RE) Prerequisite(s): 211 or 217.

Comment(s): Students who place in 200-level courses from high school will receive 6 hours of elementary Spanish credit.

217 Honors: Intermediate Spanish (3) Honors course for students of superior ability in Spanish. Students follow enriched program with continuing emphasis upon speaking ability and with an introduction to reading literary selections. (CC) (DE) Prerequisite(s): 112 or 150 or departmental placement exam.

Comment(s): Incoming freshmen are admitted on the basis of a diagnostic test, high school average and performance on the ACT.

218 Honors: Intermediate Spanish (3) Honors course for students of superior ability in Spanish. Students follow enriched program with continuing emphasis upon speaking ability and with an introduction to reading literary selections. (CC) (RE) Prerequisite(s): 217.

Comment(s): Incoming freshmen are admitted on the basis of a diagnostic test, high school average and performance on the ACT. Students who earn an A or B in 218 receive credit for 300.

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. (DE) Prerequisite(s): 212 or 218 or departmental placement exam.

Comment(s): 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.

Credit Restriction: Not available for credit for students whose level of proficiency in Spanish is superior as defined by the ACTFL Proficiency Guidelines. (RE) Prerequisite(s): 300 or 218.

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.

Credit Restriction: Not available for credit for students whose level of proficiency in Spanish is superior as defined by the ACTFL Proficiency Guidelines. (RE) Prerequisite(s): 218 or 300.

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. (RE) Prerequisite(s): 323.

331 Introduction to Hispanic Culture (3) Introduction to the fundamental historical, political and demographic developments that led to the creation of the geographic 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. (Same as Latin American Studies 331.) (RE) Prerequisite(s): 323.
332 Survey of Spanish Literature: 1700-Present (3) Main writers, trends, stylistic periods and artistic movements in Spain since 1700 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 1920s and 1930s, social realism, women writers, and contemporary developments. Writing-emphasis course.

(RE) Prerequisite(s): 323.
(RE) Corequisite(s): 330.

333 Survey of Spanish-American Literature: 1700-Present (3) Main writers, trends, stylistic periods and artistic movements in Spanish America since 1700 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. (Same as Latin American Studies 333.)

(RE) Prerequisite(s): 323.
(RE) Corequisite(s): 330.

334 Survey of Hispanic Literatures: Beginnings-1700 (3) Main writers, trends, stylistic periods and artistic movements in Spain and Spanish America up to 1700 against a broad background of cultural, socio-political and historical developments. Writing-emphasis course. (Same as Latin American Studies 334.)

(RE) Prerequisite(s): 323.
(RE) Corequisite(s): 330.


(RE) Prerequisite(s): 323.


(RE) Prerequisite(s): 323.

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. (Same as Latin American Studies 401.)

Credit Restriction: May not be applied toward the Spanish major.
Recommended Background: 6 hours of coursework in Latin American studies.

402 Latin American Studies Seminar (3) Selected topics in Latin American studies. Writing-emphasis course. (Same as Latin American Studies 402.)

Repeatability: May be repeated. Maximum 6 hours.
Credit Restriction: May not be applied toward the Spanish major.
Recommended Background: 6 hours of 300- or 400-level coursework in Latin American studies.

421 Phonetics (3)

(RE) Prerequisite(s): 323.

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 translation. Emphasis on finer points of grammatical structures. Writing-emphasis course.

(RE) Prerequisite(s): 323.
Comment(s): 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.

(RE) Prerequisite(s): 323.

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 Historical Linguistics (3) Introduction to the study of the Spanish language. Different areas of linguistic analysis: etymology, morphology, syntax, semantics, sociolinguistics, dialectology, and second language acquisition. Writing-emphasis course. (Same as Linguistics 431.)

Repeatability: May be repeated with permission of department. Maximum 6 hours.
(RE) Prerequisite(s): 323.
(RE) Corequisite(s): 330.

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.

(RE) Prerequisite(s): 323.
(RE) Corequisite(s): 330.
Comment(s): Requires 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. Taught in Spanish. Writing-emphasis course. (Same as Cinema Studies 434.)
Repeatability: May be repeated with consent of department. Maximum 6 hours.
(RE) Prerequisite(s): 323.
(RE) Corequisite(s): 330.
Comment(s): Requires completion of major or minor requirements in 332, 333, 334.

461 Special Topics (3) Focus on some aspect of Hispanic literature, culture, linguistics, or foreign language pedagogy. Topics vary.
Repeatability: 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. Writing-emphasis course. (Same as Cinema Studies 465; Latin American Studies 465.)

Contact Hour Distribution: 1 hour lecture, 2 hours screening, and 1 hour discussion.
Credit Restriction: May not be applied toward Spanish major.

479 Disenchanted Texts in Hispanic Literature (3) Texts representing periods of renewal in Spain and Latin American countries. Selected topics on traditions in crisis. Content will vary. Writing-emphasis course. (Same as Latin American Studies 479.)
Repeatability: May be repeated with consent of department. Maximum 6 hours.
(RE) Prerequisite(s): 323.
(RE) Corequisite(s): 330.
Comment(s): Requires completion of major or minor requirements in 332, 333, 334.

480 Social Forces in Hispanic Literary Expression (3) Analysis of major Hispanic texts that address factors and events that influenced and/or continue to influence the social and cultural evolution of the Hispanic world, including literature itself. Writing-emphasis course.
Repeatability: May be repeated with consent of department. Maximum 6 hours.
(RE) Prerequisite(s): 323.
(RE) Corequisite(s): 330.
Comment(s): Requires completion of major or minor requirements in 332, 333, 334.

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.
Repeatability: May be repeated with consent of department. Maximum 6 hours.
(RE) Prerequisite(s): 323.
(RE) Corequisite(s): 330.
Comment(s): Requires completion of major or minor requirements in 332, 333, 334.

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.
Repeatability: May be repeated with consent of department. Maximum 6 hours.
(RE) Prerequisite(s): 323.
(RE) Corequisite(s): 330.
Comment(s): Requires completion of major or minor requirements in 332, 333, 334.

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 movements in light of historical contexts in which those relationships emerged. Writing-emphasis course.
Repeatability: May be repeated with consent of department. Maximum 6 hours.
(RE) Prerequisite(s): 323.
(RE) Corequisite(s): 330.
Comment(s): Requires completion of major or minor requirements in 332, 333, 334.
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.
Repeatability: May be repeated with consent of department. Maximum 6 hours.
(RE) Prerequisite(s): 323.
(RE) Corequisite(s): 330.
Comment(s): Requires completion of major or minor requirements in 332, 333, 334.

490 Internship (1-15) Career-related experiences in the United States or abroad.
Grading Restriction: Satisfactory/No Credit grading only.
Repeatability: May be repeated. Maximum 15 hours.
Registration Restriction(s): Spanish major/language and world business concentration.

491 Foreign Study (1-15)
Repeatability: May be repeated. Maximum 15 hours.

493 Independent Study (1-15)
Repeatability: May be repeated. Maximum 15 hours.

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 off-campus supervised work and a weekly one-hour tutorial with a faculty member.
Grading Restriction: Satisfactory/No Credit grading only.
Repeatability: May be repeated. Maximum 3 hours. Maximum 1 hour credit per semester.
Credit Restriction: May not be applied toward the Spanish major.
(RE) Prerequisite(s): 323.
(RE) Corequisite(s): 330.
Comment(s): Requires completion of 18 hours of upper-division Spanish.
Registration Permission: Consent of instructor.

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.

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.
(RE) Prerequisite(s): 310.

402 Professional Studies: Special Education and Diverse Learners (2) Characteristics and needs of students with disabilities and diverse learners with emphasis on educational implications. Techniques, strategies and resources for teaching students with special learning, behavioral or medical needs, and the requirements of special education laws.
(RE) Prerequisite(s): Educational Psychology 210.
Registration Restriction(s): Qualification – 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.
Registration Restriction(s): Qualification – admission to teacher education.

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.
(RE) Prerequisite(s): 402.
(RE) Corequisite(s): 420.

420 Field Experience in Special Education Programs (3) Practicum in teaching special education programs: planning, developing, implementing and evaluating instruction.
Grading Restriction: Satisfactory/No Credit grading only.
(RE) Prerequisite(s): 402.
(RE) Corequisite(s): 419.
Registration Restriction(s): Qualification – admission to teacher education.

431 Field Experience in Comprehensive Programs (3) On-site teaching experience with moderately and severely handicapped children and youth.
Grading Restriction: Satisfactory/No Credit grading only.
(RE) Prerequisite(s): 402.
(RE) Corequisite(s): 432.
Registration Restriction(s): Qualification – admission to teacher education.

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 those persons.
(RE) Prerequisite(s): 402.
(RE) Corequisite(s): 431.
Registration Restriction(s): Qualification – admission to teacher education.

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.
Registration Restriction(s): Qualification – admission to teacher education.

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.

471 Early Childhood Special Education (6) Assessment, curriculum planning and development and teaching approaches used in early childhood special education.
Registration Restriction(s): Qualification – admission to teacher education.

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.
Grading Restriction: Satisfactory/No Credit grading only.
Repeatability: May be repeated. Maximum 5 hours.
Registration Restriction(s): Qualification – admission to teacher education.

Sport Management (957)

100 Orientation to Sport Management (1) Overview of the sports industry and sport management major. To be taken the first semester as a pre-major.

250 Foundations of Sport Management (3) An introduction to the scope of the sport enterprise including why business is involved in sport and an overall evaluation of sport management as a profession.
(RE) Prerequisite(s): 100.

290 Practicum 1 (3) Supervised part-time field experience (minimum of 120 clock hours) at an approved site for the purpose of clarifying career goals.
Grading Restriction: Satisfactory/No Credit grading only.
Registration Restriction(s): Sport management major.

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 strategies.

312 Coaching Basketball (1) Individual and team fundamentals for the high school coach; conditioning, schedule making, and other business arrangements.

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.

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.

330 Sport Communication (3) An introduction to the communications industry and its relationship with sport. Students will explore cultural issues, such as gender and ethnicity, and their relationship to sport and media. The course will also provide students opportunities to develop practical communication skills and learn how media and sport interact.
Registration Restriction(s): Sport management major.

340 Sport Finance (3) This course enables students to understand the importance of budgeting and finance in the sports industry. Students will understand how financing works in the sports industry and how corporatives are valued. Students will also be introduced to the basic fundamentals of investing and accounting, and how they relate to the sport industry.
Registration Restriction: Sport management major.

350 Sport Management: Theory to Practice (3) Overview of managerial theories and applications including responsibilities and practices associated with broad perspectives of sport enterprise.
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.

380 Special Topics (1-3) Study in selected disciplinary or professional areas of sport management.

390 Practicum II (3) Supervised part-time experience (minimum of 120 clock hours) at an approved site offering sport management opportunities. Grading Restriction: Satisfactory/No Credit grading only. (RE) Prerequisite(s): 390. Registration Restriction(s): Sport management major.

440 Sport Marketing (3) Application of fundamental marketing concepts to the sport industry. Including 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.

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).

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 (minimum of 480 clock hours) at an approved site offering sport management opportunities. Emphasis on managerial tasks and administrative procedures. Grading Restriction: Satisfactory/No Credit grading only. Repeatability: May be repeated. Maximum 12 hours. (RE) Prerequisite(s): 390. Comment(s): Enrollment for 2 semesters (6 hours each) or 1 semester (12 hours). Total of 12 hours required. Registration Restriction(s): Sport management major; 2.5 GPA; minimum student level — senior.

493 Directed Independent Studies (1-3) Independent study in a specialized area of sport management. Repeatability: May be repeated. Maximum 9 hours. Registration Restriction(s): Sport management major.

Sport Studies (959)

231 Introduction to Sport Psychology An 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.

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

335 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.

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.

493 Directed Independent Studies (1-3) Independent study in a specialized area within physical education.

Statistics (962)


207 Honors: Introduction to Statistics (3) Intended as an alternative to 201 for higher GPA students. (QR) Contact Hour Distribution: Two 50-minute lectures and one 110-minute lab per week. (RE) Prerequisite(s): Mathematics 125 or Mathematics 141. Recommended Background: 28 composite ACT or 1250 composite SAT.

251 Probability and Statistics for Scientists and Engineers (3) Data collection; descriptive statistics. Concepts of probability and probability distributions. Estimation of means, confidence intervals, hypothesis tests for single mean and proportion. Simple regression and correlation. Process improvement and statistical process control. 2-level experiments. Use of statistical computing software. Applied course appropriate for a general audience. (RE) Prerequisite(s): 201 or 251.

300 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 appropriate for a general audience. (RE) Prerequisite(s): 201 or 251.

305 Statistical Process Control (3) Concept of special versus common causes of variation. Construction and interpretation of control charts for attributes and variables data; Pareto charts, cause/effect diagrams and process flow diagrams; Rational subgrouping issues. Process capability analysis and capability indices. Statistical tolerancing. Accuracy, precision and resolution of measurement processes. Quantifying components of variation. Introduction to design of experiments. Discussion of enumerative versus analytical statistical techniques. (RE) Prerequisite(s): 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. (RE) Prerequisite(s): 320.


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. (RE) Prerequisite(s): 471.

(Prerequisite(s): 320.)

483 Special Topics in Statistics (1-3) Topics vary. Repeatability: May be repeated. Maximum 6 hours. Registration Permission: Consent of instructor.

485 Principles of Statistical Process Management (3) Control charts and other statistical techniques applied to management of business processes. Registration Permission: Consent of department head.

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. Grading Restriction: Satisfactory/No Credit grading only. Repeatability: May be repeated. Maximum 6 hours. Registration Permission: Consent of department head.

493 Independent Study (2-6) Faculty directed reading and investigation of specified topic in probability or statistics culminating in a written report. Repeatability: May be repeated. Maximum 6 hours. Registration Permission: Consent of department head.

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.

242 Fundamentals of Costume Design and Technology (2) Introduction to the elements of costume design, technology and the design process. Hands on and lab intensive.

252 Fundamentals of Scene Design and Technology (2) Introduction to 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) Introduction to the elements of theater lighting design, basic technology and the design process. Hands on and lab intensive.

300 Play Analysis (3) Study of methods and tools used in script analysis for the purpose of play production. (WC)

(Prerequisite(s): 100.)

320 Advanced Acting I (3) Character study and scene study in 20th century American plays.

(Prerequisite(s): 221.)


(Prerequisite(s): 320.)

323 Stage Movement (3) Introduction to movement/kinesthetic awareness techniques and their application to performance.

(Prerequisite(s): 221.)

325 Fundamentals of Musical Theatre (3) Introduction to musical theatre, including: reading music, singing techniques, basic dance, and an overview of musical theatre styles.

(Prerequisite(s): 220.)

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.

(Prerequisite(s): 221.)

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.

(Prerequisite(s): 242.)

352 Entertainment Technology I (3) Techniques in live entertainment production, including scenery techniques, structures, special effects and rigging.

(Prerequisite(s): 252.)

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 principles. Project and lab intensive.

(Prerequisite(s): 262.)

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.

Repeatability: May be repeated. Maximum 6 hours.

411 Theatre History I (3) Antiquity to 1700. Major historical periods and diverse cultural traditions in world theatre history.

(Prerequisite(s): 300.)

412 Theatre History II (3) 1700 to contemporary theatre. Major historical periods and diverse cultural traditions in world theatre history.

(Prerequisite(s): 300.)

420 Special Studies in Acting (3) Content varies. Exercises in selected advanced rigging and flying for stage and film.

(Prerequisite(s): 320.)

421 Theatre Projects in International Theatre (3-5) Study and performance of foreign works. Content varies. Language skills required.

(Prerequisite(s): 320.)

425 Advanced Musical Theatre (3) Study and practice of musical theatre material including both dance and vocal work.

(Prerequisite(s): 325.)

430 Principles of Play Directing (3) Problems in composition, picturization, rhythm, movement.

(Prerequisite(s): 220.)

431 Principles of Play Directing (3) Problems in composition, picturization, rhythm, movement.

(Prerequisite(s): 430.)

446 Costume Patterning (3) Draping patterns for period costumes. Includes corsery and the study of historic patterns 1500-1900.

450 Special Studies in Entertainment Technology (1-3) Content varies.

Repeatability: May be repeated. Maximum 9 hours.

452 Entertainment Technology II (3) Automation systems in live entertainment, including advanced rigging and flying for stage and film.

454 Scenery Painting (2) Introduction to materials, techniques, and principles of the craft. Emphasis on gaining skill and understanding through studio experience.

456 Scenic Design II (3) Advanced studies in set design.

(Prerequisite(s): 362.)

462 Lighting Design II (3) Advanced lighting design theory and practice. Lab and project intensive.

(Prerequisite(s): 362.)

464 Computer Aided Drafting for the Theatre (3) Introduction to entertainment drafting. Emphasis on 2-D graphical standards, drafting techniques, drawing layout and presentation.

470 Playwriting (3) Advanced instruction in the writing of plays.

Registration Permission: Consent of instructor.

481 Applied Theatre (1-2) Laboratory in applied theatre techniques for departmental productions.

Repeatability: May be repeated. Maximum 6 hours.

Registration Permission: Consent of instructor.

491 Foreign Study (1-15)

Repeatability: May be repeated. Maximum 15 hours.

492 Off-Campus Study (1-15)

Repeatability: May be repeated. Maximum 15 hours.

493 Independent Study (1-15)

Repeatability: May be repeated. Maximum 15 hours.

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.

Repeatability: May be repeated. Maximum 6 hours.

352 Field Experiences in Teaching: Secondary I (1) Field experiences in tasks related to teaching and teacher roles.

Grading Restriction: Satisfactory/No Credit grading only.

Registration Restriction(s): Qualification – admission to teacher education.
353 Field Experience in Teaching: Secondary II (1) Field experiences in tasks related to teaching and to teacher roles.
Grading Restriction: Satisfactory/No Credit grading only.
(RE) Prerequisite(s): 352.
Registration Restriction(s): Qualification – admission to teacher education.

355 Introduction to Secondary Schools (3) Aspects of teaching in grades 7-12, including curriculum planning and roles and responsibilities of secondary school teachers and administrators.
Registration Restriction(s): Qualification – admission to teacher education.

492 Directed Independent Study (1-3) Tutorial and specialized area.
Repeatability: May be repeated. Maximum 6 hours.
Registration Permission: Consent of instructor.

493 Independent Study (1-3) Topics to be assigned.
Repeatability: May be repeated. Maximum 12 hours.

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

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

University Honors (983)
See Chancellor’s Honors Program for Honors-By-Contract information.

100 Introduction to University Honors (1) Required of and limited to freshmen in the Chancellor’s Honors Program. Computer skills, service learning, study abroad options, professional development, and research skills.

157 Arts and Humanities Honors Seminar (3) Interdisciplinary examination of selected issues in the arts and/or humanities. Topics vary. (AH)
Repeatability: May be repeated if topic differs. Maximum 6 hours.

167 Social Science Honors Seminar (3) Interdisciplinary examination of selected issues in the social sciences. Topics vary. (SS)
Repeatability: May be repeated if topic differs. Maximum 6 hours.

177 Cultures and Civilizations Honors Seminar (3) Interdisciplinary examination of selected global and cultural issues. Topics vary. (CC)
Repeatability: May be repeated if topic differs. Maximum 6 hours.

187 Quantitative Reasoning Honors Seminar (3) Interdisciplinary applications of quantitative reasoning methods. Topics vary. (QR)
Repeatability: May be repeated if topic differs. Maximum 6 hours.

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. (AH) (WC)
Repeatability: May be repeated if topic differs. Maximum 6 hours.
(RE) Prerequisite(s): English 102 or English 118.

267 Special Topics in the Social Sciences (3) Examination of a selected issue in the social sciences from a multi-disciplinary perspective. Topics vary. (SS) (WC)
Repeatability: May be repeated if topic differs. Maximum 6 hours.
(RE) Prerequisite(s): English 102 or English 118.

277 Special Topics in Cultures and Civilizations (3) Examination of a selected global or cultural issue from a multi-disciplinary perspective. Topics vary. (CC) (WC)
Repeatability: May be repeated if topic differs. Maximum 6 hours.
(RE) Prerequisite(s): English 102 or English 118.

287 Special Topics in the Natural Sciences (3) Examination of a selected issue in the natural sciences from a multi-disciplinary perspective. Topics vary.
Repeatability: May be repeated if topic differs. Maximum 6 hours.
(RE) Prerequisite(s): English 102 or English 118.

337 Honors: Concentration in the Humanities (3) Small group studies of selected topics, issues or problems with a concentration in the humanistic disciplines. Topics vary.
Repeatability: May be repeated if topic differs. Maximum 6 hours.
Comment(s): Open to all students with a GPA of 3.25 or greater.

347 Honors: Concentration in the Social Sciences (3) Small group studies of selected topics, issues or problems with a concentration in the social sciences. Topics vary.
Repeatability: May be repeated if topic differs. Maximum 6 hours.
Comment(s): Open to all students with a GPA of 3.25 or greater.

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. Topics vary.
Repeatability: May be repeated if topic differs. Maximum 6 hours.
Comment(s): Open to all students with a GPA of 3.25 or greater.

491 Honors: Foreign Study (1-15) Open to any undergraduate honors student. Proposals must be approved in advance. Contact the director for information.
Repeatability: May be repeated. Maximum 15 hours.

492 Honors: Off-Campus Study (1-15) Open to any undergraduate honors student. Proposals must be approved in advance. Contact the director for information.
Repeatability: May be repeated. Maximum 15 hours.

493 Honors: Independent Study (1-9) Open to any undergraduate honors student. Proposals must be approved in advance. Contact the director for information.
Grading Restriction: Letter grade only.
Repeatability: May be repeated. Maximum 9 hours.

499 Senior Honors Project (3) Substantial scholarly, scientific, or artistic endeavor representing the capstone of a student’s undergraduate education. Required of all Chancellor’s Honors Program students not completing an equivalent senior project for an academic department or program.

University Studies (984)
101 Lives and Times (3) Intended for entering students. Study of biography, autobiography, and biographical theory including factors that shape individual lives. Writing-intensive.

210 Special Topics in University Studies (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.
Write-intensive and team-taught.
Repeatability: May be repeated. Maximum 9 hours.
Registration Permission: Consent of instructor.

220 Special Topics in University Studies (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.
Write-intensive and team-taught.
Repeatability: May be repeated. Maximum 9 hours.
Registration Permission: Consent of instructor.

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.
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.
Repeatability: May be repeated. Maximum 9 hours.

310 Special Topics in University Studies (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.
Repeatability: May be repeated. Maximum 9 hours.
Registration Permission: Consent of instructor.

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.
Repeatability: May be repeated. Maximum 9 hours.

320 Special Topics in University Studies (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.
Repeatability: 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 Advanced Topics in University Studies (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.
Repeatability: 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) 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. Writing-intensive. 

Comment(s): Enrollment is limited to honors students selected for the Normandy Scholars Program.

Registration Permission: Consent of coordinator.

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. 

Repeatability: May be repeated. Maximum 9 hours.

Registration Permission: Consent of instructor.

420 Advanced Topics in University Studies (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. 

Repeatability: May be repeated. Maximum 9 hours.

491 Foreign Study (1-15) 

Repeatability: May be repeated. Maximum 15 hours.

492 Off-Campus Study (1-15) 

Repeatability: May be repeated. Maximum 15 hours.

493 Independent Study (1-15) 

Repeatability: May be repeated. Maximum 15 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. 

(RE) Prerequisite(s): 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. 

(RE) Prerequisite(s): 201 and Microbiology 310.

305 Prescribed Fire Management (2) Prescribed fire ecology, use, and management in forest stands. 

(RE) Prerequisite(s): Forestry, Wildlife and Fisheries 212.

(RE) Corequisite(s): 323 and 341.

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. 

(RE) Corequisite(s): 305 and 341.

340 Wetlands Ecology and Management (2) Ecology, restoration, and management of wetland ecosystems including biotic and abiotic processes, functions, and wildlife considerations. 

(RE) Prerequisite(s): Forestry, Wildlife and Fisheries 317.

(RE) Corequisite(s): 305 and 323.

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. 

(RE) Prerequisite(s): English 102 and Communication Studies 210.

(RE) Corequisite(s): 305 and 323.

350 Wildlife Damage Management (2) Principles and methods for wildlife damage management including biological, regulatory, practical, and social considerations. Weekend field trips (2) required. 

Contact Hour Distribution: 2 hours lab and 1 lab or field.

(RE) Prerequisite(s): Forestry, Wildlife and Fisheries 317.

(RE) Corequisite(s): 305 and 323.

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. 

Contact Hour Distribution: 1 hour and 1 lab or field.

(RE) Prerequisite(s): Forestry, Wildlife and Fisheries 317.

(RE) Corequisite(s): 305 and 323.

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; skills in sampling field trip may be required. 

Contact Hour Distribution: 1 hour and 1 lab or field.

(RE) Prerequisite(s): Forestry, Wildlife and Fisheries 317.

(RE) Corequisite(s): 305 and 323.

443 Fisheries Science (3) Quantification and management of freshwater fisheries including population estimation, age and growth, biological assessment, and productivity. 

Contact Hour Distribution: 2 hours and 1 lab.

(RE) Prerequisite(s): Forestry, Wildlife and Fisheries 317.

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. Weekend field trip required. 

Contact Hour Distribution: 2 hours and 1 lab.

(RE) Prerequisite(s): Forestry, Wildlife and Fisheries 317.

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. Weekend field trip required.

Contact Hour Distribution: 2 hours and 1 lab.

(RE) Prerequisite(s): Forestry, Wildlife and Fisheries 317.

450 Fish Physiology (3) Mechanisms of gas transfer, circulation, excretion, osmoregulation, locomotion, and neural/hormonal control of these systems in fishes. Comparisons and contrasts with physiology of terrestrial animals. Practical applications of fish physiology to aquaculture, pollution assessment, and fisheries management.

Registration Restriction(s): Minimum student level – senior.

455 Fish Culture (3) Principles, concepts, and techniques of culturing economically important fish and shellfish species.

Contact Hour Distribution: 2 hours and 1 lab.

Credit Restriction: Students cannot receive credit for both 455 and 555.

Registration Restriction(s): Minimum student level – senior.

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.

Credit Restriction: Students cannot receive credit for both 456 and 556.

Registration Restriction(s): Minimum student level – senior.

493 Independent Study in Wildlife and Fisheries Science (1-15) Special research or individual problem in wildlife and fisheries science.

Repeatability: May be repeated. Maximum 15 hours.

Registration Permission: Consent of instructor.

496 Internship in Wildlife and Fisheries Science (1-6) Supervised experience at departmental-approved employment location arranged by the student. Internship 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.

Repeatability: May be repeated. Maximum 6 hours.

Registration Restriction(s): Minimum student level – junior.

Women’s Studies (994) 

210 Images of Women in Literature: Biography and Autobiography (3) Introduction to women’s journals, diaries, biographies and autobiographies. Writing-emphasis course.

215 Images of Women in Literature: Fiction, Poetry, Drama (3) 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.

220 Women in Society (3) Role played by women in various societies during different historical periods, factors which have limited women’s participation in society, social scientists’ assumptions about women.

230 Marriage and Family: Roles and Relationships (3) (See Child and Family Studies 220.) (SS)

310 Emergence of the Modern American Woman (3) Role of women in the development of American civilization and values. Major topics include women’s legal and political status, the emergence and development of feminism, women and the creative arts, and women’s roles in industrial and post-industrial American society. Writing-emphasis course.

320 Women and Religion (3) (See Religious Studies 320.)

330 Women in Music (3) (See Musicology 330.) (WC)
Women in American Literature (3) (See English 332.)

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.)

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.

Gender in Society (3) (See Sociology 375.)

Philosophy of Feminism (3) (See Philosophy 382.) (WC)

Women in the Greek and Roman World (3) (See Classics 383.)

Topics in Women’s Studies (3) Content varies.

Repeatability: May be repeated. Maximum 6 hours.

Sex Role Development: Implications for Education and Counseling (3) (See Counselor Education 410.)

Women Writers in Britain (3) (See English 422.)

Women’s Health (3) (See Health 425.)

Women in European History (3) (See History 432.)

French and Francophone Women Writers (3) (See French 433.)

Psychology of Gender (3) (See Psychology 434.)

Women in American History (3) (See History 453.)

Media and Diversity (3) (See Journalism and Electronic Media 465.)

Rhetoric of the Woman’s Rights Movement to 1930 (3) (See Communication Studies 466.)

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.)

Rhetoric of the Contemporary Feminist Movement (3) (See Communication Studies 476.)

African-American Women in American Society (3) (See Africana Studies 484.)

Foreign Study (1-6)

Repeatability: May be repeated. Maximum 6 hours.

Off-Campus Study (1-6)

Repeatability: May be repeated. Maximum 6 hours.

Independent Study (1-6)

Repeatability: May be repeated. Maximum 6 hours.

Registration Permission: Consent of chair of Women’s Studies.