Courses

2000 Survey of Accounting (3) Prereq.: Not for students majoring in Accounting or Finance. An introduction to the meaning of the values presented in financial statements; management accounting concepts and internal decision making. 2001 Introductory Financial Accounting (3) Prereq.: MATH 1021 or equivalent. Credit will not be given for both this course and ACCT 2000. 2002 Survey of Accounting (3) Prereq.: ACCT 2000 or permission of department. Credit will not be given for both this course and ACCT 2001. 2101 Introductory Managerial Accounting (3) Prereq.: ACCT 2000 or equivalent. Not for students majoring in Accounting or Finance. Principles and methods of accounting are examined in the context of decision making. 3101 Intermediate Accounting—Part I (3) Prereq.: grade of "C" or above in ACCT 2000 or equivalent. MATH 1431. College of Business students or permission of department may be given for both this course and ACCT 2001. 3102 Cost Analysis and Control (3) Prereq.: ACCT 3001. Nature, objectives, basic systems, and procedures of cost accounting and control for manufacturing firms; cost-volume-profit relationships; standard costs and variance analysis; direct costing; relevant costs; activity-based costing. 3121 Accounting Information Systems (3) Prereq.: ACCT 3001 and ISDS 1100. Majors only or permission of department. Analysis and design of standard accounting systems emphasizes computerized systems and internal control issues. 3201 Fundamental Tax Problems and Tax Planning for Individuals (3) Not open to accounting majors. Not intended to satisfy requirements for the CPA exam. Students in nonbusiness curricula are advised to enroll in ACCT 2000 if they intend to pursue a business degree at a subsequent date. All students in the E. J. Ourso College of Business are given the option of ACCT 2000 or ACCT 2001. 3202 Governmental and Not-for-Profit Accounting (3) Prereq.: ACCT 3001 or equivalent. Credit will not be given for both this course and ACCT 7201. 3203 Advanced Accounting (3) Prereq.: ACCT 3201; MS in accounting students or permission of department. Credit will not be given for both this course and ACCT 7203. 4221 Auditing and Forensic Accounting (3) Prereq.: ACCT 3221; MS in accounting students or permission of department. Credit will not be given for this course and ACCT 7210. 4225 Research in Federal Income Taxation (3) Prereq.: Credit or registration in ACCT 3221. MS in accounting students or permission of department. Indepedant auditor's legal and ethical obligations to society; responsibilities for the detection and reporting of fraud; statistical sampling concepts and applications; extensions of the auditor's function including operational auditing, compliance auditing, and auditing on other types of financial and nonfinancial information. 4233 Cases in Accounting (3) Prereq.: ACCT 3233. Case studies in professional, compliance, and financial audits. 4234 Advanced Auditing (3) Prereq.: grade of "C" or above in ACCT 3221. Operation, organization, and quality control in auditing. 4235 Fraud Auditing and Forensic Accounting (3) Prereq.: ACCT 3001; MS in accounting students or permission of department. Credit will not be given for this course and ACCT 4221 or 4333 or 7333. 4262 Environmental and Safety Auditing (3) Prereq.: ACCT 3233. Compliance and legal issues relative to economic and environmental laws and safety regulations; emphasis on current laws and compliance auditing methodology. 4244 EDP Auditing (3) Prereq.: ACCT 3222 or 3233; MS in accounting students or permission of department. Credit will not be given for this course and ACCT 7244. Electronic data processing (EDP) control, audit applications, and generalized audit software systems. 4533 Internship in Internal Auditing (3) Prereq.: Permission of department chair required. Credit will not be given for this course and ACCT 4233 or 7233. 4201 Tax Aspects of Personal Financial Planning (3) Prereq.: ACCT 3201 or equivalent. Basic concepts of estate and gift taxation and income taxes as they affect personal tax planning; emphasis on wealth management. 4333 Internship in External Auditing (3) Prereq.: Permission of instructor and department chair required. Credit will not be given for both this course and ACCT 4225. 4720 Auditing Theory and Standards (3) Prereq.: ACCT 3222; MS in accounting students or permission of instructor. A comprehensive analysis of the theory and practice of external auditing. 4721 Tax Aspects of Business Enterprises (3) Prereq.: ACCT 3201 or equivalent. Basic concepts of business enterprises, including corporations, partnerships, and S corporations; tax consequences of the formation and operation of a business entity, and its dissolution. 4722 Income Taxation of Entities and Redemptions (3) Prereq.: ACCT 7201. Income tax consequences of the sale, distribution, liquidation, or other disposition of business interests, the redemptions of equity interests, and business divisions and liquidations. 4723 Taxation of Corporations and Shareholders (3) Prereq.: ACCT 3221 or equivalent. Credit will not be given for both this course and ACCT 4222. 4724 Auditing Principles and Techniques (3) Prereq.: ACCT 3222 or equivalent. Credit will not be given for both this course and ACCT 4225. 4725 Tax Research, Planning and Business Decision Making (3) Prereq.: ACCT 3221 or equivalent. Credit will not be given for both this course and ACCT 4225. 4726 Auditing Principles and Techniques (3) Prereq.: ACCT 3222 or equivalent. Credit will not be given for both this course and ACCT 4225. 4727 Tax Research, Planning and Business Decision Making (3) Prereq.: ACCT 3221 or equivalent. Credit will not be given for both this course and ACCT 4225.
of learning experience in internal auditing under the general supervision of an authorized officer and direct supervision of a professional in internal auditing. Grading based on the faculty member’s evaluation and a written report by the student.

7421 Public Sector Accounting and Reporting (3) Prereq.: Accounting 2003 or equivalent. General purpose of governmental and nonprofit entity financial reporting. Regulation, organizational objectives, and reporting requirements applicable to multinational corporations; causes of international accounting problems.

AEROSPACE STUDIES • ASST

1001, 1002 The Foundations of the United States Air Force (1,1) F,S. Coreq.: ASST 1011, 1012. Fundamentals of leadership, effective communication, organizational elements, and weapons systems of today’s Air Force.

1011, 1012 Leadership Laboratory I (1,1) F,S. Coreq.: ASST 1011, 1012. Practicum in leadership development in drill and ceremony, physical fitness, and military protocol.


3001, 3002 Advanced Studies (2,3) F,S. Prereq.: Permission of instructor. Skilled leadership by the successful leader; individual motivational and behavioral processes; leadership, communication, and group dynamics; use of analytical aids in planning and organizing; total quality management; ethics, management of change, organizational power, politics, and managerial strategy.

3011, 3012 Leadership Laboratory III (1,1) F,S. Coreq.: ASST 2001, 2002, 3 hrs. lab. Pass-fail grading. Experiences designed to develop leadership potential; study of Air Force customs and courtesies; drill and ceremonies; career opportunities; and the life and work of an Air Force junior officer.

4001, 4002 National Security Affairs/Preparation for Active Duty (3,3) F,S. Prereq.: Permission of instructor. Organization and implementation of national security; evolution of strategy; management of conflict; and civil-military interaction; military profession/officerhood and the military justice system.

4011, 4012 Leadership Laboratory IV (1,1) F,S. Coreq.: ASST 4001, 4002, 3 hrs. leadership lab. Pass-fail grading. Advanced development of leadership skills through planning and leading activities; study of Air Force customs and courtesies; organizational career opportunities; and the life and work of an Air Force junior officer.

Leadership Lab (0) F,S. One hour per week throughout student’s involvement in AFROTC. Experiences designed to develop leadership potential; study of Air Force customs and courtesies; drill and ceremonies; career opportunities; and the life and work of an Air Force junior officer.

AFRICAN AND AFRICAN-AMERICAN STUDIES • AAAS

General education courses are marked with stars (*).

2001 Elementary Swahili Language and Culture I (4) See SWAH 1001.

2002 Elementary Swahili Language and Culture II (4) See SWAH 1002.


2040 Intermediate Swahili Language and Culture I (4) See SWAH 2040.

2050 Contemporary Africa (3) African social and political institutions in transition; challenges of democratization and development in the current international context.

2410 Black Popular Culture (3) Explores participation by black peoples in the creation and critique of popular culture through media such as film, music and television; and topics such as representation and sexuality.

2510 Race Relations (3) Coreq.:

2924 African Diaspora Intellectual Thought (3) Survey of critical ideas and theories by select diaspora scholars and writers. Emphasis on understanding tensions and deliberations that undergird attempts to theorize and resolve issues involving the status of black people in the world.

3044 Black Rhetorical Traditions (3) Survey of the development of black communication styles ranging from the sermon to the black power movement; major theories, and the world’s most effective verbal and written communicators and the tension between orality and literacy.

3120 Topics in History of Africa and the African Diaspora (3) May be taken for a max. of 6 sem. hrs. of credit when topics vary. This course surveys historical moments in the life of African and African diaspora peoples.

3122 Topics in Pre-Colonial Africa (3) May be taken for a max. of 6 sem. hrs. of credit when topics vary. Surveys African empires and civilizations from ancient times to colonial period. Emphasizes culture, religion and/or political influence and practice.

3341 African American English (3) Survey of major issues related to historical and contemporary development of African American speech, focusing on linguistic and social features.

3425 Black Women in America (3) Surveys intersection of race and gender in the U.S. Through historical and contemporary lenses, course examines: gender equality, differences, and struggles that mark black women’s subjectivity.

3901 Directed Readings and Research in African-American Studies (1-3) May be taken for a max. of 6 sem. hrs. of credit when topics vary. This course surveys historical moments in the life of African and African diaspora peoples.

3902 Special Topics in African and African-American Studies (1-3) May be taken for a max. of 6 sem. hrs. of credit when topics vary. This course surveys historical moments in the life of African and African diaspora peoples.

AGRICULTURAL ECONOMICS • AGEC

General education courses are marked with stars (*).

3201 Introduction to Agricultural Business (3) F Nature and scope of agribusiness; application of management and marketing concepts to selected agribusiness problems; exploring agribusiness management as a profession.

3203 Introduction to Agricultural Economics (3) F,S Role of agriculture in the global economy; economic principles applied to agricultural production, marketing, consumption, and policy problems.

3205 Agricultural and Food Business (3) F,S Prereq.: AGEC 2003 or equivalent. An overview of the agricultural commodity and food marketing system; marketing, management, and economic principles applied to the formulation of product development plans for agricultural commodities and branded food products; future market trading principles.

3303 Farm Management (3) F Prereq.: AGEC 2003 or equivalent. Fundamental economic and business principles applied to a farm business; comprehensive and integrated treatment of management concepts for successful operation of a farm business.

3311 Agricultural Business Management Decisions (3) F Prereq.: AGEC 2003 or equivalent. Identification of typical decisions of agricultural business firms; development of concepts, procedures, and analyses that facilitate planning, organizing, directing, coordinating, and controlling functions within agricultural business firms.

3503 Natural Resource Economics (3) S Prereq.: AGEC 2004 or equivalent. Economic rationale for collective, public action in allocation of natural resources in agriculture; emphasis on economic efficiency, property rights, resource use, legal concepts, institutions, and project evaluation.

3706 Internship (1-3) F Prereq.: AGEC 2003 or equivalent and approval of department head. May be taken for a max. of 3 sem. hrs. of credit. Supervised career-oriented experience with a business or organization in the food and fiber system.

3803 Agricultural Law (3) F,O Principles of law and their application to agricultural business firms and institutions; legal processes and relationships relevant to agriculture; Louisiana Civil Code and statutes; federal law, including bankruptcy code; analysis and review of cases, documents, and processes.

4023 Intermediate Food and Fiber Products Marketing (3) F Prereq.: AGEC 3003 or equivalent. Industrial organization analysis of the food and fiber system; emphasis on structural problems and their control by competition, antitrust, and government.

4213 Economics of Milk Marketing Systems (3) S,O Prereq.: Coreq.: ENGL 4322. May be taken for a max. of 6 sem. hrs. of credit when topics vary. Surveys African empires and civilizations from ancient times to colonial period. Emphasizes culture, religion and/or political influence and practice.

4327 Agricultural Price Analysis (3) S Prereq.: AGEC 2003 or equivalent; MATH 1431 and EXST 2201 or ISDS 220. Economic processes of price discovery and price determination in agricultural commodity and real estate markets; emphasis on methods of price analysis and their application to decision processes; analysis of cyclical, trend, and seasonal movements in prices.

4431 Agricultural Finance (3) F Prereq.: AGEC 2003 or equivalent. Capital acquisition and use in the agricultural sector; cost and availability of credit; emphasis on financial management concepts for managing growth, leverage, liquidity, risk, and capital investment in agricultural business.

4435 Agricultural Business Planning, Management, and Policy (3) S Prereq.: senior standing; AGEC 3003, 3213, 3413; MGT 3401; MGT 3200 and BLAW 3200 or equivalent. Identification of typical decisions of agricultural business firms; development of concepts, procedures, and analyses that facilitate planning, organizing, directing, coordinating, and controlling functions within agricultural business firms.

4543 Farm and Rural Land Appraisal (3) F Prereq.: AGEC 2003 or equivalent. Analysis of the milk production and marketing system; market channels, characteristics, institutions, and government regulations in pricing and marketing milk.

4603 Agricultural Policy (3) F Prereq.: AGEC 2003 or equivalent. Role of agriculture in the global economy; how agricultural policy decisions affect the general public;
emphasize economic impacts of policies on producers and consumers of agricultural products; effects of other nations' policies on American agriculture.

4613 Agricultural Trade (3) S-O Prereq.: AGEC 3003 or equivalent. Structure, trade, and practices in exporting and importing regions and nations; policies of major agricultural trading nations and institutions; aid, development relationships, and current development trade policy.

4623 Rural Resource and Community Development (3) S-E Prereq.: AGEC 3003 or equivalent. Characteristics of developed and undeveloped rural areas; analysis of economic and resource potentials and potential for development; public policy issues concerning rural development.

4700 Methods in Agricultural Economics (1-3) Prereq.: approval of department head. May be taken for a max. of 6 sem. hrs. of credit when topics vary. Independent study under the direction of a faculty member or faculty committee.

7103 Advanced Statistical Methods in Agriculture (3) S Prereq.: AGEC 7803 or concurrent registration. Application of advanced statistical tools to problems in agricultural economics; emphasis on the general linear model, including diagnostics, applications, and interpretation.

7113 Agribusiness Research Applications (3) F Introduction to and review of student's graduate research projects; preparation for data collection; collection of evidence; analysis of evidence; composition of research reports; applications to agribusiness market analysis, agribusiness planning and management, and agribusiness forecasting.

7125 Operations Research Methods in Agricultural Economics (3) S Applications of fundamental operations research methods to economic problems in agricultural production, marketing, and resource use; linear and nonlinear programming; integer programming; network analysis; dynamic programming; queuing; simulation.

7203 Advanced Agricultural Marketing Theory (3) F O Prereq.: ECON 7203. Advanced modeling of economic adjustments to agribusiness policies; marketing of agricultural and farm products; competition and comparative advantage; modeling of demand, interference, allocapathy, competition, and scale and quality resistances, and the impact of weed control mechanisms on crop production and competition.

8000 Thesis Research (1-12 per sem.) S "S"/U" grading. 9000 Dissertation Research (1-12 per sem.) "S"/U" grading.

AGRICULTURE • AGRI

General education courses are marked with stars (*).

1001 Introduction to Managed Plant Systems in the Modern World (3) S-O Prereq.: 1 hr. Lab. Survey of plant kingdom; anatomy, growth, and development of plants; ecosystem structure, sustainable agriculture and animal welfare; environment and health food additives, antibiotic food safety; plant breeding for improved food and fiber; biotechnology and its role in modern agriculture.

1051 Soils and the Environment (3) S-O Also offered as ENV 1051. Survey of the earth's soil surface; soils and soil management, reclamation of mis-managed soils, and use of recyclable waste materials as soil amendments.

2051 Soil Science (4) S-O Prereq.: CHEM 1002 or 1212 or equivalent; 3 hrs. lecture; 2 hrs. lab. Also offered as EMS 2051. Principles of soil science; properties of soils related to plant growth and the environment.

2066 Introduction to Turfgrass Management (3) S-O Prereq.: See HORT 2066.

3000 Principles of Crop Production (3) F-O Prereq.: BIOL 1426 or equivalent. Crop production practices related to major crops grown in Louisiana and the U.S.; seed bed preparation, planting, weed and pest control; harvest and processing practices related to each major crop group.

3100 Research Problems (3) F-S Prereq.: consent of instructor. May be taken for a max. of 6 sem. hrs. of credit. Independent research under a faculty member, culminating in an oral and written report.

3111 Fall Crop Production Laboratory (1) F O Prereq.: credit or registration in AGRO 3000. Field and laboratory research designed to provide an understanding of the growth and practices involved in production of soybeans, cotton, and sugarcane.

3121 Spring Crop Production Laboratory (1) F-O Prereq.: credit or registration in AGRO 3000. Field and laboratory research designed to provide an understanding of the growth and practices involved in the production of winter small grains.

3133 Summer Crop Production Laboratory (1) S Prereq.: AGRO 3000. Field and laboratory research designed to provide an understanding of the growth and practices involved in the production of rice, corn, and sorghum.

3400 Soil Conservation (2) F Prereq.: AGRO 2051. Also offered as EMS 3400. Causes and effects of soil erosion and sedimentation; their effects on the quality of the environment; methods of reducing erosion and soil environmental pollution.

3990 Agronomic Internship (3) S-F Prereq.: overall GPA of 2.50 and written consent of instructor. May be taken for a max. of 6 sem. hrs. of credit. Work experience in crop, soil, or environmental quality related areas culminating in acceptable written reports and a seminar presentation.

4005 Foreage Ecology and Management (3) S-F Prereq.: credit or registration in AGRO 3000. Principles of forage crop production, adaptation, production, utilization, and management; impact on people, animals, and the environment.

4052 Soil Fertility and Soil Management (4) S-O Prereq.: AGRO 2051. Field and laboratory study. Factors affecting plant growth and utilization of essential elements; mechanisms of nutrient uptake; diagnosis of deficiencies; use of lime and fertilization; and soil fertility management.

4055 Chemical Properties of Soil (4) F Prereq.: AGRO 2051 and CHEM 2002. 3 hrs. lecture; 3 hrs. lab. Also offered as EMS 4055. Chemical and mineralogical properties of soils; their relationship to pollution from agriculture; effects of nonhazardous amendments on soil properties.

4056 Microbial Ecology and Nutrient Cycling in Soils (4) S-O Prereq.: AGRO 2051 and BIOL 2051. 3 hrs. lecture; 3 hrs. lab. Also offered as BIOL 4255 and EMS 4056. Microorganisms in terrestrial environments and biogeochemical processes influencing C, N, S, and P cycling; role of microorganisms in biological nitrogen fixation, plant nutrient availability, formation of soil humus, and decomposition of organic and inorganic materials; impact of microbial processes on environmental quality.

4058 Soil Morphology and Classification (4) F-O Prereq.: 2 hrs. lecture; 2 hrs. lab. Fundamentals of soil morphology, processes related to classification and soil taxonomy; relationships of soil process and classification to environmental quality.

4064 Principles of Plant Breeding (4) F Prereq.: AGRI 2072 or equivalent; 3 hrs. lecture; 2 hrs. lab. Also offered as HORT 4064. Methods of plant genetic improvement: biotechnology and molecular genetics.

4072 Weed Science and the Environment (3) F-O Prereq.: BIOL 1001, 1002, or equivalent; 2 hrs. lecture; 2 hrs. lab. Study of plant adaptation and evolution, effects of pressure selection for insect, disease, and environmental stress resistance; genetic engineering and biotechnology.

4073 Weed Biology and Ecology (3) F-O Prereq.: BIOL 1001, 1002, or equivalent; 2 hrs. lecture; 2 hrs. lab. Study of growth and adaptation of weeds; population biology, competition, ecology, and management.

4079 Environmental Soil Physics (3) Prereq.: AGRO 2051. Also offered as EMS 4077. The physical soil system; the soil components and their physical interactions; processes involving water flow in saturated and unsaturated soils, air, and heat; fate and transport of applied chemicals in the soil profile and processes governing the mobility of contaminants.

4078 Land Use Planning and Land Management (3) F-E Prereq.: consent of instructor. 2 hrs. lecture; 2 hrs. lab. Land use planning and management based on chemical, mineralogical, and physical properties of soils; includes soils, plants, data bases, hydrology, and remote sensing; areas of use and management include crops, pasture, forest and woodland, metropolitan, transportation, waste disposal, wetlands, and disturbed lands.

4080 Advanced Crop Production and Management (3) S-O Prereq.: AGRO 1021 and BIOL 3000 or equivalent. Environmental considerations; crop production practices related to crop growth and development, yield.

4090 Agronomic Problem Solving (3) S-E Prereq.: AGRO 2051 or equivalent; 3 hrs. lecture; 3 hrs. lab. 4090: 3000 or equivalent. Analysis and solution of specific agronomic problems; emphasis on research literature, group discussion, and development of answers to hypothetical management questions.

4091 Special Topics in Crop Science (1-3) Prereq.: written consent of instructor. May be repeated for credit; total of 6 sem. hrs. may be earned in AGRO 4091 and 4092 combined.

4092 Special Topics in Soil Science (1-3) Prereq.: written consent of instructor. May be repeated for credit; total of 6 sem. hrs. may be earned in AGRO 4091 and 4092 combined.

7001 Agronomy Seminar (1) May be repeated for credit. 1 hr. seminar; reports.

7140 Research Methods in Plant Science (3) S-E Prereq.: EXST 7005; or equivalent; field research experience. Research activities and methodology used to conduct field research in plant science and pest management disciplines from initial planning through publication of results; areas of emphasis include: research planning and preparation and analysis of experimental design and implementation of research; data analysis, interpretation, and presentation; and manuscript preparation.

7041 Plant-Herbicide Physiology (3) F-E Prereq.: AGRO 4070 or equivalent. 2 hrs. lecture; 3 hrs. lab. Lab project includes several techniques used in plant-herbicide physiology research; physical and chemical interactions of herbicides with plants; emphasis on the
specific mode of action, entry, movement, metabolism, and side effects of each chemical family of herbicides.

7042 Soil-Pesticide Interactions (3) F-E Prereq.: AGRO 2051 and 4076. Chemical, physical, and biological properties of soils as they affect bioavailability and absorption of toxic substances; interactions of plant roots with the soil environment; fertilizer use efficiency.

7051 Advanced Soil Fertility and Plant Nutrition (4) S-E Prereq.: AGRO 4052 and BIOL 3060 or equivalent. 3 hrs. lecture; 2 hrs. lab. Principles of bioavailability and acquisition of mineral nutrients by crop plants; interactions of plant roots with the soil environment; fertilizer use efficiency.

7052 Micronutrients in Soils and Crops (4) S-O 3 hrs. lecture; 2 hrs. lab. Micronutrient deficiencies, homeostasis, and factors regulating their mobilization and uptake by plants; application to nutrient management of crops.

7055 Advanced Soil Chemistry (3) F-O Prereq.: AGRO 4055. MATH 1552, and one semester of physical chemistry. Theory of physico-chemical properties of soils; emphasis on soil solution chemistry and soil environmental properties.

7056 Current Topics in Soil Microbiology (3) F-O Prereq.: AGRO 4056 or equivalent. 2 hrs. lecture; 2 hrs. lab. Role of soil microbial processes in maintaining environmental quality; fate and behavior of introduced microorganisms; methods of development of a laboratory curriculum consistent with students' interests.

7057 Advanced Soil Physics (4) F 3 hrs. lecture; 2 hrs. lab. Also offered as EMS 7057. Physical properties of the soil matrix, soil water processes and processes governing water, gas, solute, and heat fluxes in the soil profile.

7058 Advanced Pedology (3) S-O Theory and current literature on pedogenic processes responsible for the physical, chemical, and mineralogical properties found in soil environments.

7066 Agronomic Crop Breeding Techniques (1) F,S 2 hrs. lab. May be repeated in the alternate semester for a max. of 2 hrs. of credit. Practical experience in hybridization of agronomic and horticultural crops; objectives, methodologies, and rationale of specific breeding programs; selection procedures; computerized record keeping and data management.

7068 Soil Mineralogy (3) F-O Prereq.: GEOL 2082 or AGRO 4035 or equivalent. 2 hrs. lecture; 3 hrs. lab. Van't Hoff, distribution, and alteration of major minerals in soils; their physico-chemical properties and reactions; their significance to agriculture and the environment.

7070 Advanced Plant Breeding (4) S-E Prereq.: AGRO 4064 and EXST 7014, or equivalent. 3 hrs. lecture; 2 hrs. lab. Also offered as HORT 7070. Advanced methods of plant breeding and genetic improvement of crop plants; breeding for insect, pathogen, and abiotic stress resistance; breeding strategies and theory; resource allocation and evaluation of breeding methodologies.

7071 Advanced Plant Genetics (4) S-O Prereq.: consent of instructor. 3 hrs. lecture; 2 hrs. lab. Genotypic and environmental values, their effects and interactions, homeostasis, stability; variances, covariances, combining ability, genetic advance, selection indices, molecular markers for quantitative trait loci.

7165 Biogeoclimatology of the Wetland Soils and Sediments (3) Same as OCS 7165.

8000 Thesis Research (1-12 per sem.) "S"/"U" grading.

8901 Research in Crop Science (3-6) Prereq.: consent of department.

8902 Research in Soil Science (3-6) Prereq.: consent of department.

9000 Dissertation Research (1-12 per sem.) "S"/"U" grading.

ANIMAL SCIENCE • ANSC

1011 Introduction to Animal Science (3) F,S Science and production of the beef, dairy, swine, and poultry industries; the role of animals in American agriculture.

2001 Farm Unit Internship (1) F,S,Su Prereq.: ANSC 1011 and consent of department head. 3 hrs. work experience. May be taken for a max. of 3 sem. hrs. of credit, one each in beef, horse, sheep, swine, and meat units. Pass-fail grading. Supervised work experience with animal industries; vocational management skills, and livestock handling.

2006 Companion Animal Management (3) Care, feeding, breeding, and management of companion animals; emphasis on dogs and cats; opportunities in the pet-related fields and industries.

2133 Growth and Development of Livestock (3) 2 hrs. lecture; 2 hrs. lab. Cell, tissue, and body growth, development, and composition; patterns of tissue deposition in livestock, composition of normal and abnormal growth; evaluation and measurement of composition of beef, sheep, swine, and horses.

3033 Elements of Live Animal and Carcass Evaluation (3) F 4 hrs. lab. Basic principles and techniques involved in evaluation of meat animals and their carcasses.

3034 Advanced Live Animal and Carcass Evaluation (3) S Prereq.: consent of instructor. A lab course in the principles and techniques involved in the evaluation of meat animals and their carcasses.

3051 Animal Science Problems (1-6) F,S,Su Prereq.: consent of department head. May be taken for a max. of 6 hrs. of credit. Individual study of a problem in biotechnology, nutrition, meats, reproduction, breeding and genetics, herd health, or marketing of farm animals.

3053 Meats (3) F 2 hrs. lecture; 2 hrs. lab. Livestock and poultry production; preparation of meats for retail and wholesale markets.

3054 Quality Assurance in the Food Industry (4) S See DART 4040.

4050 Animal Biotechnology (3) Prereq.: CHEM 1060 or equivalent. Basic principles of nutrition including chemical composition of feedstuffs, digestion, metabolism, and functions and values of nutrients.

4949 Meat Technology (3) S-E Prereq.: ANSC 3553, and BIOL 3060 or equivalent. 2 hrs. lecture; 2 hrs. lab. Field trips are required. Reproductive biology of zoo, laboratory, and companion animals, with emphasis on breeding management.

7001 Experimental Methods (2) F Prereq.: credit or registration in EXST 7004 or equivalent. Scientific methods applied to animal science.

7006 Advanced Animal Genetics (3) F-O Prereq.: DARY 7004 or equivalent. Application of genetic principles and theory to farm livestock populations.

7030 Energy in Nutrition (3) F Prereq.: credit in BIOL 4087 or equivalent. Energy-supplying nutrients and their metabolism; energy balance; measuring food energy needs; dietary recommendations.

7050 Advanced Animal Physiology and Laboratory Techniques (4) F-E Prereq.: consent of instructor. 3 hrs. lecture; 2 hrs. lab. Physiological processes relating to domestic animals and their utilization in the evaluation of their performance and dissipation of pesticides; fate of pesticides and abiotic stress resistance; breeding strategies and theory; resource allocation and evaluation of breeding methodologies.

ANTHROPOLOGY • ANTH

1001 Introduction to Physical Anthropology and Prehistory (3) Origin and evolution of people; its biological bases; human prehistory; human diversity; origin and development of human culture through the rise of civilization.

1003 Introduction to Cultural and Social Anthropology (3) Diversity of human cultures; nature of culture, social organization, subsistence patterns, economics, law, politics, religion, language, and other institutions of culture viewed in cross-cultural perspective.

2015 Introduction to Archaeology (3) Archaeological goals, methods, techniques, and interpretations; particular prehistoric cultural sequences or projects; relationship of archaeology with other social, life, and earth sciences.

2046 Field Methods in Archaeology (3-6) Prereq.: ANTH 2051 or equivalent. May be taken for a max. of 6 sem. hrs. of credit. Techniques of survey, mapping, excavation, and recording; participation in one or more archaeological excavations.

2050 World Archaeology (3) Survey of human culture history from the stone age to the present; spread of human society around the globe; major cultural developments including hunting and gathering, origins of agriculture, discovery and spread of metallworking, rise of ancient civilizations, and development of the modern world.

2051 Introduction to World Ethnography (3) Sex roles, economic pursuits, values, beliefs, families, and other institutions of culture viewed in cross-cultural perspective.
4015 North American Archaeology (3) 
Prereq.: 3 sem. hrs. of introductory anthropology or equivalent. Fundamental concepts of archaeology and the prehistory of the Americas. Archaeological classification, and formation of research hypotheses. Also offered as ARCH 4440. Subject matter and instructor vary. 1 hr. undergraduate seminar. May be taken for a max. of 9 hrs. of credit when topics vary.

4016 Old World Archaeology (3) 
Archaeological developments in prehistoric ranging from the earliest evidence of humans to the foundations of civilization.

4017 Louisiana Archaeology (3) 
Prereq.: ANTH 1001 or BIOL 1001, 1002 or 1592. Examination of the human skeleton including skeletal anatomy, bone growth, bone pathology, and human osteology.

4019 Archaeology of Death (3) 
Archaeological approaches to the study of historic cemeteries and ancient burial sites.

4021 Advanced Field Methods in Archaeology (3-6) 
Prereq.: ANTH 2001 and 2005 or equivalent. Also offered as ANTH 4015 or equivalent. Two overnight field trips. Archaeological data relative to the Indian cultures dating from the end of the Pleistocene period to the early historic era.

4022 Method and Theory in Archaeology (3) 
Prereq.: ANTH 1001 or 1003, and ANTH 2015; or equivalent. Empirical method and theory in archaeological research. Emphasis on the logic of scientific argument; history of American archaeology, survey of modern archaeological interpretations, types of explanation, logic of archaeological classification, and formation of research designs.

4023 Latin American Archaeology (3) 
Prereq.: ANTH 2001 or equivalent. Also offered as LING 4090. Relationships between various aspects of pre-Columbian societies, and how they relate to the development of language and society.

4024 Archaeology of Complex Societies (3) 
Prereq.: 2 sem. hrs. of introductory anthropology or equivalent. Study of the biological and cultural evolution of the human species. Also offered as GEOG 4081.

4025 Human Environment Interactions (3) 
Sequel to ANTH 4017. Introduction to the use of environmental data in the study of cultural change. Also offered as GEOG 4083.

4026 History of Anthropological Theory (3) 
Major theoretical approaches; analysis of examples from the development of the discipline.

4028 Social and Cultural Anthropology (3) 
Prereq.: ANTH 2001. For graduate students with little or no anthropology background. Culture, society, language in primitive and complex settings.

4031 Quaternary Paleoclimatology (3) 
See GEOG 4083.

4032 Religion, Gender, and Society (3) 
Prereq.: ANTH 4015 or equivalent. How and why languages change; basic concepts and methods of linguistic analysis.

4033 Comparative Religions (3) Also offered as REL 4031. Religious systems in different levels of sociocultural evolution.

4034 Religion, Gender, and Society (3) See REL 4032.

4040 Physical Anthropology (3) 
Prereq.: ANTH 1001, or BIOL 1002 or BIOL 1202. Evolutionary theory, human variation, fossil record of human evolution, and primate behavior.

4050 Black Music in America (3) Cultural and historical survey of musical genres created and developed by black Americans.

4052 Africa (3) 
Cultural and historical survey of musical genres created and developed by black Americans.

4053 African-American Cultures (3) Cultures of African-Americans in the western hemisphere; their origins, development, and present distinctiveness.

4064 Pidgin and Creole Languages (3) Prereq.: ANTH 4060 or equivalent. Also offered as FREN 4064 and LING 4064. Study of new languages that emerge in contact situations, particularly among peoples of different languages and cultures; languages of the slave trade and European commercial expansion from the 15th through 18th centuries.

4074 Place and Culture (3) Also offered as GEOG 4074. Consideration of place and culture as two core concepts in geographic and anthropological theory.

4081 Human Evolution (3) 
The biological and cultural evolution of the human species.

4082 Social and Cultural Anthropology (3) 
Prereq.: ANTH 2001. For graduate students with little or no anthropology background. Culture, society, language in primitive and complex settings.

7054 Anthropology of Complex Societies (3) 
Prereq.: 2 sem. hrs. of introductory anthropology or equivalent. Study of the biological and cultural evolution of the human species. Also offered as GEOG 4081.

7055 Human Environment Interactions (3) 
Sequel to ANTH 4017. Introduction to the use of environmental data in the study of cultural change.

7056 History of Anthropological Theory (3) 
Major theoretical approaches; analysis of examples from the development of the discipline.

7057 Human Evolution (3) 
The biological and cultural evolution of the human species.

7058 Social and Cultural Anthropology (3) 
Prereq.: ANTH 2001. For graduate students with little or no anthropology background. Culture, society, language in primitive and complex settings.

7059 Selected Topics in Anthropology (3) 
May be taken for a max. of 6 hrs. of credit when topics vary. Also offered as LING 7090.

7059 Anthropology of Complex Societies (3) 
Prereq.: 2 sem. hrs. of introductory anthropology or equivalent. Study of the biological and cultural evolution of the human species. Also offered as GEOG 7090. Individual supervision of advanced research and field work in anthropology.

0000 Thesis Research (1-12 per sem.) "S"/"U" grading.

ARABIC • ARAB 
Native speakers of Arabic will not receive credit for courses marked with an asterisk (*).

General education courses are marked with stars (•). 
*1101 Beginning Arabic (4) 
Prereq.: permission of department. 12 hrs. studio. Emphasis on two-dimensional representation of three-dimensional forms; development of basic skills in architectural design drawing and modeling.

1002 Architectural Design I (6) 
Prereq.: permission of department. 12 hrs. studio. Emphasis on two-dimensional representation of three-dimensional forms; development of basic skills in architectural design drawing and modeling.

1003 Architectural Design II (6) 
Prereq.: permission of department. 12 hrs. studio. Emphasis on the organization of spaces, form and process, and development of skills in program development and design drawing.

2001 Architectural Design III (6) 
Prereq.: ARCH 1002; coreq.: ARCH 2003. 12 hrs. studio. Emphasis on abstract and theoretical organizational concepts; space, form, function, and resolution of materials and structural systems.

2002 Architectural Design IV (6) 
Prereq.: ARCH 2001; coreq.: ARCH 2006. 12 hrs. studio. Required field trip. Students are responsible for paying travel expenses associated with the course. Emphasis on process, materials theory, site inventory, and analysis and impact of regionalism.

2003 Architectural Design V (6) 

2006 Architectural Design VI (6) 
Prereq.: ARCH 2003; coreq.: ARCH 2002. Use of case studies to contrast the meanings of buildings designed in urban or rural environments.

2151 Louisiana and Gulf Coast Building Culture (3) 
History and development of Louisiana and gulf coastal architecture from the 17th century to the present. 
*2401 Appreciation of Architecture (3) 
Not open to architecture majors. Architectural concepts and principles; architectural vocabulary, style, symbolic form characteristics; spatial character, and refinements.

2402 Introduction to Structural Design I (3) Prereq.: ENGL 3501 or equivalent. Also offered as ARCH 3501. 12 hrs. studio. Emphasis on the organization of spaces, form and process, and development of skills in program development and design drawing.

2405 Introduction to Structural Design II (3) Prereq.: ARCH 2002; coreq.: ARCH 2001. 12 hrs. studio. Emphasis on abstract and theoretical organizational concepts; space, form, function, and resolution of materials and structural systems.

2415 Louisiana and Gulf Coast Building Culture (3) 
History and development of Louisiana and gulf coastal architecture from the 17th century to the present. 
*2404 Appreciation of Architecture (3) 
Not open to architecture majors. Architectural concepts and principles; architectural vocabulary, style, symbolic form characteristics; spatial character, and refinements.
3000 Supervised Independent Study and Research (1-3) Prereq.: consent of instructor. May be taken for a max. of 6 sem. hrs. of credit with consent of school director. Investigation of areas of interest not covered in other departmental courses.

3001 Architectural Design V (6) Prereq.: approval for advancement to upper division in architecture. 12 hrs. studio. Emphasis on the development of architectural technology, including the selection and design of mechanical systems, including lighting, electrical distributions, acoustics, plumbing, vertical transportation, and fire suppression.

3002 Architectural Design VI (6) Prereq.: ARCH 3001, 3007. 12 hrs. studio. Emphasis on planning buildings while incorporating building codes and safety, and the technologies of materials, structure, environmental controls, lighting, and acoustics.

3003 Architectural Structures I (3) Prereq.: approval for advancement to upper division in architecture. Building structural analysis, properties of materials, and theories of structures.

3004 Architectural Structures II (3) Prereq.: ARCH 3003. Design and application of timber and steel structures in architecture.

3005 History of Architecture I (3) The development of architectural and spatial forms as they relate to changing perceptions of self, society, and the natural world. From prehistory to the 13th century.

3006 History of Architecture II (3) Prereq.: ARCH 3005. The development of architectural and spatial forms as they relate to changing perceptions of self, society, and the natural world from the Italian Renaissance through modern times.

3007 Architectural Systems (3) Prereq.: approval for advancement to upper division in architecture. Detailed treatment of construction materials and systems, with emphasis on large scale application of enclosure systems and steel and concrete structures.

3008 Environmental Control Systems (3) Prereq.: permission of department. Specialization and selection of design and design of mechanical systems, including lighting, electrical distributions, acoustics, plumbing, vertical transportation, and fire suppression.

3457 Hands on Materials (3) V Prereq.: ARCH 2154, 6 hrs. studio. Design and physical manipulation, construction, and/or fabrication of devices or components made primarily (but not necessarily exclusively) of steel.


4002 Architectural Design VIII (6) Prereq.: ARCH 4001, 12 hrs. studio. Emphasizes the development of theory and design knowledge with the focus on building structures. Students are responsible for paying travel expenses associated with the course. Emphasis on the design of single or multiple buildings in the community.

4003 Intensive Design Studio (6) Su Prereq.: admission to the M.Arch. program. 12 hrs. studio. Introduction to design, analysis, and the development of basic architectural skills.


4032 Advanced Architectural Technology (3) Prereq.: ARCH 3008. Seminar relating to topics of architectural technologies including, but not limited to building structures, environmental concerns, electronic transfer of information.

4033 Fundamentals of Architectural Technology (2) Su Prereq.: admission to the M.Arch. program or consent of instructor. A survey of the fundamental theories and techniques of mathematical and physical science related to the application of architectural technology.

4041 Issues in Sustainability (3) Examination of issues in sustainability as they relate to the practice of architecture.

4051 Advanced 20th Century Architectural History (3) Prereq.: ARCH 3001, 3005. Topics in 20th century architectural history and theory.

4052 Advanced Architectural History (3) Prereq.: ARCH 3005, 3008. Topics on architectural history and theory.

4062 Urban Design and Planning (3) Fundamentals of urban design and planning related to historical, social, political, and economic systems.

4072 Community Design Studies (3) Study of community design. Emphasis on contemporary participatory action research and techniques.

4090 Restoration Studies (3) Theory and methodology of architectural restoration; tools and techniques of restoration.

4155 Recording Historic Structures (3) Prereq.: permission of department. 1 hr. lecture; 2 hrs. lab. Hands-on field and laboratory experience in current methods of documenting historic buildings, including hand methods, photography, and photogrammetry.

4165 Applied Principles of Conservation (3) Prereq.: permission of department. Laboratory work will be at the LSU Rural Life Museum. Hands on work with traditional construction materials, tools and methods: masonry, timber, boulleeage, and others.

4221 Selected Topics in Architecture (3) V May be taken for a max. of 12 hrs. of credit with school approval. Studies in various subjects related to architecture.

4353 Principles and Practices of Land Development (3) Environmental, physical, and financial aspects of land development.

4440 Vernacular Architecture and Material Culture (3) See ANTH 4440.

4441 Aesthetics of Architecture (3) Prereq.: consent of instructor. Development of aesthetic theory through architectural history.

4474 Passive Solar Energy Applications for Buildings (3) Design and application of passive solar systems for space heating and cooling.

4700 Research Methods (3) Major research methods in architecture; hypothesis formulation and testing, data gathering and analysis.

4991 Advanced Computer Applications in Design (3) F,S Prereq.: permission of department. 1 hr. lecture; 2 hrs. lab. Development and application of computer-based image processing and information management skills.

4993 Advanced Computer Aided Architectural Graphics (3) F,S Prereq.: consent of instructor. The development and application of advanced computer-based architectural design and communication skills.

5001 Comprehensive Architectural Design (6) Prereq.: ARCH 4002. 12 hrs. studio. Emphasis on the comprehensive design of a single building integrating material selection, mechanical, acoustical, structural, lighting, and two- and three-dimensional studies.

5002 Architectural Design Concentration (6) Prereq.: ARCH 5001. 12 hrs. studio. Emphasis on architectural problems developed around faculty expertise and emerging opportunities in the profession.

5003 Advanced Architectural Topics (3) Seminar relating to various topics in architecture, writing component.

5004 Concentration Seminar (3) Various topics relating to architectural problems encountered in ARCH 3002.

5005 Advanced Architectural Techniques (3) 1 hr. lecture; 4 hrs. studio. Preparation and correlation of working drawings, specifications, and project manuals, from design development drawing.

5006 Professional Practice (3) Exploration and analysis of project acquisition, contract negotiations, governmental regulations, personnel, office management, and the architect's societal role.

5008 Community Design Practicum (6) Prereq.: ARCH 3002, LA 3002, or permission of department. Minimum 200 hours of supervised experience. Supervised learning experience in the Office of Community Design and Development or approved off-campus site with emphasis on pre-professional services for community-based projects.

7001 Graduate Design Studio I (6) F, Prereq.: ARCH 4003 or equivalent. 12 hrs. studio. The use of space and form in relation to concept in the exploration of basic architectural elements.

7002 Graduate Design Studio II (6) S Prereq.: ARCH 7001. 12 hrs. studio. Emphasis on the design of buildings in a variety of physical settings.

7003 Graduate Architectural Techniques (6) F Prereq.: ARCH 7002. 12 hrs. studio. Emphasis on architectural programming and the design of buildings incorporating technologies of materials and various architectural systems.

7004 Graduate Architectural History (6) F Prereq.: ARCH 7003. 12 hrs. studio. Emphasis on the design of buildings incorporating technologies of environmental systems.

7005 Graduate Design Studio V (6) Prereq.: ARCH 7004. 21 hrs. studio. Emphasis on contextual design for buildings in an urban setting with emphasis on site and context analysis and community planning in a collaborative workshop environment.

7006 Graduate Design Studio VI (6) Prereq.: ARCH 7005. 12 hrs. studio. Credit will not be given for both this course and ARCH 4008. Emphasis on synthesis of all issues addressed in previous studios in the comprehensive design of buildings.

7030 Structural Concepts and Forms (3) Relationship between the schematic programming and computer-based conceptual building forms and basic types of total system behavior.

7050 Project Planning/Management (3) Relationship of the construction process and project planning to building projects of various scales and complexity.

7080 Building Energy Systems (3) Prereq.: ARCH 3171 or 3173 or equivalent. Building energy performance and human interaction.

7600 Seminar in Architecture (3) May be taken for a max. of 9 hrs. of credit when topics vary. Selected topics in architecture.

7900 Architectural Studies/Research (3) Prereq.: written consent of School of Architecture Graduate Committee. May be taken for a max. of 6 sem. hrs. of credit. Selected readings and/or research under the supervision of graduate faculty.

8000 Thesis Research (1-12 per sem.) “S”/“C” grading.

ART • ART

ART 1010 Introduction to Fine Arts (3) Fundamental problems and concepts of art in the fields of design, sculpture, graphics, painting, and ceramics, as related to home, community, religion, commerce, and industry.

ART 1001 Introduction to Two-Dimensional Composition (3) 6 hrs. studio. Credit will not be given for both this course and ART 1011. An introduction to two-dimensional art and design studies using a variety of materials and techniques.

ART 1008 Introduction to Three-Dimensional Art (3) 6 hrs. studio. Credit will not be given for both this course and ART 1012. Introduction to fundamental concepts of three-dimensional art; projects will explore line, plane, spatial organization, surface, and volume using a variety of materials and techniques.

ART 1010 Introduction to Drawing (3) 6 hrs. lab. Credit will not be given for both this course and ART 1017. Drawing from observation and invented images; various drawing materials, methods, and subjects are explored as a means to develop perceptual ability and descriptive drawing skills; drawing concepts including composition, line, perspective, shape, space, and value.

ART 1011 Art Structure (3) 6 hrs. studio. Disciplines in art, with practice in the various media.

ART 1012 Three-Dimensional Design (3) Prereq.: majors only, 6 hrs. studio. Introduction to the fundamental concepts of three-dimensional art. Projects will explore line, plane, spatial organization, surface, and volume; using a variety of materials and techniques.

ART 1013 Studio Art Abroad (3) 6 hrs. studio. Studio art fundamentals within the specific medium of faculty members participating in Academic Programs Abroad.

ART 2050 Digital Art I (3) Prereq.: majors/minors only, ART 1008 or 1011. 2 hrs. lecture/2 hrs. studio. Introduction to digital applications in art.

ART 2055 Digital Art II (3) Prereq.: ART 2050 or permission of instructor. 2 hrs. lecture; 2 hrs. lab. Introductory work in digital animation and multimedia applications.

ART 4020 Special Topics in Studio (3) Prereq.: consent of department. May be taken for a max. of 6 hrs. of credit when topics vary. 6 hrs. studio. Directed studies with a visiting artist.

ART 4044 Gender Aesthetics: Art Theory and Criticism (3) May be taken for a max. of 6 hrs. of credit. Interdisciplinary study of art, writing, and gender.
emphasizes the interaction of art and writing about art as it relates to the visual arts.

4050 Digital Art III (3) Prereq.: ART 4050 or equivalent. 6 hrs. studio. Primarily for students majoring in art. Intermediate-level work in digital animation, video, and animation.

4080 Performance Art (3) Advanced work in digital imaging, video, and animation. 6 hrs. studio. Primarily for students majoring in art. Advanced work in digital imaging, video, and animation.

4090 Performance Art (3) Prereq.: ART 4050 or equivalent. 6 hrs. studio. Multi-disciplinary "live" art studio problems utilizing a diverse range of media such as drawing and painting, sound and movement, and poetry; lectures and discussions on the history of performance art.

7042 Visiting Artist Seminar (3) May be taken for a max. of 9 hrs. of credit. Seminar with visiting artists: contemporary art, criticism, individual and group projects.

8000 Thesis Research (1-12 per sem.) "S"/"U"/"G" grading.

ART HISTORY

1440 Historical Survey of the Arts (3) Prehistoric, Near-Eastern, Greek, Roman, and medieval art.

1441 Historical Survey of the Arts (3) Renaissance to modern art.

1401 Art of the Ancient Near East and Egypt (3) Development of architecture in the area of ancient Near East and Egypt over three millennia; influences of one culture on another and subsequent contributions to Western art.

2411 Survey of Asian Art (3) The arts of China, India, and Japan in relation to religious and philosophical beliefs that affected their production.

2409 Italian Renaissance Art (3) Italian painting, sculpture, and architecture from 1400-1600.

2470 Survey of 20th Century Art (3) Modern art.

2480 Introduction to Museum Studies (3) Introduction to art and history museums, their missions and functions; practical aspects and philosophical issues related to museums.

4041 History of Prints (3) History of prints from the 15th century to the present.

4043 The Frame (3) Development of architecture, sculpture, and painting from Rome's early beginnings (600-200 B.C.) to the end of the 4th century.

4059 Early Christian and Byzantine Art (3) Painting, sculpture, and architecture of the Christian era through 12th century Byzantium.

4066 Romanesque Art (3) Architecture, sculpture, manuscripts, and painting from the 11th to the 13th centuries in France, Germany, and England.

4089 Early Greek Art (3) Greek art to the time of the Persian Wars.

4109 Later Greek Art (3) Greek art from the time of the Peloponnesian Wars to the end of the Hellenistic period.

4112 Gothic Art (3) Architecture, sculpture, and painting of Northern Europe from 1150 to 1450.

4113 Early Netherlandish and German Painting (3) Painting in the Netherlands and Germany in the 15th and 16th century.

4200 Studies in Art History (3) May be repeated for credit when topics vary. Advanced work in a pre-determined area of specialization.

4212 History of Western Decorative Arts from the Renaissance to 1850 (3) Development of decorative arts design; emphasis on furniture with, investigations of metal, textiles, ceramics, and glass; materials, constructional techniques, and socioeconomic conditions giving rise to the objects’ fabrication.

4222 History of Modern Design (3) Aesthetic theory and stylistic evolution of decorative arts from mid-19th century to the present; emphasis on crafts, architectural decoration, furniture, interior design, and industrial design; Victorian period, arts and crafts movement, art nouveau, Bauhaus, and international style.

4233 Early Renaissance Painting in Italy (3) The origins and development of Italian Renaissance painting in Florence and Siena.

4244 High Renaissance and Mannerist Painting in Italy (3) The climax and aftermath of Italian Renaissance painting in Florence, Rome, and Venice.

4245 Renaissance Sculpture in Italy (3) The origins and development of Italian Renaissance sculpture; its function, patronage, and significance within its social and cultural context.

4277 Northern Baroque Painting (3) Dutch, Flemish, and French painting of the 17th century.

4292 Southern Baroque Art (3) Painting, sculpture, and architecture of the 17th century in Italy and Spain.

4331 18th Century European Art (3) European art from the age of absolutism to the beginning of the Napoleonic era, including Rococo art, the influence of Enlightenment thought, the rediscovery of classical antiquity, Neoclassicism, and the impact of the French Revolution on the visual arts.

4377 History of European and American Sculpture, 1840 to Present (3) European and American sculpture from 1840 to the present.

4410 Chinese Painting (3) History of Chinese painting from prehistoric times through the 20th century.

4422 Japanese Art (3) History of Japanese painting, sculpture, and architecture from prehistoric times through the early 20th century.

4435 Indian Art (3) History of Indian painting, sculpture, and architecture from prehistoric times through the 16th century.

4441 Southeast Asian Art (3) History of architecture, sculpture, ceramics, and painting in Burma, Thailand, Cambodia, Indonesia, Vietnam, and Laos from the prehistoric times through the 19th century.

4455 Chinese Ceramics (3) History of Chinese ceramics from the prehistoric times to the 20th century; hands-on examination of objects.

4501 19th Century European Painting (3) History of painting in European countries from the French Revolution (1789) to 1900; emphasis on neoclassicism, romanticism, realism, impressionism, post-impressionism, and symbolism.

4521 20th Century European Art (3) History of painting in European countries from 1900 to 1960; emphasis on Fauvism, Cubism, geometric abstraction, Futurism, Dada and Surrealism, German Expressionism, British figurative art, and the School of Paris.

4544 American Art to 1900 (3) North American painting, architecture, and sculpture from the colonial beginnings to 1900; emphasis on painting.

4546 American Art: 1900-1960 (3) Study of American painters and sculptors between 1900 and 1960; from the Impressionists to the Abstract Expressionists; emphasis on the artists’ connections to social, political, and cultural developments.

4640 Survey of Contemporary Art (3) Major movements in art from World War II through the 1980’s; the wane of modernism and the rise of postmodernism; focus on America and Europe, but Latin American and non-western art also considered.

4660 Latin American Art (3) Pre-Hispanic, colonial, and contemporary architecture, painting, sculpture, and related arts throughout Latin America.

4680 Issues in Contemporary Art (3) Principal issues confronting contemporary artists and the sources and theories behind the issues.

4699 Art of the American South: 1550-1861 (3) History of architecture, painting, sculpture, and decorative arts made in the states below the Mason-Dixon Line.

4700 History of Photography (3) History of photography from its inception in the 1830’s until the present; technological development of the medium and its inherent aesthetic, interrelationships between photography and more traditional media.

4800 Video Art and Theory (3) Sources and origins of artists’ video from the late 1960’s to the present day; consideration of theoretical, political, and technological aspects; survey of single-channel, projected, installation, and Internet formats for video art display.

4900 Independent Study in Art History (1-3) Prereq.: consent of instructor. May be taken for a max. of 6 hrs. of credit when topics vary.

4999 Undergraduate Seminar (3) Prereq.: ART 1440, 1441, and any other additional art history courses; open to art history majors of junior and senior standing. Intensive reading, writing, and classroom discussion; introduction to art history methodologies.

4700 Art Theory and Criticism (3) Criticism; building of art collections from ancient to modern times.

7420 Special Topics in Art History (3) Prereq.: graduate standing in art history or consent of instructor. May be taken for a max. of 6 hrs. of credit when topics vary. Advanced topics in art history.
Design projects investigating problems of visual year. This course is not offered during the summer term hrs. studio. To be taken in the last semester of the senior 4561 Survey of Graphic Design (3) multimedia; special focus on the study and application of communications standards, emerging technologies, and virtual reality, sound and visual synchronization, Internet-based communications, hypermedia language, equivalent. 2 hrs. lecture; 2 hrs. lab. Basic exploration of digital graphic design and its application in communications; topics include: scanning, image processing and manipulation, digital filtering, and imaging peripherals; emphasis on emerging technology and preparing images for multimedia applications.

4551 Problems in Graphic Design (3) Prereq.: consent of instructor; 6 hrs. studio. Problems in design related to the professional designs of reproduction, exhibition techniques, and digital applications.

4552 Product Design (3) Prereq.: consent of instructor. 6 hrs. studio. Technology, needs, and market related to the mass-produced article; materials research; human engineer- ing; prototype construction; presentation methods; field trips.

4554 Applied Illustration (3) Prereq.: consent of instructor. 6 hrs. studio. Techniques of general illustration; produc- ut illustration; problems of layout and its application within the commercial field.

4555 Advanced Graphic Design (3) Prereq.: consent of instructor; 6 hrs. studio. Principles of visual communica- tion through graphic design; problems in design theory and application.

4556 Advanced Design (5) Prereq.: 3 sem. hrs. in advanced design course work and consent of instructor based on review of student's portfolio. 10 hrs. studio. Advanced studio work in a predetermined area of design specialization.

4557 Advanced Project in Graphic Design (5) Prereq.: 3 sem. hrs. in course work and consent of instructor based on student's portfolio evaluation. Advanced studio work in a predetermined area of design specialization.

4560 Interactive Media for Visual Communications (3) Prereq.: consent of instructor and ART 4550 or equivalent. 2 hrs. lecture; 2 hrs. lab. Basic application of interactive media design and application of Internet-based communications, hypermedia language, virtual reality, sound and visual synchronization, communications standards, emerging technologies, and multimedia; special focus on the study and application of interactive multimedia theory.

4561 Survey of Graphic Design (3) Prereq.: Consent of instructor. Overview of graphic design, covering its development from its inception to the present; its relationship to other arts; and the cultural influences and technological advances that have shaped its present role in the field of visual communications.

4564 Senior Graphic Design (3) Prereq.: ART 4355. 6 hrs. studio. To semester of the senior year. This course is not offered during the summer term. Design projects investigating problems of visual communication: individual and group projects with professional-level presentations.

4567 Interactive Multimedia Design (3) Prereq.: consent of instructor. 6 hrs. studio. May be taken for a max. of 6 hrs. of credit. Application of interactive computer graphics technology for art and design; design and application of CD-ROM, video disks, Internet-based communication, hypermedia language, virtual reality, sound and visual synchronization, communication standards, emerging technologies, and multimedia; emphasis on study and application of interactive multimedia design theory.

4574 Graphic Design Synthesis (3) Prereq.: consent of instructor based on review of student's portfolio. 6 hrs. studio. May be taken for a max. of 6 sem. hrs. of credit. Project or internship approved by graphic design faculty committee.

4576 Digital Imaging Techniques (3) Prereq.: consent of instructor. 6 hrs. studio. May be taken for a max. of 6 sem. hrs. of credit. Digital imaging technology and its application in art and design areas; scanning, image processing, image filtering, and imaging peripherals; emphasis on digital imaging aesthetics, emerging technology, and preparing images for printed and multimedia application.

7500* Graduate Design (3,6,12) 6, 12, 18, 24 hrs. studio. Each may be taken for a max. of 15 hrs. of credit.

7553, 7554, 7555, 7556 Graduate Research in Design (3 each) Prereq.: consent of instructor. 6 hrs. studio each.

JEWELRY/METALSMITHING

2655 Introduction to Jewelry/Metalsmithing (3) Prereq.: majors/minors only. ART 1009 or 1012 or consent of instructor. 6 hrs. studio. Prereq. color connections, fabrication, silver soldering, forming and stone setting; studio projects in bronze, copper and sterling with emphasis on basic jewelry and metalmithing.

2656* Jewelry/Metalsmithing: Casting (3,6,9) Prereq.: ART 2653 or equivalent. 6, 12, or 18 hrs. studio. May be taken for a max. of 12 sem. hrs. of credit. Advanced studio work in jewelry/metalsmithing involving sand casting, cuttle bone casting, steam casting, vacuum casting, and centrifugal casting.

4651 Special Studies in Jewelry/Metalsmithing (3,6,9) Prereq.: consent of instructor based on review of student's portfolio. 6, 12, or 18 hrs. studio. May be taken for a max. of 9 sem. hrs. of credit. Directed studies for the advanced student.

4655* Advanced Jewelry/Metalsmithing (3,6,9,12) Prereq.: consent of instructor. 6, 12, or 24 hrs. studio. May be taken for a max. of 18 sem. hrs. of credit. Consent of instructor based on review of student's portfolio. 6 hrs. studio. May be taken for a max. of 3 sem. hrs. of credit.

Photography

2995 Basic Photography (3) Prereq.: majors/minors only. ART 1008 or 1011. 6 hrs. studio. Basic concepts and techniques of black and white photography; emphasis on photography as a visual art.

2996 Intermediate Photography (3) Prereq.: ART 2995. 6 hrs. studio. Continued investigation of basic photographic principles; focusing on specific subject areas drawn from major themes in visual art.

3992 Introduction to Digital Photography (3) Prereq.: ART 3994, 3996, and permission of instructor. 6 hrs. studio. Introduction to digital photographic tools and techniques.

3994 Advanced Photography (3) Prereq.: ART 2996 and permission of instructor. 6 hrs. studio. Technical investigation of contemporary materials; critical testing of equipment, films, and printing papers; emphasis on process control as an expressive tool.

3995 Introduction to Digital Art (3) Prereq.: ART 3994, 3996, and permission of instructor. 6 hrs. studio. Introduction to digital photographic tools and techniques.

3996* Color Photography I (3) Prereq.: ART 3994 and permission of instructor. 6 hrs. studio. Introduction to color theory, color perception, and contemporary color printing materials; emphasis on color print portfolio.

3997 Experimental Photography (3) Prereq.: ART 3994 or 3996, and permission of instructor. 6 hrs. studio. Investigation of experimental camera and darkroom techniques; emphasis on the creative possibilities of photographic manipulations.

4941 Special Studies in Photography (3) Prereq.: ART 3994 and permission of instructor. 6 hrs. studio. May be taken for a max. of 12 sem. hrs. of credit. Creative explo- rative research in a predetermined area of specialization.

4994 Large Format Photography (3) Prereq.: ART 3994 and permission of instructor. 6 hrs. studio. Fundamentals of the view camera.

4996 Color Photography II (3) Prereq.: ART 3996 and permission of instructor. 6 hrs. studio. May be taken for a max. of 9 sem. hrs. of credit. Continued investigation of color photography; color negative materials and printing processes.

4997 Sensor Silver Photography (3) Prereq.: ART 3994 and permission of instructor. 6 hrs. studio. Exploration of historical photographic processes; emphasis on nonsilver printing techniques.

4998* Project Photography (3) Prereq.: consent of instructor. 6 hrs. studio. To be taken in the last full semester of the senior year. This course is not offered during the summer term. Proposal for and execution of an independent photography project under the direction of a major professor.

7900* Graduate Photography (3,6) Prereq.: permission of instructor. May be taken for a max. of 18 sem. hrs. of credit.

Printmaking

1361 Introduction to Intaglio (3) Prereq.: majors/minors only. ART 1008 or 1011 and 1014 or 1047. 6 hrs. studio. Basic intaglio techniques; work in black and white.

1371 Intaglio Techniques (3) Prereq.: majors/minors only. ART 1008 or 1011 and 1014 or 1047. 6 hrs. studio. Planographic printing from stones in black and white.
Courses

ASTRONOMY • ASTR

1101 The Solar System (3) Prereq.: MATH 1020 or 1021 or an ACT math score of at least 21.

1108 Astronomy Laboratory (1) hrs. lab. Prereq.: credit or registration in ASTR 1101. Visual observation of positions of celestial bodies with application to star charts and globes; and visual and photographic observations will be made using telescopes; provides student with practical observing experience.

1109 Astronomy Laboratory (1) hrs. lab. Prereq.: credit or registration in ASTR 1102. Analysis of light from terrestrial and celestial sources; visual and photographic observations of stars and nebulae; training in the use of smaller telescopes and larger telescopes with multimedia techniques.

2001 Current Topics in Astronomy and Astrophysics (3) S Prereq.: ASTR 1101; 1102. Primarily for nonscience students. Topics of current interest in astronomy; recent topics include extraterrestrial intelligence, black holes, exploration of the solar system.

4221, 4222 Introductory Astrophysics (3,3) V Prereq.: PHYS 1202 or 2102 or consent of instructor. ASTR 4221 is prerequisite for ASTR 4222 which introduces to advanced stellar systems; results and problems of modern astrophysical research.

4261 Modern Observational Techniques (3) V Prereq.: ASTR 1101. 1 hr. lecture; 6 hrs. lab. Modern astronomical observations and reductions; the telescope, astronomical photography, spectroscopic and photometric observations and reductions.

4750 Special Topics in Observational Astronomy (3) V Prereq.: consent of instructor. May be taken twice for credit when topics vary. One topic scheduled each time course is offered; current topics include astronomical spectroscopy and astronomical photometry.

4997 Problems in Astronomy (1-3) Prereq.: consent of instructor. May be taken for a max. of 3 sem. hrs. of credit. Individual research or experimental work on advanced problems.

6101 Astronomy for Teachers (4) Su, V For teachers and students in the College of Education. Cannot be taken for degree credit by physics majors. General astronomy including the solar system, stellar astronomy, and stellar systems.

6108 Astronomy Laboratory for Teachers (3) Su, V For in-service teachers and graduate students in the College of Education. May not be taken for credit by physics majors. May be taken for a max. of 9 hrs. 2-6 hrs. lab. Visual observation techniques including the use of star charts and globe; visual and photographic observation of celestial objects such as the sun, moon, stars, and nebulae using small reflectors as well as large telescopes through multimedia technologies.

7741, 7742 Stellar Astrophysics (3,3) F,S ASTR 7741 is prerequisite for ASTR 7742. Application of physical principles to study of stars; spectroscopy, stellar atmospheres, stellar structure, and stellar evolution.

7751, 7752 Galactic Astrophysics (3,3) F,S ASTR 7751 is prerequisite for ASTR 7752. Also offered as PHYS 7751, 7752. Application of physical principles to study of galaxies; interstellar medium, galactic structure and stellar motions, galaxies, and cosmology.

7777 Seminar in Astronomy and Astrophysics (1-6) V May be taken for a max. of 6 hrs. of credit. Also offered as PHYS 7777.

7783 Topics in Astronomy and Astrophysics (3) V May be taken for a max. of 6 hrs. of credit. Also offered as PHYS 7783.

BASIC SCIENCES • BASIC

6001 Topics in Physical Science for Elementary School Teachers (3) Su only May be taken for a max. of 12 hrs. of credit.

6002 Topics in Biological Science for Elementary School Teachers (3) Prereq.: 8 sem. hrs. of introductory biology. May be taken for a max. of 9 hrs. of credit when topics vary.

6003 Topics in Environmental Science for Elementary School Teachers (3) Su only May be taken for a max. of 9 hrs. of credit when topics vary.

7000 Methods of Instruction in College Life Science Laboratories (1) F Pass-fail grading. Philosophy and practice of life science laboratory education at the college level.

BIological Engineering • BE

1250 Introduction to Engineering Methods (2) F & 6 hrs. lab. Fundamentals of engineering design; presentation of an engineering design; graphical expression of engineering design using computer-aided drafting.

1252 Biology in Engineering (2) S Prereq.: credit or registration in BIOI 1201. 1 hr. lecture; 3 hrs. lab. Effect of availability and constraints on engineering problem solving and design; engineering units; engineering report writing; oral report presentation; laboratory demonstration of biology.

2307 Elements of Landscape Construction (3) F,S Prereq.: MATH 1015 or 1022. 2 hrs. lab. The theory and use of tape, level, transit, plane table, and compass; principles of area and volume calculations; land slope, drainage grades, legal land descriptions, and topo-graphic mapping.

2350 Experimental Methods for Engineers (3) S Prereq.: consent of instructor. Introduction to experimental methods; technical report writing; and instrumentation for engineering applications; measurement of temperature, pressure, and force; introduction in biological products; microprocessor data loggers and computer data acquisition systems.

2352 Quantitative Biology in Engineering (3) S Prereq.: BE 1232. 2 hrs. lecture; 1 hrs. lab. Characterization of biological phenomena in engineering design; relationships among parameters used in biological design; analytical and graphical expressions; case studies of engineering design solutions.

3190 Professionalism for Biological Engineers (1) F Prereq.: senior standing in the College of Engineering. Ethical standards, professional societies, goal setting, safety, and time management.

3249, 3250 Engineering Practice (1-3,1-3) Su only Prereq.: consent of instructor. Pass-fail grading. A mini-course of six weeks of full-time employment in an industry participating in the summer program. Same as ENGR 3049, 3050. Selected engineering problems in an industrial environment.

3320 Mechanical Design for Biological Engineering (3) Prereq.: CE 3440; credit or registration in CE 2460 or ME 1135. 2 hrs. lecture; 3 hrs. lab. Term project in mechanical design. Philosophy of mechanical design for biological engineering; materials for construction; frame, design; power transmission.

3340 Process Design in Biological Engineering (3) S Prereq.: BE 2350, CE 2200, and credit or registration in ME 3333. 2 hrs. lecture; 3 hrs. lab. Design applications in biological engineering; design and analysis of fluid mechanics and thermodynamics; water distribution systems; and controls.

3361 Soil and Water Technology (3) Prereq.: AGRO 2250. For majors in agriculture, engineering, and natural sciences. Cannot be used to fulfill College of Engineering requirements. Soil and water technology, including the hydrological cycle, hydraulics, soil and water conservation, irrigation, drainage, and surface and ground water pollution prevention.

3571 Irrigation Fundamentals and Management (3) Prereq.: consent of instructor. For majors in agriculture, design, and natural sciences. Cannot be used to fulfill College of Engineering requirements. Turf, landscaping, and other horticultural applications of irrigation; design of irrigation systems from water source to application and uptake by plants; covers typical irrigation application techniques from sprinklers to micro; friction loss in system components; irrigation scheduling; and auditing/touchless irrigation system performance.

3581 Nonpoint Source Pollution in Ag. (3) Prereq.: BE 2352 and CE 3110. 2 hrs. lecture; 3 hrs. lab. Water quality criteria and regulations for the agricultural community; production, transformation, and disposal of agricultural and food processing wastes; management of agricultural nutrients; nonpoint source pollution; bi-product utilization; land application; wetland restoration; stream sampling and analysis; re-aeration studies and modeling.

3400 Environmental Engineering II (3) F,S Prereq.: CHEM 2060 (2261), EVEC 2000. Same as EEFC 3400.

3899 Special Projects in Biological Engineering (1-4) hrs. Prereq.: consent of instructor. May be taken for a max. of 6 hrs. of credit. Library research, experimental and/or theoretical investigation, and written report in form of engineering report.
4989 Independent Study in Biological Engineering (1-4) F S Prereq. P: In Eng. design, project or major project: computer engineering report required. May be taken for a max. of 6 sem. hrs. of credit when topics vary. Biological engineering practice: library research, experimental or theoretical investigation.

7301 Similitude in Biological Engineering Research (3) V Prereq.: BE 4372. Principle of similitude of pertinent quantities in a research project, Buckingham’s theorem, theory and systematic calculation of dimensionless numbers, similarity and distortion in model studies, research project design, and prediction equations.

7304 Advanced Natural Resource Engineering (3) V Prereq.: BE 4383. Advanced topics in soil hydrology, infiltration, evaporation, evapotranspiration, pollution and sedimentation, control, and design for various waste management systems.

7361 Biological Reactor Systems for Agricultural Waste Treatment (3) V Prereq.: BE 4352. Design and development of biological reactors for agricultural wastes; utilizing and developing kinetic models for suspended and attached growth cultures; characterization of agricultural wastes; and wastewater, consideration of nutrient recovery, pathogen survival, odor reduction, and by-product recovery goals.

7381 Advanced Aquacultural Engineering (3) V Prereq.: BE 4352. Advancedtopics in aquacultural aeration, oxygenation, disinfection of aquatic systems, and wastewater treatment in traditional and extensive aquaculture systems.

7500 Seminar (1) Prereq.: graduate standing in engineering. One 4.0 hrs. of credit will be allowed toward the degree. Prereq.: BE 4352.

7909 Advanced Topics in Biological Engineering (1-4) F,S Prereq.: consent of instructor. May be taken for a max. of 6.0 hrs. of credit when topics vary. One or more advances in advanced biological engineering practice.

8000 Thesis Research (1-12 per sem.) S-U grading

BIOLICAL SCIENCES + BIOL
General education courses are marked with star (*).

* 1001 General Biology (3) F,S Prereq.: Credit will not be given for this course and BIOL 1201. For non-science majors. Not for degree credit for a student majoring in a biological science. Credit will not be given for this course and BIOL 1201. Not open to science majors. Microorganisms and their role in disease, ecology, and industry; food from protec tration to genetic engineering.

* 1012 Microorganisms and Man Laboratory (1) Prereq.: credit or registration in BIOL 1011. 3 hrs. lab. Credit will not be given for this course and BIOL 2051. Not open to science majors. Microorganisms and their role in disease, ecology, and industry; food from protec tration to genetic engineering.

* 1102 Biology for Science Majors I (3) Prereq.: credit or registration in BIOL 1005 or 1208. 3 hrs. lab. Topics include biochemistry, enzymes, cell structures, osmosis, cellular respiration, photosynthesis, cell division, genetics, and ecology.

* 1208 Biology for Science Majors II (3) Prereq.: BIOL 1011. Primarily for students in science, agriculture, or education. Credit will not be given for this course and BIOL 2002. General concepts in evolution, ecology, and the function of organisms.

* 1207 HNRS: Biology Laboratory for Science Majors I (1) Prereq.: credit or registration in BIOL 1005 and admission to the Honors College. Credit will not be given for courses in this major. Credit will not be given for this course and BIOL 1005 or 1208. 3 hrs. lab. Topics include biochemistry, enzymes, cell structures, osmosis, cellular respiration, photosynthesis, cell division, genetics, and ecology.

* 1209 Biology Laboratory for Science Majors II (1) Prereq.: Credit in BIOL 1005, credit or registration in BIOL 1202. Credit will not be given for this course and BIOL 1005 or 1208. Primarily for students majoring in science, agriculture, or education.

* 1503 HONORS: Biology for Science Majors II (4) Prereq.: BIOL 1005 and 1208 and consent of instructor. 3 hrs. lecture; 3 hrs. lab. Credit will not be given for this course and BIOL 1005 and 1208 and 1209. Similar content to BIOL 1005 and 1209 with special emphasis on selected topics for qualified students.

2051 General Microbiology (4) F,S Prereq.: BIOL 1002, CHEM 1002 and CHEM 1202. 3 hrs. lecture; 3 hrs. lab. Credit for this course will not be given for both this course and BIOL 1011 or 1012. Structure and function of microbial cells and their relationship to people and the environment.


2213 Principles of Genetics (4) F,S Prereq.: BIOL 1005, CHEM 1002, and enrollment or credit in CHEM 1202. Fundamental laws of heredity.

2238 General Biology (4) F,S Prereq.: BIOL 1011 or 1201 recommended. May not be taken for credit by a student majoring in a biological science or premed student. Elements of human physiology; control systems and functions of the various organ systems.

2240 Introduction to Research in Biological Sciences (1) Prereq.: 6 sem. hrs. of biological sciences and consent of the instructor. Pass-fail grading. Introduction to research with faculty in the Department of Biological Sciences.

2390 Information Retrieval in the Sciences (1) F,S Prereq.: CHEM 2251 or equivalent. Modern methods of information retrieval from abstracts, scientific research literature, computerized index programs, and key-word citation systems: proper techniques in data presentation.

2500 Natural History of the Vertebrates (4) Prereq.: BIOL 1201, 1208, and 4 hrs. of additional biological sciences with laboratory. 2 hrs. lecture; 6 hrs. lab/field work. Diversity, ecology, and evolution of the fishes, amphibians, reptiles, birds, and mammals of the Southeastern U.S.

2510 Introduction to Marine Zoology (4) Prereq.: BIOL 2002 and 1209; permission of department. 12 hrs. lab. Five weeks at Louisiana Universities’ Marine Consortium (LUMCON). For degrees in biological sciences – this course counts only as an elective. Field and laboratory survey of marine animals, particularly those of the Louisiana Gulf Coast; classification, morphology, physiology, and ecology.

3001 Science Teaching in Secondary School I: The Learner (1) Prereq.: registration in EDCI 1001 or equivalent and credit in either BIOL 2051 or 2353, or CHEM 1201 or 2251, or PHYS 1201 or 2211. Also offered as CHEM 3001 and PHYS 3001. Monitored and evaluated...
Course: Technology in Science Education (1)

Prereq.: registration in EDCI 3092 or equivalent and credit in EDCI 3091 and BIOL 3091, or CHEM 3091, or PHYS 3091. Also offered as EDCI 3092 and PHYS 3092.

Instructional Strategies in the Sciences (1) Prereq.: registration in EDCI 3092 or equivalent and credit in EDCI 3091 and BIOL 3091, or CHEM 3091, or PHYS 3091. Also offered as EDCI 3092 and PHYS 3092.

Model whole-classroom instructional strategies that depart from the lecture style (cooperative learning or open-ended problem solving, explorations, and presentation of science lesson using such a strategy; laboratory safety program management.

4004 Seminar in Teaching Secondary School Biology (3) Prereq.: credit or registration in EDCI 4002 or equivalent, and credit in EDCI 4003, or CHEM 4003, or PHYS 4003. Also offered as CHEM 4004 and PHYS 4004.

4015 Conservation Biology (3) F,R Prereq.: 13 sem. hrs. of biological sciences; genetics recommended. See EMTN 4092.

4016 Introduction to Insect Physiology (3) Prereq.: 12 hrs. of entomology or biological sciences; 1 yr. of organic chemistry or biochemistry. 2 hrs. lecture; 3 hrs. lab. Also offered as EMTN 4092.

4020 Taxonomy and Ecology of Wetland Plants (3) FAR. 4 hrs. lecture; 4 hrs. lab; extended field trips. Also offered as RNR 4020. Taxonomy, ecology, distribution, and economic significance of wetland plants in Louisiana.

4024 Plant Anatomy (4) Prereq.: BIOL 1209 and 1209. 2 hrs. lecture; 4 hrs. lab. Plant cellular and developmental biology of vascular plants; emphasis on seed plants.

4034 Morphology of Vascular Plants (4) Prereq.: BIOL 1209 and 1209. 2 hrs. lecture; 4 hrs. lab. Field service fee. Developmental biology of plant form and development among vascular plants from ferns and related forms through gymnosperms and angiosperms.

4041 Plant Taxonomy (4) Prereq.: BIOL 1209 and 1209. 2 hrs. lecture; 4 hrs. lab. Principles of classification, nomenclature, and classification; their application to selected groups of vascular plants; evolution and classification of vascular plants.

4042 Projects in Plant Taxonomy (3) Prereq.: BIOL 4041 or equivalent; 1 hr. credit; 4 hrs. lab. Individual student projects under the guidance of a plant taxonomy project related to interests.

4052 Phylogeny (4) Prereq.: BIOL 1209 and 1209. 2 hrs. lecture; 4 hrs. lab. Also offered as OCS 4052. Field service fee. Phylogenetic analysis of angiosperms, including molecular data.

4054 Introductory Ecology (4) Prereq.: BIOL 1209 and 1209 or equivalent; 3 hrs. lecture; 3 hrs. lab. Same as PLHL 4054. Developmental morphology, taxonomy, and structural adaptations of flowering plants with animals.

4055 Flora of Louisiana (4) Prereq.: BIOL 1209 and 1209. 2 hrs. lecture; 4 hrs. lab. Two Saturday field trips. Major plant groups and communities of Louisiana and the Gulf region; field and laboratory identification, natural history, ecology, environmental issues related to natural vegetation, and conservation of natural areas.

4056 Lichenology and Bryology (4) Prereq.: BIOL 1209 and 1209. 2 hrs. lecture; 4 hrs. lab. Field service fee.lichen and bryophyte morphology, ecology, and systematics.

4084 Geomicrobiology (3) Prereq.: GEOL 3032 or BIOL 2051 or consent of instructor. See GEOL 4084.

4087 Basic Biochemistry (4) F,S,SR Prereq.: BIOL 2153 and CHEM 3091. Credit will not be given for BIOL 4087 or either BIOL 4903 or 4944. Certain macromolecules: production and utilization of energy by the cell; molecular basis of division of labor; control of metabolism and their role in molecular biology.

4090 Marine and Environmental Microbiology (3) SR Prereq.: GEOS 3090.

4093 General Biochemistry I (3) F Prereq.: BIOL 2153 and CHEM 2262 and 2262. Credit will not be given for BIOL 4093 or either BIOL 4903 or 4944. Structure and function of proteins, nucleic acids, lipids, and carbohydrates. Enzymology; reaction mechanisms.

4094 General Biochemistry II (3) S Prereq.: BIOL 4093. Credit will not be given for both BIOL 4087 or either BIOL 4903 or 4944. Metabolic pathways; metabolic acid-base balance; structure; flow of genetic information; regulation of gene expression; recombination DNA.

4104 Histology (4) Prereq.: BIOL 3090 or 3156. Permission of department. 2 hrs. lecture; 6 hrs. lab. Morphological basis of function in mammalian tissues and organs.

4105 Parasitology (3) F,S Prereq.: BIOL 2153. Biology of animal parasites; emphasis on important human parasites.

4106 Parasitology Laboratory (1) F,S Prereq.: BIOL 4105. Lab fee. Field and laboratory investigations in parasitology.

4110 Introductory Microbial Physiology (3) F Prereq.: BIOL 2051 and CHEM 2261 or 2261. Concepts of bacterial nutrition, metabolism, adaptation, and genetics; their role in human and environmental Affairs.

4111 Microbial Physiology Laboratory (2) Prereq.: credit or registration in BIOL 4110 or CHEM 4110. 6 hrs. lab. Microbial physiology. Metabolism and cellular basis of innate and cell-mediated immunity.

4124 Mycological Pathogens (3) F Prereq.: BIOL 4123. Survey of fungal pathogens including bacteria, viruses, fungi, and protists.

4125 Prokaryotic Diversity (3) Prereq.: BIOL 2153. Biology of bacteria and archaea; evolution, diversity, assessment, systematics, ecology; emphasis on molecular approaches.

4126 Methods in Microbial Diversity (4) S Prereq.: BIOL 4125 and consent of instructor. 1 hr. lecture; 6 hrs. lab. 3 hrs. lab. Classical and molecular methods used to study microbial diversity.

4127 Immunopathogenics Laboratory (3) SR Prereq.: BIOL 4125 and consent of instructor. 1 hr. lecture. 3 hrs. lab. Field service fee. Laboratory course fee. Biology of infections; emphasis on ecology, behavior, and evolution.

4147 Biology of Eukaryotic Microorganisms (4) Prereq.: BIOL 2051. 2 hrs. lecture; 4 hrs. lab. Field service fee. Course fee. Biology of the yeasts, molds, slime molds, algae, and protozoa.

4148 Aquatic Invertebrate Ecology (4) Prereq.: BIOL 1209 and 1209. 3 hrs. lecture; 3 hrs. lab. Field service fee. Lecture emphasizes ecology, systematics, and evolution of fresh water invertebrates; lab emphasizes identification and collection methods.


4155 Environmental Physiology (3) Prereq.: BIOL 2153. Physiological adaptations of animals to physical and chemical parameters of the environment.

4156 Environmental Physiology Laboratory (1) Prereq.: credit or concurrent enrollment in BIOL 2153 or equivalent. 3 hrs. lab. Laboratory exercises in environmental physiology.

4157 Cellular Physiology (4) Prereq.: BIOL 2153 and CHEM 2262. 3 hrs. lecture; 3 hrs. lab. Physiological systems in cells and tissues.


4160 Vertebrate Physiology (3) F,S Prereq.: BIOL 3090 or 4257 or 4903, and CHEM 2262 and 2262. Principles of vertebrate systems physiology; emphasis on mammalian systems.

4161 Vertebrate Physiology Laboratory (1) F,S Prereq.: credit or concurrent enrollment in BIOL 4160 or equivalent and EXST 2201. 1 hrs. lab. Laboratory exercises in systems physiology.

4162 Food Microbiology (4) SEE FDSC 4162.

4163 Industrial Microbiology (4) Prereq.: BIOL 4110; equivalent; 1 hr. lecture; 4 hrs. lab. Also offered as FDSC 4163. Microbes used in industrial processes such as production of chemicals, antibiotics, and vitamins.

4172 Plant Microtechnique (3) Prereq.: BIOL 4024 or equivalent; 1 hr. lecture. 4 hrs. lab. Technique and practice in making permanent slides.

4177 Neurobiology (3) Prereq.: BIOL 3090 or 4160, and CHEM 2262 and 2262. Principles of organization and function in nervous systems; molecular basis of behavior.


4194 History of Biology (2) Prereq.: senior standing or consent of instructor.

4200 Microbial Morphogenesis (3) Prereq.: BIOL 2051 and 2153. Cellular morphology in microorganisms and its control by differential gene expression; physiological changes during microbe differentiation; adaptive roles and practical applications.

4210 Biological Modeling and Data Analysis (3) Prereq.: MATH 1356 or equivalent; Introduction to computer and mathematics. 2 hrs. lecture; 2 hrs. lab. Modeling of biological systems; design and analysis of biological experiments; presentation of data.
7284 Proteins (3) V Prereq.: CHEM 4931 or BIOL 4901; and consent of instructor. Conformations of proteins and globular proteins; their interactions with small and large molecules.

7285 Advanced Enzymology (3) V Prereq.: one semester of physical chemistry and credit or registration in BIOL 4994. Principles involving action of enzymes on a molecular level; includes kinetics, inhibition, PH effects, active sites, enzyme mechanisms, reaction mechanism, and protein structure of enzymes.

7286 Seminar (1-5) F,S May be repeated for a max. of 6 sem. hrs. of credit. Reports on topics of current interest in biological sciences.

7288 Lipids and Membranes (3) V Prereq.: BIOL 4994. Chemistry and biochemistry of lipids and membranes; analysis of structure and function; biosynthesis of complex lipids; organization and function of biological membranes.

7289 Biochemistry of Viruses (3) V Prereq.: BIOL 4904 or equivalent. Also offered as FBS 7410. Biochemistry and molecular biology of representative bacterial, animal, and plant viruses; virus attachment to and penetration of host cells; replication, transcription, and translation of viral genomes; virus morphogenesis and assembly; virus-induced host cell modifications; emphasis on structure-function relationships.

7290 Complex Carbohydrates (3) V Prereq.: BIOL 4904. Chemistry of carbohdrates including stereochemistry, reactions, derivatization, and analysis; biosynthesis and function of complex carbohydrates; structure, function, and metabolism of complex carbohydrates including polysaccharides, glycoproteins, and glycolipids; immunology and recognition of myeloid cells.

7262 Fundamentals of Carcinogenesis (3) S-E Prereq.: CBS 7603 or consent of instructor. Same as CBS 7622 and ENVS 7622.

7264 Toxicology II (3) See CBS 7624.

7265 Toxicology IV: Genetic Toxicology (3) S-E See ENVS 7622.

7268 Museum Field Expedition (6) Prereq.: consent of instructor. One semester in the field under the direction of the Museum. Special topics of current interest in the biological sciences.

7901 Departmental Seminar in Biochemistry (1) May be repeated for a max. of 6 sem. hrs. of credit. Reports on specific topics of current interest in the biological sciences.

7902 Departmental Seminar in Biochemistry (1) May be repeated for a max. of 6 sem. hrs. of credit. Reports on specific topics of current interest in biochemistry.

7921 Research Presentations in the Biological Sciences (1) May be repeated for credit. Pass/fail grading.

7946 Seminar: Current Topics in Molecular Evolution (1) Prereq.: course in evolution, genetics, BIOL 4087 or equivalent, credit as offered as ENTM 7466. May be taken for max. of 6 sem. hrs. credit when topics vary. Detailed study of a specific aspect of entrepreneurship.

7910 Legal Environment of Business (3) Prereq.: one semester of business courses. General supervision by a faculty member; direct supervision by a business professional. Pass/fail grading. Credit based on a written evaluation by the professional supervisor; a written report by the student, and the faculty member's evaluation.

7910 The Practice of Business (1) F,S Open only to students in the MBA program. Taken each semester of the MBA program. Target audience falls into the following four times prior to graduation: Exposure to the practice of business; a series of visits to area businesses; a conjunction with classroom experiences, to learn how managers and operations specialists in various industries cultivate, shape, and exploit companies' resources to meet current and future demands, and to study the challenges facing individuals and families involved in family business.

7910 Understanding International Management Challenges (3) F Open only to students in the MBA program. Theoretical concepts and policy issues associated mainly with international operations; development of environmental, operational, strategic, and decision-making perspectives.

7920 Managing Sources of Competitive Advantage (3) S Contemporary approaches to developing and sustaining a competitive advantage in global competition; topics include: competition for talent and technology, managing home and host government relations, strategic alliances, multipolar innovation, and market opening.

7920 Environmental Management of the Firm (3) S National and global issues that affect the firm; an introduction to the conceptual principles and policy issues associated mainly with environmental protection and the lesser degree with managerial economics.

7920 Understanding Ethical Issues in Business (1.5) S Designed to help future managers confront and successfully manage ethical issues and their economic, legal, political, social, and cultural aspects.

7910 Family Business (3) S Designed to help future managers confront and successfully manage ethical issues and their economic, legal, political, social, and cultural aspects.

7920 Seminar in New Developments in Business Administration (3)

8910 Research Participation (3) S Open only to high school students of high academic potential, with the written consent of the instructor. Undergraduate research conducted by Organization for Tropical Studies; includes visits to the family business.

8920 Internship in Entrepreneurship (3) Prereq.: approval of department. May be repeated for a max. of 6 sem. hrs. credit when topics vary. Directed research under the guidance of a graduate faculty member. Prereq.: approval of department. May be repeated for a max. of 6 sem. hrs. credit when topics vary.
CHEMICAL ENGINEERING • CHE

2160 Computer Technology for Chemical Engineering Systems (1) F Prereq.: MATH 1550. Introduction to operating systems, programming techniques, and software packages used in the solution of chemical engineering problems.

2171 Chemical Engineering Fundamentals: Material and Energy Balances (3) Prereq.: MATH 1550 and CHEM 1321. Emphasizes fundamental concepts and principles applied to the analysis of chemical processes; mathematical description of physical systems and application of modern computers to solution of real engineering problems.

3100 Chemical Equilibrium and Kinetics of Environmental Processes (3) F Prereq.: CHE 3172 or ME 3333 or equivalent. Not open to chemical engineering majors. Credit will not be given for this course and CHE 4190. Introductory chemical thermodynamic concepts extended to heterogeneous equilibrium, dilute solutions, surfaces and colloids of significance in environmental engineering processes; chemical reaction kinetics concepts applied to the environment; applications to waste treatment processes design, pollution abatement, and displacement of the fate and transport of chemicals in the environment.

3101 Transport Sciences: Momentum Transfer (3) F Prereq.: CHE 2171, 2190, and credit or registration in CE 2421. Fundamentals of heat and mass transfer; similarities of heat, mass, and momentum transfer and their interrela-
tion; engineering applications.

3104 Engineering Magnetic Measurements Laboratory (3) F Prereq.: CHE 2176 and credit or registration in CHE 3102. 2 hrs. lecture; 3 hrs. lab. Laboratory work to accompany CHE 3101. Magnetic measurements of magnetic materials.

3171 Process Economics and Optimization (3) F Prereq.: CHE 2176 and credit or registration in CHE 3102 and 3173. Application of optimization principles to the economic design of chemical engineering unit operations.

3172 Chemical Engineering Thermodynamics (3) F Prereq.: CHE 2171. Basic concepts and chemical engineering applications of thermodynamics; emphasis on flow processes and real gas thermodynamics.

3173 Heterogeneous Equilibrium (3) S Prereq.: CHE 3172. Kinetics of 2nd order reactions; rate and solid-liquid equilibrium, including the effects of chemical reactions; application of thermodynamic theory to the correlation of equilibrium data and the prediction of equilibrium compositions.

3249, 3250 Engineering Practice (1-3, 1-3) S, Su only Prereq.: consent of instructor. Pass-fail grading. A minimum of 6 weeks of directed employment by an industry participant during the summer program. Same as ENGR 3049, 3050. Selected engineering problems in an industrial environment.

3271, 3272 Senior Projects (1-2, 1-2) Prereq.: consent of department. Pass/fail grading. Experimental and theoretical investigations including library research.

4151 Unit Operations Design (4) F Prereq.: CHE 3102, 3171, and 3173. 3 hrs. lecture; 3 hrs. lab. Unit operations analyzed as applications of chemical engineering fundamentals and transport phenomena; use of these principles in design calculations.

4162 Unit Operations Laboratory (3) F Prereq.: CHE 4151 and credit or registration in CHE 4151. 1 hr. lecture; 6 hrs. lab. Obtaining and interpreting data needed to solve typical problems in design or operation of chemical engineering equipment.

4172 Process Design (4) S Prereq.: CHE 4151 and 4190. 3 hrs. lecture; 3 hrs. lab. Plant design from initial concept through preliminary estimate; flow diagrams, equipment cost estimation, economic analysis, safety, and environmental issues; computer-aided process design.

4980 Chemical Reaction Engineering (3) Prereq.: CHE 3102 and 3171, or equivalent. Basic principles of reactor design applied to pollutant abatement; achievement of optimum reactor operation.

Prereq.: CHE 3171 and credit or registration in CHE 4151. Principles and prac-
tics of process dynamics and automatic control; mathematical modeling of process dynamics, feedback control, and feed forward control.

4204 Technology of Petroleum Refining (3) F Prereq.: Credit or registration in CHE 4151, or equivalent. Chemical processes used in petroleum refining; application of scientific and engineering principles in processes such as catalytic cracking, reforming, alkylation, isomerization, and hydrosulfurization; emphasis on applied catalysis and its impact on engineering design.

4205 Technology of Petrochemical Industry (3) Prereq.: CHE 4151. Processes of petro-

4210 Industrial Catalysis (3) Prereq.: credit or registration in CHE 4190. Principles of the industrial utilization of heterogeneous catalysts; topics include absorption phenomena, methodology in catalyst preparation, characterization and evaluation of catalysts, diffusion and reaction in porous catalysts, and a survey of major industrial processes.

4221, 4222 Senior Research (1,2) Prereq.: credit or registration in CHE 3102, 3104, and 3173. Gpa of at least 2.8 (in CHE) and consent of instructor. CHE 4221 is a prerequisite for 4222. Not open to graduate students. 1 hr. lecture (4221), 6 hrs. lab (4222). Comprehensive research or development project of a theoretical or experimental nature, involving a team effort over two semesters (spring and fall periods).

4231 Introduction to Industrial Pollution Control (3) Prereq.: CHE 3102 or equivalent introductory course in transport science. Quantitative aspects of chemical engineering principles to removal of objectionable components from effluents, with emphasis on industrial processing problems. Elements currently available techniques for controlling air and water pollution and solid wastes; concept of pollution control through basic process alterations developed by specific examples.

4240 Biochemical Engineering (3) Prereq.: credit or registration in CHE 4191 or equivalent. Application of chemical engineering fundamentals to microbiological and biochemical systems; problems peculiar to industrial operations involving microbial processes; growth conditions and requirements, metabolisms, product separations, enzyme catalysis, sterilization, and aseptic operations.

4243 Environmental Chemodynamics (3) Prereq.: CHE 3102 or equivalent introductory course in transport science. Environmental chemodynamics: interphase equilibri-

4279 Processing of Advanced Materials (3) Prereq.: CHE 3102 or equivalent. Advanced concepts of coupled chemical reaction and mass, energy, and momentum transport in the manufacturing and processing of semi-conductors and advanced ceramics. Emphasis on advanced computer-aided process models for chemical and physical vapor deposition meth-

4275 Environmental Catalysis (3) Prereq.: CHE 3102 or equivalent introductory course in transport science. Principles of electrochemistry applied to engineering problems; potential distribution theory, kinetics, mass transport, and thermodynamic principles; quantification of controlling factors in microfabrication, corrosion, battery design, and electrochemical synthesis.

4285 Principles of High Polymers (3) Prereq.: CHE 3172 and CHEM 3491. Solution and solid-state properties of high polymers; microstructure of polymer chains and effects on macromolecular physical properties of the final plastic.

4296 Development of Mathematical Models (3) Prereq.: CHE 2176 and 3102, or equivalent. Mathematical descriptions of systems encountered in chemical engineering developed from basic principles; lumped parameter sys-

eus, distributed parameter systems, formulation of ordinary and partial differential equations, models for chemical and physical vapor deposition meth-

4277 Environmental Engineering (3) Prereq.: CHE 3102 or equivalent introductory course in transport science. Principles of the application of chemical engineering to water pollution control; effect of chemical engineering fundamentals on the design and operation of chemical engineering equipment.
7109 Mathematical Methods in Chemical Engineering

1. Analytical method for solving differential equations through analytical and approximate techniques for the solution of linear and nonlinear differential equation models in chemical engineering systems.

10. Course Thermodynamics (3) F

Thermodynamic properties, first and second laws of thermodynamics, entropy, Maxwell relations, and relationships of thermodynamic functions to interrelated properties. Physical equilibrium with emphasis on partial free energy, fugacity, Raoult’s law, $K_v$, equations of state, and activity coefficients; chemical equilibrium and free energy: fundamentals of statistical mechanics.

1100 Fundamentals of Transport Phenomena (3)

- Foundations of mass and momentum transfer in continua; laminar flow; boundary layer theory; turbulence; buoyancy-induced flows; heat and mass transfer by diffusion, convection, and turbulence.
- Gas-phase reactions methods, solid state spectroscopies, and reaction mechanisms; adsorption phenomena, physical properties, and design of isothermal reactors, effects of nonideal flow, nonisothermal conditions, and solid-gas catalytic reactions.

7140 Chemical Reactor Design Methods (3)

- Basic principles of chemical kinetics, fluid flow, heat transfer, and mass transfer used in design of chemical reactors; chemical equilibria, chemical thermodynamics, design of isothermal reactors, effects of nonideal flow, nonisothermal conditions, and solid-gas catalytic reactions.

7101 Optimization (3)

- Techniques of optimization including analytical methods, linear and nonlinear programming, geometric and dynamic programming, and variational methods with application to systems of interest to chemical engineering.

7352 Distillation and Other Separation Processes (3)

- Mathematical models, phase equilibria, and calculation procedures related to design and behavior of distillation columns, absorbers, extractor-settlers, etc.; emphasis on computer techniques.

7512 Advanced Chemical Engineering Analysis (3)

- Prerequisite: CHEM 7120 or equivalent. May be taken for a max. of 6 hrs. of credit with consent of department. Topics in chemical engineering analysis, such as perturbation methods, matched asymptotic expansions, vector and tensor calculus, and numerical techniques.

7552 Advanced Chemical Engineering Fluid Mechanics (3)

- Prerequisite: CHEM 7120 or equivalent. May be taken for a max. of 6 hrs. of credit with consent of department. Chemical engineering flow processes, such as turbulence, boundary layer theory, hydrodynamic stability, compressible flow, multiphase flow, chemically reacting flows, and non-Newtonian and viscoelastic fluids.

7554 Advanced Chemical Engineering Heat Transfer (3)

- Prerequisite: CHEM 7120 or equivalent. May be taken for a max. of 6 hrs. of credit with consent of department. Chemical engineering flow processes, such as turbulence, boundary layer theory, hydrodynamic stability, compressible flow, multiphase flow, chemically reacting flows, and non-Newtonian and viscoelastic fluids.

7556 Advanced Chemical Engineering Mass Transfer (3)

- Prerequisite: CHEM 7120 or equivalent. May be taken for a max. of 6 hrs. of credit with consent of department. Transport of mass in chemical engineering processes, such as diffusion models, models for mass transfer in multi-component, multi-phase, stationary, flowing, and reacting systems.

7524 Catalysis (3)

- Prerequisite: CHEM 7140 or equivalent. Heterogeneous catalysis; adsorption phenomena, physical methods, solid state spectroscopies, and reaction mechanisms applicable to fundamental and industrially significant processes.

7544 Chemical Kinetics and Reaction Mechanisms (3)

- Prerequisite: CHEM 7140 or equivalent. Gas-phase reactions using the transition state and modern approach to deduction of reaction mechanisms; collision, transition state, RRK, and RRKM theories; bond energy and bond order, vibration, conformation of complex reaction systems, fast reactions, computer modeling, and sensitivity analysis.

7527 Advanced Automatic Process Control (3)

- Prerequisite: CHEM 7120 or equivalent. Recent developments in control theory and control schemes in industrial processes; techniques of state space analysis, nonlinear stability criteria, multivariable control, and system identification.

7575 Digital Control of Processes (3)

- Prerequisite: CHEM 7120 or equivalent. Principles and use of digital computers for process control; relationships between computer and process control schemes, control algorithms, valve dynamics, modeling techniques.

4100 Environmental Chemistry (3) Prereq.: CHEM 2001 and 2261 or 2461 or 2060. Also offered as ENVS 4101. Chemical principles applied to the study of the distribution, transport, activity, and toxicity of chemical species in the environment.

4160 Industrial Organic Chemistry (3) S Prereq.: CHEM 2262 or 2462. Review of major industrial processes with special emphasis on polymer synthesis and applications.

4552 Instrumental Characterization of Organic Compounds (2) Prereq.: CHEM 2001, 2003, or 2005 and credit or registration in CHEM 4102. Molecular analysis, NMR, IR, and UV spectrosopy, mass spectrosopy, chromatography, thermal analysis, and combination of techniques.


4561 Intermediate Physical-Organic Chemistry (3) F Prereq.: CHEM 2262 or 2462 and 3492. Topics in kinetics, reaction mechanisms, applications of quantum mechanics to organic chemistry, and related topics in physical-organic chemistry.

4562 Intermediate Organic Chemistry (3) F Prereq.: CHEM 2262 or 2462. Advanced treatment of synthesis, reaction mechanisms, and related topics in structural and synthetic organic chemistry.

4563 Problems in Organic Structure Elucidation (3) Prereq.: CHEM 2262 or 2462 and 3492. Focus on interpretation of multiple types of NMR spectra, mass spectra or other spectra relevant to structure elucidation; extensive utilization of actual spectra in problem solving sessions.

4564 Advanced Organic and Inorganic Laboratory (3) Prereq.: CHEM 3452 or equivalent (1 hr. lecture, 6 hrs. lab). Laboratory usage deposit. Organic and inorganic preparations emphasizing modern synthetic methods and modern characterization techniques.

4570 Advanced General Inorganic Chemistry (3) Prereq.: credit or registration in CHEM 3492. For advanced undergraduates and beginning graduate students. Principles in advanced inorganic chemistry; modern interpretations.

4571 Organometallic Chemistry (3) Prereq.: CHEM 2262 or 2462 and credit or registration in CHEM 3492. Chemistry and principles of metal bonds with metal to carbon sigma and pi bonds; bonding concepts, electronic structure, periodic trends, and fundamental reaction mechanisms; applications to homogeneous catalysis.

4572 Foundations of Bioinorganic Chemistry (3) S Prereq.: CHEM 3492 or BIOL 4001. Concepts of coordination chemistry, electronic structure, and physical methods used in bioinorganic chemistry.

4581 Introduction to Mathematical Chemistry (3) V Prereq.: MATH 2057 and credit or registration in CHEM 3491. Mathematical methods of chemistry, with application to selected chemical problems.

4594 Introduction to Quantum Chemistry (3) V Prereq.: CHEM 3491 and MATH 2057. Basic ideas of quantum mechanics; application to atomic and molecular structure.

4596 Chemical Thermodynamics (3) V Prereq.: CHEM 2262 or 2462 and credit or registration in CHEM 3492. Thermodynamics of macroscopic systems, and application to systems of chemical relevance.

4597 Introduction to Statistical Thermodynamics (3) V Prereq.: CHEM 3492 and MATH 2057. Introductory quantum and classical statistical thermodynamics of some simple systems of chemical relevance.

6691 Seminar in Current Developments in Chemistry (1-3) Su only, V Prereq.: CHEM 1202 or 1422 or equivalent. For upperclassmen and junior college teachers; part of the M. N. S. degree program. May be taken for a max. of 6 sem. hrs. of credit when topics vary.

7010 Macromolecular Systems III (3) F Prereq.: CHEM 4010. Introduction to general principles of polymer science; emphasis on polymerization mechanisms and kinetics; advanced polymer synthesis techniques, including synthesis of inorganic polymers, biopolymers, and conjugated polymers.

7011 Macromolecular Systems IV (3) S Prereq.: CHEM 4011. Structure property relationships for materials such as liquid crystals, polyelectrolytes, and block copolymers; polymer nanocomposites and nanotechnology related materials.

7221 Chemical Dynamics and Kinetics (3) Prereq.: CHEM 3491 and 3492. Theories of chemical reaction rates in the gas phase and in solution; chemical dynamics; gas phase and solution kinetics; applications of kinetics and chemical dynamics to mechanistic studies; modern experimental techniques.

7251 Elementa...
Courses

2700 Introduction to Civil Engineering Practice (1)
Descriptive: Analytical statistics; correlation to monument by consent of department. 1 hr. lecture; 3 hrs. lab. Credit will not be given for this course and EVEG 2090. Students will conduct three individual projects in civil engineering applications. Basic technical and professional aspects of civil engineering education and practice.

2720 Computational Methods in Civil and Environmental Engineering I (3) Prereq.: MATH 1550. Fundamental computational numerical and statistical techniques and applications; example problems; linear algebraic equations; numerical solution of differential equations; probability distributions; hypothesis testing; confidence intervals; and multivariate regression analysis in civil engineering systems.

2730 Computational Methods in Civil Engineering II (3) Prereq.: CE 2720. Advanced numerical, probabilistic, and statistical techniques for solving civil engineering problems; linear algebraic equations; numerical solution of differential equations; probability distributions; hypothesis testing; confidence intervals; and multivariate regression analysis in civil engineering systems.

3200 Fluids Hydraulics (3) Prereq.: CE 2200 and 2720. Fundamentals of fluid mechanics applied to problems in the field of water; steady and unsteady flow in closed conduits, flow of water and air in pipes and ducts, measurement of flowing water, and computer applications. Emphasis on computer methods.

3301 Geotechnical Engineering I (3) Prereq.: GEOL 1001 or 1002, and credit or registration in CE 3350. Introduction to properties and engineering behavior of soil as a native earth material, an engineering material, and an environmental medium subject to flux and transport of liquids, gases, and contaminants; understanding of elementary physical, chemical, and biological phenomena as such phenomena influence the engineering behavior of soils.

3350 Geotechnical Engineering Laboratory I (1) Prereq.: EXST 2201, and CE 2720 and credit or registration in CE 2720. Laboratory measurement of properties, indices, and behavior of soil as an engineering material and environmental medium; testing methods to determine strength, specific shear strength testing, unconfined compression, one-dimensional consolidation, hydraulic conductivity, specific surface area, surface change, x-ray diffraction, pH-redox, and conductivity measurements.

3400 Mechanics of Materials (3) Prereq.: CE 2450 and credit or registration in CE 2720 or equivalent. Stress and strain, torsion, bending, deflections of beams, columns, statically indeterminate problems, combined stress.

3410 Materials of Mechanical Engineering (3) Prereq.: EXST 2201 and CE 2450. 3 hrs. lab. Mechanical properties and design of mechanical engineering materials and structural and machine elements.

3415 Structural Analysis I (3) Prereq.: CE 3400 and MATH 3100. Numerical determination of structural elements including beams, frames, trusses, and arches for the effects of dead, live, moving, and wind loads.

3500 Plane Surveying and Measurements (3) Prereq.: Eligibility for MATH 2057 and CE 2720. 2 hrs. lecture; 3 hrs. lab. Plane surveying theory of measurement; use of surveying equipment; field and office work for boundary surveys of real property and topographic mapping.

3600 Principles of Highway and Traffic Engineering (3) Prereq.: EXST 2201 and CE 3500 or equivalent. Basic traffic characteristics; highway capacity analysis; geometric design of highways; route location, traffic operations, and signalized intersection design.

3700 Engineering Materials Laboratory (1) Prereq.: credit or registration in CM 3500 or CE 3400 or equivalent. 3 hrs. lab. Design and properties of concrete and bituminous mixtures.

3740 Applied Hydrology (3) Prereq.: senior standing. English proficiency, and ENGL 3002 unless ROTC is elected; gpa of at least 2.0 (overall and major areas); and consent of department chair. Prerequisite or concurrent with department chair. Pragmatic approach to problems with departmental software package.

2400 Hydrology (3) Prereq.: CE 2200 or consent of instructor. Water movement from arrival on land surface until it reaches the sea overland; concept of frequency, maximum probability, rainfall, mass curves, and other statistical methods of hydrologic engineering.

2450 Ground Water (3) Prereq.: CE 2200 or consent of instructor. Occurrence, distribution, and classification of water-bearing formations; origin, discharge, and methods of evaluating direction and rate of ground water movement; ground water quality evaluation; analysis of aquifer tests, and "safe yield;" legal doctrines, side effects of aquifer development, and the economics of ground water. The use of modern hydrogeologic techniques for the determination of water-bearing formations and the utilization of water resources. The legal aspects of ground water development and control.

2600 Design of Hydrologic Systems (3) Prereq.: CE 3200, 4200, and CE 4750 or equivalent. Hydrologic design of water resources projects; maximization of benefits; analysis techniques, and design parameters.

3400 Geotechnical Engineering II: Shallow Foundations (3) Prereq.: CE 3300, 3350, and credit or registration in CE 4410. Fundamentals of geotechnics applied to design and analysis of shallow foundations, excavations, retaining structures, and slopes; selected topics on soil improvement and vibration; emphasis on computer utilization.

3410 Geotechnical Engineering III: Deep Foundations (3) Prereq.: CE 3300 and 3350. Fundamentals of geotechnics in the design and analysis of deep soil-structure systems; single piles and pile groups under axial load; caissons and piers; effects of lateral loads; computer utilization.

3420 Coastal Engineering (3) Prereq.: CE 3300 or equivalent. Engineering problems of the coastal zone; coastal processes, wave action, currents, sediment movement; environmental aspects; changes due to storms, winds; offshore soil geotechnical properties, vertical and lateral pile capacity; design principles for submarine pipelines and cables, including case studies.

4000 Principles of Steel Design (3) Prereq.: CE 3415. Analysis and design of elements of steel structures, elastic and plastic design, critical comparison of specifications with theory.

4100 Principles of Reinforced Concrete (3) Prereq.: CE 3415. Working stress and ultimate strength theories as applied to concrete structures (reinforced and prestressed), columns, slabs, and footings; experimental data and current design specifications.

4200 Principles of Prestressed Concrete (3) Prereq.: CE 4400. Analysis of reinforced concrete elements; full and partial prestressing; service ability and strength requirements; code criteria for bridges, buildings, and other structures.

4250 Principles of Wood Mechanics and Timber Design (3) Prereq.: CE 3415 or equivalent. Basic principles of mechanics, elasticity, stability, and failure as applied to wood; design methods and specifications governing the design of sawn lumber, plywood, and glue laminated structures and structural components.

4300 Structure and Wind Engineering (3) Prereq.: CE 4750, 4400, and 4410, or equivalent. Fundamental principles applied to planning, analysis, and design of structures; introduction to computer-aided design approach to solving structural engineering problems using mainframe and microcomputer software.

4340 Structural Analysis (3) Prereq.: CE 4415. Analysis of steel structures; methods of consistent deformations, elastic energy, virtual work, slope deflection, moment distribution, and matrix formulations.

4400 Advanced Mechanics of Materials (3) Prereq.: CE 3400 and MATH 2065. Mechanics of materials; emphasis on needs of students interested in structural and machine design.

4450 Hurricane Engineering (3) Prereq.: CE 3415 and credit or registration in CE 3200 or equivalent. Analysis and design of structures to resist hurricanes and other natural hazards and hazards; hurricane, wind, flood engineering; hazard phenomena and probabilities of occurrence; estimation of loads, loading provisions of major building codes and standards; damage mechanisms; design strategies for life safety and damage mitigation.

4455 Finite Element Methods (3) Prereq.: CE 3400; and either MATH 2065 or 2090 or 2070. Basic theory of finite element methods with applications to a wide class of physical problems; matrix representation of strain, stress, and material relations; principle of virtual work, discrete finite element models; numerical methods for construction of basic finite element algorithms; and solutions of physical problems by using existing finite element computer programs.

4600 Design of Bridges (3) Prereq.: CE 4410, 4750. 2 hrs. lecture; 3 hrs. lab. Design of concrete and steel bridges in accordance with AASHTO specifications; understanding of theoretical background behind the codes such as risk and reliability concepts; load rating of bridges, and hands-on bridge design using computer software and hardware; properties of fresh concrete; and design criteria for reinforced and prestressed concrete beams; practical aspects of bridge design.

4500 Geodetic and Photogrammetric Surveying (3) Prereq.: CE 3500 or equivalent. 2 hrs. lecture; 3 hrs. lab. Geodetic surveying, computer applications, image analysis and photointerpretation; and calculation and field procedures used in ground control surveys and photogrammetry.

4520 Advanced Surveying (3) Prereq.: CE 3500 or equivalent. 2 hrs. lecture; 3 hrs. lab. Geodetic surveying, simultaneous conveyances, subdivision surveys, flood plain management, state plane coordinates, solar azimuths, horizontal and vertical curves.

4530 Control Surveying with GPS (3) Prereq.: CE 3500 or equivalent surveying course. 2 hrs. lecture; 3 hrs. lab. Understanding of spatial positioning capabilities available using GPS and geodetic positioning system (GPS) receivers to determine positions and to evaluate results; topics include classical geodetic methods, geometric geodesy, GPS receivers, and static and kinematic GPS surveying, GPS computations, GPS mapping, vertical GPS, and gravimetric geodesy; lab includes demonstration and hands-on use of GPS equipment.

4550 Boundary Surveying (3) Prereq.: CE 3500 or equivalent. 2 hrs. lecture; 3 hrs. lab. Designed to prepare engineers to complete Land Surveyor Registration requirements. Procedures and laws governing surveying of boundaries. Emphasis on U. S. Land Survey System and Louisiana surveying laws and grids.

4560 Engineering Applications of Remote Sensing (3) Prereq.: consent of instructor. 2 hrs. lecture; 3 hrs. lab. Photographic and digital image processing class related to interpretation, principles, theories of remote sensing. Focus on computer engineering applications in materials, land use, energy, hydrology, transportation, geology, geomorphology, and water resources.

4600 Geometric Design of Highways and Airports (3) Prereq.: CE 3600 or equivalent. 2 hrs. lecture; 3 hrs. lab. Principles of design and practice for rural and urban highway facilities and airport installations; design criteria and controls, capacity analysis, cross-section design, selection of horizontal and vertical alignment, intersections, interchanges, and computer applications to design problems.

4620 Transportation Engineering (3) Prereq.: CE 3600 or equivalent. History, economics, and traffic characteristics of transportation systems; planning, design, construction, maintenance, and improvement of highway facilities and airport installations; design criteria and controls, capacity analysis, cross-section design, selection of horizontal and vertical alignment, intersections, interchanges, and computer applications to design problems.

4650 Advanced Water Distribution Systems (3) Prereq.: CE 3400 or equivalent. Design and application of water distribution systems; advanced design, analysis, and optimization of water distribution systems; and computer applications.
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7640 Transportation Engineering Data Collection Methods (3) Prereq.: EECS 7903, or CE 3600, or equivalent. Application of sampling theory to data collections for transportation studies; determination of sample size and sampling error; expansion of sample survey data; survey methodologies, including interviews, counting programs, mobile observer surveys, self-administered surveys. Simple panel surveys, et cetera: design of survey instruments; conduct of data collection activities; data reduction techniques.

7605 Transportation and Environment (3) Prereq.: CE 3600 or equivalent. The laws relating to environmental impact of transportation actions and preparation of environmental documents on energy consumption and traffic impacts; public participation; methods of estimating impacts of transportation projects.

7610 Traffic Engineering Operations and Control (3) F-O Prereq.: CE 3600 or equivalent. Traffic regulations, short-term pedestrian control, and control of traffic signals; application of traffic control applications to highway design and development.

7611 Intelligent Transportation Systems (3) V Theories and applications of Intelligent Transportation Systems (ITS).

7615 Advanced Highway Design and Traffic Safety (3) S-E Prereq.: CE 4600 or consent of instructor. Traffic flow theory as the principal technique of application of highway design principles, particularly as they relate to safety; analysis of accident statistics, diagnosis of high-hazard locations, risk analysis, and design principles to address high accident hazard locations; design principles of traffic calming, highway-railroad grade crossings, highway work zones, and roadway cross-sections.

7621 Mass Transit Systems (3) Prereq.: CE 3600 or equivalent. Historical development, role in society, federal participation, and institutional and legislative development of transit; description of conventional and innovative forms, and characteristics of users; planning, vehicle scheduling, environmental impact and energy consumption; system costs, pricing and financing; future systems and policies.

7635 Transportation Demand Analysis (3) S-O Prereq.: CE 3700 or equivalent. Theoretical and empirical foundation of transportation demand analysis; traffic flow behavior; travel or shipping behavior; analytical economic and supply theory; geographical context divided into urban and interurban settings; emphasis on urban analysis.

7638 Systems Analysis in Transportation (5) S-E Prereq.: EXST 7003 or equivalent. Systems approach to transportation problem solving, econometric modeling, large-scale mathematical programming and simulation; decision analysis and multivariate evaluation.

7639 Air Transportation Economics (3) F-O Prereq.: CE 3600 or equivalent. Traffic regulations, short-term pedestrian control, and control of traffic signals; application of traffic control applications to highway design and development.

7645 Transportation Systems Analysis (3) V Prereq.: CE 7630 or equivalent. Quantitative tools for analysis of transportation systems; basic network algorithms; macroscopic and microscopic traffic simulation models; dynamic traffic assignment and practice of asphalt concrete mix design for pavements and bases including specification and construction methods for hot-mixes and surface treatments.

7650 Bituminous Materials and Mixtures (3) S-O Prereq.: CE 3700 or equivalent. Laboratory, lecture; 5 hrs. lab. Properties of asphalts and tars used in bituminous materials; historical developments; properties and design of bituminous mixtures; design of asphalt concrete mix design for pavements and bases including specification and construction methods for hot-mixes and surface treatments.

7652 Transportation Engineering - Materials (3) S-O Prereq.: CE 4670 or equivalent. Earthen materials—fills and subgrades; aggregates—types, properties, and performance; introduction to asphalt and asphaltic concrete; introduction to cement and cement concrete; variability, OC Curves; stabilization principles and practices; unsalted roads.

7655 Pavement Materials Characterization (4) F-O Prereq.: CE 3700 or equivalent. 3 hrs. lecture; 3 hrs. lab. Laboratory and field test methods for determining engineering properties of pavement materials; interpretation of test data for selecting property values; use of fundamental engineering properties in design and analysis of pavement response to environment; use of fundamental properties in design.


7673 Pavement Maintenance and Rehabilitation (3) S-E Prereq.: CE 3700 or equivalent. Concepts of pavement maintenance and rehabilitation; pavement evaluation techniques; maintenance versus rehabilitation versus replacement alternatives.

7670, 7701 Special Topics in Civil Engineering (3) Prereq.: permission of department. Each course may be taken for a max. of 6 hrs. of credit. Specialized civil engineering areas.

7720 Numerical and Matrix Methods in Civil Engineering (3) Prereq.: CE 3700 or equivalent. Application of computer codes to structures, soil mechanics, transportation, water resources, and other civil engineering areas; matrix analysis of differential equations; eigen values, eigenvectors, and canonical forms; use of finite differences; high-speed computational techniques.

7740 Master’s Report (3) Comprehensive report with oral defense subject approved by the major professor. 7750 Seminar (1) All graduate students are expected to enroll every semester. Only one semester hour of credit will be allowed toward degree. Pass-fail grading.

8000 Thesis Research (1-12 per sem.) "S"/"U" grading.

9000 Dissertation Research (1-12 per sem.) "S"/"U" grading.

CLASSICAL STUDIES • CLST

General education courses are marked with stars (*). 1080 Survey of Communication Science and Disorders (3) For students interested in the study/teaching of language, Anatomical, physiological, and behavioral basis of normal and disordered verbal communication.

2050 Introduction to Language (3) Linguistic study of the principal interrelated levels of language structure: phonetics, phonology, morphology, syntax, semantics; related topics such as writing systems and dialects.

2051 Introduction to Manual Communication (4) 3 hrs. lecture; 2 hrs. lab. Basic linguistic structure, educational and therapeutic aspects of language acquisition and uses in manual communication systems; American Sign Language as well as English-based systems.

2081 Introduction to Communication Disorders (3) Required initial course for undergraduates concentrating in speech pathology and audiology. Observations in Speech and Hearing Clinic required. Processes involved in speech production; definition, description, and incidence of speech and hearing disorders; overview of the profession, including related professionals, job opportunities, publications, professional associations, and certification.

4150 Phonetics (4) Prereq.: COMD 2050. 3 hrs. lecture; 1 hr. lab. Also offered as LING 4150. Principles of phonemics; articular and phonetic phonetics; description and classification of sounds; transcription at different levels of detail; production and perception.

4153 Acoustics of Speech and Hearing (3) Prereq.: COMD 2050 or equivalent. Also offered as LING 4153. Production, transmission, and perception of speech acoustics in communication; acoustic phonetics and psychoacoustics.

4190 Introduction to Audiology (3) Prereq.: COMD 2081, 4153. Interaction of hearing and speech abilities, effects of hearing loss on speech and language development, types of hearing loss and evaluation processes.

4250 Anatomy and Physiology of Speech and Hearing (3) Prereq.: COMD 2050 or equivalent. Historical development of the organ of hearing, and the role of the ear in the sensation of hearing.

4380 Speech and Language Development (4) Also offered as LING 4380. 3 hrs. lecture; 1 hr. lab. Language acquisition and development, language and cognitive development, verbal learning, and structural properties of speech to the normal speaker and the normal child.

4581 Basic Articulation Disorders (3) Prereq.: COMD 2081. Factors in speech and language disorders such as development, etiology, evaluation and treatment of disorders.

4582 Basic Language Disorders of Children (3) Prereq.: COMD 4380 or equivalent. Evaluation of childhood speech and language disorders.
4383 Basic Fluency Disorders (3) Prereq.: COMD 4381 or equivalent. Study of neuroanatomical and physiological bases of language and speech disorders; normal and pathological development of articulation and phonology. 

4384 Basic Voice Disorders (3) Prereq.: COMD 4382 or equivalent. Technique for evaluation and management of aural rehabilitation. 

4385 Basic Voice Disorders (3) Prereq.: COMD 4383, 4384, or 4653. Stuttering and allied disorders; emphasis on symptomatology, testing, rehabilitation and prevention.

4386 Basic Voice Disorders (3) Prereq.: COMD 4383, 4384, or 4653. Stuttering and allied disorders; emphasis on symptomatology, testing, rehabilitation and prevention.

4387 Auditory Rehabilitation in Children (3) Prereq.: COMD 4153, 4190. Methods of management including modes of communication, auditory and speech-reading training, amplification issues, early identification and intervention, and educational placement.

4681 Clinical Preparation and Observation Laboratory (1) 2 hrs. lab. For majors in communication sciences and disorders. Study of clinic rules and procedures, code of ethics; observation of various types of therapy and evaluation.

4682 Introduction to Clinical Practicum (2) F,S For majors in communication sciences and disorders. Techniques for test administration, therapeutic methods, report writing, counseling/conference, behavior management.

4683, 4684, 4685 Clinical Practice: Therapeutic Techniques (1-6 each) Prereq.: COMD 4882 and credit in course work related to practicum-specific speech, language, learning, and attention. May be taken for a max. of 8 sem. hrs. of credit each. On- and off-campus practicum in speech, language, and hearing disorders.

4694 Clinical Practicum in a Medical Environment (1-4) Prereq.: consent of instructor. Speech and/or audiology practicum in a hospital or medical practitioner's office.

4750 Independent Research in Speech Science or Linguistics (1-3) Prereq.: credit or enrollment in the course dealing with human communication. May be taken for a max. of 6 hrs. of credit. Also offered as LING 4750. Readings in speech science or linguistics directed by a senior faculty member.

4751 Special Topic in Auditory Disorders (3) May be taken for a max. of 6 hrs. undergraduate or graduate credit when topics vary.

7151 Speech Science (3) Motor and articulatory phonetics, including palatography, acoustic phonetics, and aspects of signal detection and perception.

7152 Instrumentation and Methods for Speech and Hearing (4) Prereq.: COMD 4153 or equivalent. 5 hrs. lecture; 2 hrs. lab. Instrumentation techniques for assessment and research in speech and hearing; both theory and application are emphasized.

7153 Research Design in Communication Science and Disorders (3) Prereq.: EXST 4045, 4060 or equivalent. Empirical research design problems in speech and hearing; emphasis on measurement validity and reliability.

7191 Hearing Aids (0-12) Prereq.: COMD 4250. Auditory transmission and processing from the outer ear to the central nervous system as it relates to sensory/motor and cognitive systems; augmentative communication assessment; intervention guidelines and procedures.

7194 Hearing Aids: Auditory and Vestibular Function (3) Prereq.: COMD 7191, 7490. Electrodiagnostic analysis of hearing aids, earmold acoustics, selection and evaluation procedures, special devices, and problems in communication and speech processing.

7280 Neuroanatomical Bases of Speech and Hearing (3) Prereq.: BIOL 2160 and COMD 4250 or equivalent. Study of neuroanatomy and physiology of the central nervous system as it relates to sensory/motor and cognitive processes underlying speech and hearing.


7381 Language and Voice Disorders (3) Prereq.: COMD 4382. Language disorders and the communicative aspect of language; current research and treatment models for language intervention; relationship between language and learning; aged child.

7382 Voice Disorders (3) Prereq.: COMD 4384. Incidence, etiology, concomitant problems; assessment and management of vocal dysphonias, aphonia, and laryngectomies.

7383 Cleft Palate/Orofacial Disorders (3) Prereq.: COMD 4380, 4381. Orofacial anatomy, physiology, and embryology; classification of orofacial cleft; surgical, dental, speech, hearing, and psychosocial concomitants and their management.

7384 Early Communicative Intervention (3) Prereq.: COMD 4382 or equivalent. Prereq.: consent of instructor. For alternate speech and language intervention approaches (prevention, evaluation, direct stimulation of child-caregiver interactions) and service delivery models (home-based, center-based).

7385 Neurological Bases of Speech and Hearing (3) Prereq.: COMD 4250, 4381, and 7280; or equivalent. Physiological and anatomical bases of dysarthria, apraxia, and related speech disorders due to neuropathology in the adult population; emphasis on diagnosis, description, and clinical management.

7386 Introduction to Augmentative/Alternative Communication (3) Prereq.: consent of instructor. Overview of augmentative and alternative communication systems; assessment and intervention processes; pragmatics of interpersonal communication involving individuals who use AAC systems; augmentative communication assessment; intervention guidelines and procedures.

7387 Fluency Disorders II (3) Prereq.: COMD 4383 or equivalent. Etiology and nature of speech fluency disorders.

7389 Communicative Rehabilitation of Severely/Multiply Handicapped Individuals (3) Medical bases of severely handicapping conditions; neurological and developmental aspects of communication systems; assessment and intervention processes; pragmatics of interpersonal communication involving individuals who use AAC systems; augmentative communication assessment; intervention guidelines and procedures.

7400 Measurement and Diagnosis of Communication Disorders (3) Psychological and behavioral measurement of communicative functioning and treatment planning for common speech/language disorders.

7490 Diagnostic Audiology I (1-3) Prereq.: COMD 7191. Behavioral tests and middle-ear measurements in relation to test purpose, selection of assessment strategies, procedures, and interpretation.

7491 Diagnostic Audiology II (1-3) Prereq.: COMD 7490 or consent of instructor. Auditory evoked potentials and electrocochleography in relation to purpose, scientific basis, assessment strategies, procedures, and interpretation using cross-check principles.

7509 Auditory Research Project (1-3) Prereq.: COMD 7192. Special needs of the adult hearing-impaired individual (communicative, social, and vocational); hearing aid use and components of the rehabilitation process.

7683, 7684, 7685 Graduate Clinical Practicum (1-6 each) Prereq.: credit or enrollment in the course dealing with the special disorder in which practice is to be taken. May be repeated for credit in obtaining the clock hours necessary for certification by American Speech-Language-Hearing Association. Only 6 sem. hrs. of academic credit may be counted toward the degree, although all practicum hours count for professional certification. 2-8 hrs. clinic. On- and off-campus graduate practicum in specific areas (articulation, language, fluency, voice, aural rehabilitation, early intervention, diagnostic audiology, oral-facial anomalies, neurological disorders).

7754 Psycholinguistics: Linguistic Perspectives (3) Prereq.: ENGL 1111 or equivalent. Also offered as ENGL 7754 and LING 7754. Theories of constituent structure and their application; discourse/semantic principles and their application; speech errors and language change.

7755 English for Speakers of Other Languages: Methods and Materials (3) Also offered as LING 7755. Problems in teaching English to speakers of other languages; assessment and production strategies for spoken language; discourse analysis, theoretical foundations, second language acquisition; reading, classifying, and teaching syllabus; work with international students.

7756 Independent Research: Phonetics and Linguistics (1-3) Prereq.: consent of instructor. May be taken for a max. of 6 sem. hrs. of credit. For advanced graduate students who wish to pursue research on special problems exclusive of thesis or dissertation. Also offered as LING 7756.

7780 Seminar in Communication Disorders (3) Prereq.: consent of instructor. May be repeated for credit. Selected topics pertaining to diagnosis of communicative disorders.

7781 Independent Research: Speech Science (1-3) Prereq.: consent of instructor. May be taken for a max. of 6 sem. hrs. of credit. For advanced graduate students who wish to pursue research on special problems exclusive of thesis or dissertation.

7782 Individual Research in Communication Disorders (1-3) Prereq.: consent of instructor. May be taken for a max. of 6 sem. hrs. of credit. For advanced graduate students who wish to pursue research on special problems exclusive of thesis or dissertation.

7783 Dysphagia (3) Prereq.: COMD 4250, 7280. Characteristics, assessment, and management of swallowing disorders in children and adults occurring secondary to neurological or structural deficits.

7789 Seminar in Hearing Disorders (3) Prereq.: consent of instructor. May be repeated for credit. Exploration of current professional/scientific topics in clinical practice/research.

7791 Independent Research: Audiology (1-3) Prereq. of instructor. May be taken for a max. of 6 sem. hrs. of credit. For advanced graduate students who wish to pursue research on special problems exclusive of thesis or dissertation.

7850 Experimental Phonetics (3) Prereq.: PhD standing and permission of instructor. May be taken for a max. of 9 hrs. of credit when topics vary. Current research and modeling of the quantitative representation of human speech.

7853 Psychacoustics (4) Prereq.: COMD 7191. 3 hrs. lecture; 3 hrs. lab. Admission to PhD program required. Classic and contemporary readings about perception of sound; examination of psychoacoustical methods, signal detection theory, frequency processing, pitch perception, intensity processing, binaural hearing and temporal acuity.

7854 Physiological Acoustics (3) Prereq.: COMD 7191 and admission to doctoral program. Auditory system structure and function; physiological acoustics and psychoacoustic correlates.

7880 Advanced Seminar in Language Disorders (3) Theorize, contemporary research related to language disorders as a method of inquiry and intervention; evaluation of research methodology.

7882 Advanced Individual Research in Communication Science and Disorders (1-6) Prereq.: admission to PhD program and consent of instructor. May be taken for a max. of 6 hrs. of credit. Research topics ancillary or extra- nuous to dissertation research.

9000 Thesis Research (1-12 per sem.) "S"/"U" grading.

9000 Dissertation Research (1-12 per sem.) "S"/"U" grading.

COMMUNICATION STUDIES * CMST

General education courses are marked with stars (*).

1061 Fundamentals of Communication (3) The practice of speech, listening, and development of communication theory; extensive practical and performance applications of communication skills in addition to lectures and readings.

1150 Introduction to Communication Studies (3) Not a substitute for CMST 1061. Survey of fundamental principles and subject areas in the study of human communication.

1150 Interpersonal Communication (3) Theories and research in human communication; one-to-one interactions.
Courses

2012 Introduction to Film (4) 3 hrs. lecture; 5 hrs. lab. **Natural and human functions in a mode of communication; basic language of cinema; selected films screened and studied.**

2015 Introduction to Performing Literature (3) The study of literature through performance: reading, analysis, and performance of prose, poetry, and drama.

2060 Public Speaking (3) Theory and skills needed by the communicator; critical components of public speaking; analysis of the speech; analysis of other speakers and practice in speaking.

2061 Communication for Business and the Professions (3) A seminar in the business college; preparation and practice in public speaking and written communication in business and professional settings. May be repeated for a total of 6 credit hours when topics vary.

2062 HONORS: Contemporary Public Address (3) Effectiveness of public address in contemporary society; use of oral communication to influence the mass media. May be repeated for a total of 6 credit hours when topics vary.

2063 Topics in Film Genres (4) 3 hrs. lecture; 3 hrs. lab. Historical, cultural, artistic, and technological development of the film medium; selected films screened and studied.

2064 Communication and Power (3) Relationship of various communication practices and social control; use of discourse to create and subvert power in dyads, groups, organizations, and society.

2067 Rhetoric of the Contemporary Media (3) Various forms of media (television, pulp novels, pop music); their promotion of cultural values and modes of conduct; study of major rhetorical critics and theorists.

2068 Conversation (3) Analysis of verbal processes in conversation; emphasis on theory and research concerning language, messages, and social interaction.

2069 Communication Research (3) Techniques and procedures in communication research; topic development, research design, data collection, data analysis; examination of research in communication.

2104 Communication and Gender (3) 3 hrs. lecture; 3 hrs. lab. May be taken for a max. of 6 hrs. of credit when topics vary. Gender differences, sex roles, and communication in different cultures.

2118 Family Relationships (3) Theories and research on marital and family relationships; development in platform speaking.

2144 Group Performance (3) Communication-centered study of performance and theatricality in daily life.

2160 Advanced Public Speaking (3) Prereq.: grade of "B" or better in CMST 1061 or 2060. Refined development of oral communication skills.

2161 Communication and Power (3) Relationship of various communication practices and social control; use of discourse to create and subvert power in dyads, groups, organizations, and society.

2170 Rhetoric of the Contemporary Media (3) Various forms of media (television, pulp novels, pop music); their promotion of cultural values and modes of conduct; study of major rhetorical critics and theorists.

2171 Conversation (3) Analysis of verbal processes in conversation; emphasis on theory and research concerning language, messages, and social interaction.

2172 Communication Research (3) Techniques and procedures in communication research; topic development, research design, data collection, data analysis; examination of research in communication.

2174 Communication and Gender (3) Prereq.: CMST 2060 or equivalent. Gender differences, sex roles, and sexual stereotypes in communication.

2175 Intercultural Communication (3) Prereq.: CMST 2060 or equivalent. Theories and research of how people of different cultures communicate; emphasis on developing cultural sensitivity and foundations for increased effectiveness appropriate to a multicultural society.

2176 Rhetoric and Civilization (3) Role of oratory in the formation, mobilization, and destruction of human communities from ancient to modern times.

2180 Independent Study (1-3) May be taken for a max. of 3 hrs. of credit on a communication topic not duplicated in regular course offerings. Course may be taken for a max. of 6 hrs. of credit in the major.

2185 Selected Topics in Speech (3) Prereq.: consent of instructor. May be taken for a max. of 6 hrs. of credit when topics vary. Consult Schedule of Classes for current offerings.

2192 Communication and Relationships (3) Prereq.: CMST 2060 or equivalent. Survey of theories of interpersonal communication and misunderstandings in relational development and deterioration; more effective communication.

2193 Political Communication (3) Factors and strategies in contemporary political communication in the U.S.; emphasis on electronic communication, candidates and images, campaign management, speech making, and advertising; study of recent and current elections.

2194 Organizational Communication (3) Prereq.: CMST 2060. Theories surrounding how people communicate within the organizational setting, as well as how communication relates to the process of organizing; examines relevant theories and research.

2195 Communication and Cultural Studies (3) Prereq.: at least three of the following—CMST 2010, 2040, 2063, 2064, 2012, 3040, 3107, 3900. Critical studies of contemporary culture; emphasis on popular culture and media texts, audiences, and institutions.

2196 Health Communication (3) Communication in the health care context; application to pragmatic problems in the healthcare industry; critical examination of health messages in popular culture.

2197 Communication and Leadership in Teams (3) Analysis of communication processes in groups and teams; includes examination of theories and research findings; addresses individual, team participation, leadership, and decision-making skills.

2198 Contemporary Theories of Communication (3) Current methods and theories of human communication; research literature on the influence of new developments in communication; consequences of messages and their variations; how messages interact with communicators to produce behavioral outcomes.

2199 Modeling Communication Within Marital and Family Relationships (3) Prereq.: CMST 2060. Also offered as CMST 3199. Role of communication within marriage and other family arrangements.

2201 Nonverbal Communication (3) Prereq.: CMST 2060 or equivalent. Nonverbal message systems such as kinesics and proxemics; relationship between nonverbal and verbal communication.

2202 Analysis and Performance of Poetry (3) Prereq.: CMST 2060. Advanced study of selected forms, styles, and genres of oral and written poetry through solo and group performance.

2203 Analysis and Performance of Narrative (3) Prereq.: CMST 2040. Advanced study of selected novels, short stories, and oral narratives through solo and group performance; stylistic and rhetorical analyses.

2204 Selected Topics in Performance Studies (3) Prereq.: CMST 2060 or equivalent. May be taken for a max. of 6 hrs. of credit when topics vary.

2205 Performance of Southern Fiction (3) Prereq.: CMST 2040 and 4141, or equivalent. Types of speech criticism, criteria, and methods of advanced approaches to interpersonal communication, including developmental approaches, cognitive and relational theories.

2206 Seminar: Contemporary Theories of Speech Communication (3) Prereq.: CMST 2199 or equivalent. May be taken for a max. of 6 hrs. of credit when topics vary. Criticism, interpretation, and validation of specific theories in speech communication; different theoretical perspectives.

2207 Seminar: Research in Communication Theory (3) Prereq.: CMST 2199 or equivalent. May be taken for a max. of 9 sem. hrs. credit. Research literature on advanced topics in communication theory.

2208 Independent Research: Communication Theory and Research (1-3) Prereq.: consent of instructor. May be taken for a max. of 6 sem. hrs. credit. For advanced graduate students who wish to pursue research on special problems exclusive of thesis or dissertation.

2209 Seminar: Theories in the History of Performance (3) Historical development of select Western performance practices outside the institution of theatre; methods of historical research in performance studies.

2210 Independent Research: Performance Studies (1-3) Prereq.: consent of instructor. May be taken for a max. of 9 sem. hrs. credit. For advanced graduate students who wish to pursue research on special problems exclusive of thesis or dissertation.

2211 Seminar: Contemporary Theories and Research in Performance Studies (3) May be taken for a max. of 12 hrs. of credit when topics vary. Topics related to solo and group performance of literature; performance theory and criticism; interrelationships of performance and culture; experimental performance forms; qualitative research methods.

2212 Theory and Performance of Narrative Discourse (3) Prereq.: CMST 4141, or equivalent. Narrative theory in literature and performance; rhetoric of narrative discourse.

2213 Seminar: Evolution of Rhetorical Theory, Classical Period (3)

2214 Seminar: Rhetorical Criticism (3) Prereq.: consent of instructor. Types of speech criticism, criteria, and measures of effectiveness of public address.

2215 Seminar on Southern Oratory (3) Prereq.: CMST 2060 or 2063. Oratory from 1590 to 1860 in the South; speeches of outstanding American statesmen, lawyers, and clergymen and sources of their effectiveness.

2216 History and Criticism of American Public Address (3) Prereq.: CMST 2060 or 2063. American public address from 1860 to the present; speeches of outstanding American statesmen, lawyers, and clergymen and sources of their effectiveness.

2217 Seminar on Southern Oratory (3) Prereq.: CMST 2060 or 2063. Oratory from 1590 to 1860 in the South; speeches of outstanding American statesmen, lawyers, and clergymen and sources of their effectiveness.

2218 Seminar on Southern Oratory (3) Prereq.: CMST 2060 or 2063. Oratory from 1590 to 1860 in the South; speeches of outstanding American statesmen, lawyers, and clergymen and sources of their effectiveness.

2219 Seminar on Southern Oratory (3) Prereq.: CMST 2060 or 2063. Oratory from 1590 to 1860 in the South; speeches of outstanding American statesmen, lawyers, and clergymen and sources of their effectiveness.
9000 Dissertation Research (1-12 per sem.)

7965 Independent Research: Topics in Rhetoric and Public Address (5-12 per sem.)

9800 Special Topics in Communication (1-6 per sem.)

7602 Research Techniques in Comparative Biomedical Sciences (1-6) Prereq.: consent of instructor. May be taken for a max. of 8 hrs. of credit when topics vary. Specialized coverage of a variety of topics related to selected scientific disciplines in the department.

7300 Seminar in Communication Theory (1) Prereq.: consent of instructor. May be taken for a max. of 12 hrs. of credit when topics vary. Selected problem that goes beyond present advanced course offerings in public address; topic to be announced.

7603 Development of Contemporary Rhetorical Theory (3) P: Instructor's consent. May be taken for a max. of 12 sem. hrs. of credit when topics vary. Critical analysis of rhetorical strategies in applied disciplines; evolution of science and surrounds; impact on people and social institutions; the Internet, e-mail, news groups, ftp, telnet, World Wide Web, multimedia, word processing, spreadsheets, databases.

120 Ethics in Computing (1) For majors only.

Introduction to ethical issues in computer science as it relates to the computing professional, licensing, intellectual property, conflicts of interest, freedom of information and privacy, security.

124 Programming With Applications in Statistics (3) Prereq.: MATH 1021 or placement in MATH 1021 or 1025 or 1431 or 1550. Credit will not be given for both this course and CSC 1248 or 1240 or 1320. Fundamentals of algorithm development, program design, and programming using a high-level language.

125 Computer Science I with C++ (3) Prereq.: credit or registration in MATH 1550 or credit in MATH 1435. Credit will not be given for both this course and CSC 1248 or 1240 or 1320. Fundamentals of algorithm development, program design, and programming using an object-oriented language.

124 Computer Science II with C++ (3) Prereq.: CSC 1251 or MATH 1550 or registration in CSC 1248. Credit will not be given for both this course and CSC 1248 or 1250 or 1325. For majors only.

Introduces applications of computer science as it relates to majors only.

125 Computer Science I with C++ (3) Prereq.: credit or registration in MATH 1550 or credit in MATH 1435. Credit will not be given for both this course and CSC 1248 or 1240 or 1320. Fundamentals of algorithm development, program design, and programming using an object-oriented language.
Courses

2700 Special Topics in Computer Science (1-3) Prereq.: CSC 1254 or 1351 or permission of department. May be taken for a max. of 6 hrs. of credit when topics vary. Total credit earned in CSC 2700 and 4700 should not exceed 9 hrs.

2970 Special Topics in Computer Science (1-3) Prereq.: CSC 1254 or 1351 or permission of department. May be taken for a max. of 6 hrs. of credit when topics vary. Total credit earned in CSC 2700 and 4700 should not exceed 9 hrs. Specialized areas of current interest in computer science.

3302 Advanced Data Structures and Algorithm Analysis (3) Prereq.: CSC 1254 or 1351 and credit or concurrent enrollment in CSC 2259 or EE 2720. Design and utilization of formal ADT representations, especially those on lists, sets, and graphs; time and space analysis of recursive and nonrecursive algorithms, including graph and sorting algorithms; algorithm design techniques.

3501 Computer Organization and Design (3) Prereq.: CSC 2280 or CSC 3102. An introduction to computer organization and design for both the hardware and software components of a computer, including hardwired, microprogrammed, and microprocessor structures. Techniques for analyzing the performance of computer systems.

4101 Programming Languages (3) Prereq.: CSC 3102. Principles of programming language design; specification of syntax and semantics; underlying implementation of block-structured languages; dynamic memory allocation for strings, lists, and arrays; imperative versus applicative programming; logic programming; modern programming languages.

4303 Independent Undergraduate Research (1-3) Prereq.: consent of department chair. May be taken for a max. of 4 hrs. of credit. Individual readings, conferences, and research experience in an area of interest to the student.

4304 Operating Systems (3) Prereq.: CSC 3102. Design techniques, process management, processor scheduling; deadlock, memory management, secondary memory management, input-output management, and OS interfaces.

4304 Systems Programming (3) Prereq.: CSC 4101. Batch process systems, their components, operating system architectural services and limitations; implementation techniques for parallel processing of input-output and interrupt handling; overall structure of multiprogramming systems; multiprocessing configurations; addressing techniques, core management, file system design and management, system accounting, and other user-related services; traffic control, interprocess communication, design of system modules, and interfaces; system updating, documentation, and operation.

4320 Software Systems Development (3) Prereq.: CSC 3102. Software requirements analysis, design representation, programming methodologies; verification, validation, maintenance, and software planning.

4351 Compiler Construction (3) Prereq.: CSC 4101 or equivalent. Program language structures, translation, loading, execution, and storage allocation; compilation of simple expressions and statements; organization of compiler input, output, and run-time symbol tables, lexical scan, syntax scan, object code generation, error diagnostics, object code optimization techniques, and over-all compiler organization.

4352 Applied Interactive Graphics (3) See ME 4573.


4362 Advanced Numerical Methods (3) Prereq.: CSC 2533 or equivalent. Advanced treatment of numerical computation in practice; methodology for enhancing the efficiency, accuracy, and stability of elementary numerical techniques; emphasis on extrapolation.

4370 Software Modeling Techniques (3) Prereq.: CSC 3700 or 3800 or equivalent. Design and implementation of advanced software techniques for complex/high quality software including static/dynamic software models and project management models.

4402 Introduction to Database Management Systems (3) Prereq.: CSC 3102. Network, hierarchical, and relational, and entity-relationship models; data definition, manipulation languages, and database recovery; querying model; relational database design theory, efficient query evaluation, elementary query optimization techniques.

4444 Artificial Intelligence (3) Prereq.: CSC 4101. Theorem proving and inference techniques, production systems, knowledge representation, approximate reasoning, nonmonotonic reasoning, machine language understanding, scene analysis, planning, game playing, and learning.

4446 Fuzzy Sets and Applications (3) Prereq.: permission of instructor. Basic concepts of fuzzy sets, fuzzy operations, fuzzy logic, and fuzzy rule-based systems; applications to engineering and decision making; emphasis on systematic methodology to construct fuzzy applications; software and hardware tools in solving real-world problems using fuzzy-set techniques.

4501 Computer Networks (3) Prereq.: CSC 4103. Introduction to local, metropolitan, and wide area networks using the standard OSI framework: introduction to the Internet protocol suite and network tools and programming; discussion of various networking technologies.

4601 Computer and Network Security (3) Prereq.: CSC 3102. Information security’s role, threats, elements of cryptography, authentication, and technologies for secure systems and services.

4602 Fundamental Computer Science for Teachers (3) Prereq.: ELRC 4507 (or prior programming experience) and credit in an education methods course numbered 3000 or above. Also offered as ELRC 4512. Advanced study of data specification, storage and retrieval techniques, association rule learning; time series and forecasting; clustering and classification; and other topics to prepare students to teach computer science in secondary schools.

4700 Special Topics in Computer Science (3) Prereq.: CSC 3102 or permission of instructor. May be taken for a max. of 9 cr. hrs. when topics vary. Total hrs earned in CSC 2700 and 4700 should not exceed 9 hrs. Specialized areas of current interest in computer science.

4890 Introduction to Theory of Computation (3) Prereq.: CSC 2259. Introduces finite automata, regular expressions and languages, pushdown automata and context-free languages; selected advanced language theoretical topics; emphasis on technique.

4999 Advanced Independent Undergraduate Research (1-3) Prereq.: consent of department chair. May be taken for a max. of 4 hrs. of credit. Individual readings, conferences, and research experience in an area of interest to the student.

6100 Advanced Elements of Computer Science for Teachers (3) Prereq.: permission of instructor. Includes advanced course or knowledge of a programming language required. Advanced techniques of programming using a high-level, structured language; data structures and computer systems software.

7000 Computer Architecture (3) Prereq.: CSC 7002 or equivalent. Background in electronics not required. Functional architecture of modern digital computer systems; detailed description of instruction set implementation with monoprocessor and multiprocessor hardware; structure of computer systems.

7101 Programming Language Structures (3) Prereq.: CSC 4101. Advanced study of data specification, storage management, and control in programming languages, which includes coverage of formal specification languages; languages for concurrent processing; languages that support programming environment techniques, and in-depth study of applicable languages.

7103 Advanced Operating Systems (3) Prereq.: CSC 4101. Concurrent programming; shared memory, communication, and operation-oriented models; concurrent, distributed, and network programming; distributed operating systems; synchronization and deadlock detection in distributed systems.


7355 Software Engineering (3) Prereq.: CSC 4310 or equivalent. Formal specification techniques, design techniques, abstraction, information hiding, modularity, software testing, automated testing tools, maintainability factor.

7300 Theory of Computation I (3) Prereq.: CSC 4890. Algorithms, computability, decidability, enumerability, formal languages and Church’s thesis; Turing machines, primitive recursive functions, u-recursion functions; undecidable predicates.

7301 Theory of Computation II (3) Prereq.: CSC 7200. Theory of computation problems for complexity classes, NP, PSPACE, and NL; characterization of polynomial-time by alternating log space Turing machines and log space Turing machines by auxiliary pushdown stores; time-space trade-offs and combinatorial problems.

7355 Advanced Software Engineering (3) Prereq.: CSC 7135. Formal testing, validation and verification techniques; in-depth study of formal specification languages and techniques.


7351 Advanced Compiler Design Theory (3) Prereq.: CSC 4331 or equivalent. Automatic generation of LL (1), LR (1), LALR (1) parsers, implementation of high-level control structures, error recovery, optimization of branch, local code optimization using directed acyclic graphs, loop optimization, global data flow analysis, and object-code optimization.

7350 Graph Algorithms (3) Prereq.: MATH 4171 or equivalent. Graph layout algorithms; networks; application of network flow techniques to scheduling, assignment problems and NP-completeness; dynamic graph drawing.

7373 Algorithms for Parallel and Distributed Computing (3) Prereq.: CSC 7135. Parallel algorithms for searching, sorting, matrix processing, network optimization, and other problems; implementation and efficient measurement of the algorithms on different machines, and VLSI systolic arrays.

7375 Computational Models for Mobile Robots (3) Prereq.: CSC 7310. Computational tools for design, analysis, and implementation of algorithms for robotic applications; existing computational paradigms, constraint representation and real-time modeling for robotic vision; image understanding, path planning, autonomous learning, and sensor-fusion problems for mobile robots.

7380 Computational Vision (3) Prereq.: CSC 7310 or equivalent. Computational techniques from computer vision, human and machine combinatorics, probability theory, and artificial intelligence; visual recognition and classification.

7382 Computational Geometry and Computer-Aided Design (3) Prereq.: CSC 7310 or equivalent. Data structures and algorithm design techniques for geometric problems; geometric searching, convex hulls, Voronoi diagrams; proximity, intersections of geometric objects; applications of computational geometry.

7381 Computational Aspects of VLSI CAD (3) Prereq.: CSC 7300 or equivalent. Overview of VLSI design and fabrication process; abstract model of VLSI; combinatorial optimization algorithms; circuit partitioning; placement and floor planning; global routing; detailed routing; and circuit compaction.

7402 Data Base Management Systems (3) Prereq.: CSC 4892. Implementation of database systems (physical model and its mapping to conceptual model) and analysis of data structures and their influence on performance, concurrency control, distributed databases; advanced database systems.

7420 Parallel and VLSI Computing (3) Prereq.: CSC 3102. Theoretical aspects of the design and analysis of algorithms for parallel computation; physical implementation: pipelined and chip.

7420 Data Mining and Knowledge Discovery (3) Prereq.: CSC 7533. Introduction to data mining and knowledge discovery in databases; data cleaning, statistical techniques, association rule mining, clustering, and spatial data mining algorithms, clustering algorithms, data visualization.

7443 Scientific Information Visualization (3) Prereq.: CSC 7800 or equivalent. Foundations of visualization principles, techniques, and tools used for explaining and understanding information; includes visualization algorithms, techniques, and applications.
7444 Advanced Artificial Intelligence (3) Prereq.: CSC 4444. Temporal and voice-control logic; truth maintenance systems; probabilistic reasoning; deductive databases; automated learning, planning, and tutoring; story understanding; and intelligent expert systems.

7446 Soft Computing (3) Prereq.: CSC 4446 or permission of instructor. Interplay of three paradigms in soft computing: fuzzy sets and fuzzy logic; neural computing, and evolutionary programming; applications in image processing, diagnosis and classification, decision making, and other areas; software and simulation tools for problem solving in the soft-computing arena.

7500 System Modeling and Computer Simulation (3) Prereq.: CSC 2563 or equivalent. Construction and use of mathematical models of systems; simulation of discrete-event systems; use of software and simulation tools for problem solving; modeling and evaluation of systems using simulation software.

7501 Advanced Computer Networks (3) Prereq.: CSC 4501. Network protocols and algorithms; network design and management; multimedia and distributed systems; network security.

7502 Advanced Computer and Network Security (3) Prereq.: CSC 4103. Radio and wireless security; wireless standards; freehand sketching; three-dimensional forms and space; design elements and techniques; and uses of computer-aided design systems.

7540 Distributed Systems (3) Prereq.: CSC 4103. Networking and inter-networking; client-server model; remote procedure calls; processes and processors in distributed systems; distributed file systems; transaction-processing techniques; and distributed systems for high performance computing.

7560 Computational Methods (3) Prereq.: CSC 4562 or equivalent. Synthesis, implementation, and analysis of numerical algorithms; algorithm concept introduced in context of abstract schemes of solution.

7600 High Performance Computing I (3) V Prereq.: CSC 4562 or consent of instructor. Fundamental computational techniques required for scientific computing; important algorithms for parallel computation; high performance computing.

7601 Design Issues in High-Speed Networks: Multicast, Pricing and Control (3) Prereq.: CSC 4501. Multicasting architectures and performance; ATM and Internet solutions; scalable reliable multicast; distributed sensor networks; Internet pricing and economics of communication; game theoretic approaches to congestion control.

7602 Wireless Networks (3) Prereq.: CSC 4501. Radio systems and ad-hoc wireless networks; relevant concepts in terms of mobility, migration, and service levels and their impact on system design; wireless network communication; packet radio techniques; ad-hoc networks; nomadic computing; issues in cellular networks; TCP/IP over wireless.

7610 High Performance Computing II (3) V Prereq.: CSC 7600. Optimization of algorithms for scientific computing; parallel computers; communication schemes for molecular dynamics; classical deterministic simulations; combinatorial optimization; algorithms for quantum molecular dynamics; scientific applications in high performance computing.

7620 High Performance Computing III (3) V Prereq.: CSC 7600 or equivalent. Basic stochastic simulation techniques for massively parallel computer systems; simulated annealing and routing algorithms.

7700 Special Topics in Computer Science (3) May be taken for a max. of 12 hrs. of credit when topics vary. Specialized areas of interest in computer science.

7701 Sensor Networking Concepts (3) Prereq.: CSC 4501 or 7501. Self-organizing sensor networks; querying, and data aggregation; routing; energy-efficient communication protocols; sensor network security.

7702 Telecommunications Networks (3) Prereq.: CSC 4501. The architecture of modern telecommunication networks; applications focused on distributed middleware architectures, and the Internet; traditional telecommunication facilities; telephone and ISDN architectures; Signal System 7; distribution of application processing in the Advanced Intelligent Nework; new frameworks for forwarding-based architecture; and proposals to generalize the existing telephony architecture.

7800 Computer Science Research Seminar (1) V May be taken for a max. of 6 sem. hrs. of credit.

9000 Dissertation Research (1-12 per sem.) V Registration in any course above CM 2211 is restricted to students admitted to a senior college with a declared CM major or minor.

1010 Construction Graphics and Nomenclature (3) Credit or registration in MATH 1550. 2 hrs. lecture; 2 hrs. lab. Graphic communication concepts and techniques relating to construction; construction drafting and methods.

1020 Engineering Graphics for Mechanical Engineering (2) 4 hrs. lab. Credit will not be given for both this course and CM 2211. Not open to students with credit in CM 2211. Conceptual, visualization, and communication of creative design concepts; introduction to engineering drafting and USA Standards Institute standards; freehand sketching; three-dimensional forms used in solution of engineering problems; use of solid modeling software in design and communication of conceptualizing.

1030 Engineering Graphics (2) 4 hrs. lab. Credit will not be given for both this course and CM 2210. Not open to students with credit in CM 2210. Conceptual, visualization, and communication of creative design concepts; introduction to engineering drafting and USA Standards Institute standards; freehand sketching; three-dimensional forms used in solution of engineering problems; use of solid modeling software in design and communication of conceptualizing.

1040 Plan and Cost Analysis for Residential Construction (3) Prereq.: CM 2121. 2 hrs. lecture; 2 hrs. lab. Interpretation of working drawings and specifications; cost estimation, building, materials, methods, and equipment for residential construction.

1211 Materials, Methods, and Equipment I (3) Prereq.: credit or registration in CM 2212. Job site planning, work methods, materials, and equipment required in building and heavy construction.

1213 Materials, Methods, and Equipment II (Heavy and Industrial Construction) (3) Prereq.: CM 2212. Continuation of CM 2212. Emphasis on both heavy and industrial equipment.

1214 Construction Planning and Scheduling (3) Prereq.: SDDS 1100 or IE 2060 and CM 2212 or IE 1002. Fundamentals of planning and scheduling techniques used in the construction industry to manage construction projects.

1300 Construction Safety (3) Construction safety relating to accident causation; contractual obligations; project management and coordination.

1301 Construction Surveying (3) Prereq.: CM 2211. 2 hrs. lecture; 2 hrs. lab. Principles of construction surveying, fundamental measuring procedures, error analysis, leveling, traverse measurements, horizontal curves, vertical curves, and earthwork calculations.


1311 Industrial Construction Estimating (3) Prereq.: CM 2211 and 2212. 2 hrs. lecture; 2 hrs. lab. Principles of estimating including quantity surveys, pricing analysis, and bid package preparation for industrial construction.

1314 Highway Construction (3) Prereq.: CM 3100. Basic fundamentals of highway construction including; earthmoving, drainage, road paving, bridge, and retaining walls; interpretation of plans, specifications; materials, methods, equipment, and estimating.

5210 Advanced Computer Applications for Construction Management (3) Prereq.: 3 hrs. of CSC 4434. Applications of software programs currently being used in the construction industry.

5300 Mechanical and Electrical Systems (3) Prereq.: CM 2212 and PHYS 2001. Mechanical and electrical systems in residential and commercial buildings; nomenclature and design consideration; emphasis on management, quality control, and installation procedures.

5300 Construction Materials (3) Prereq.: CM 2211. Fundamentals involved in design, evaluation, testing, and construction of asphalt, concrete, aggregates, steel, timber, and composites; mechanical properties of soils, compaction, and slope stability; construction of shallow and deep foundations, and retaining walls.

5350 Structural Technology I (3) Prereq.: MATH 1350 and PHYS 2001. Rigidity and deformable bodies, analysis of equilibrium under load effects; construction management majors focusing on determination of the nature, magnitudes, and internal load effects (stress and deformation) of these forces on the structural components.

5356 Structural Technology II (3) Prereq.: CM 3505. Structural design of ordinary timber, steel, and reinforced concrete buildings and bridges in accordance with proprietary design code specifications; emphasizes allowable stress design provisions to achieve safe and serviceable structural resistance to vertical and lateral load effects.

14200 Construction Administration (3) Prereq.: CM 2141, 3121 and credit or registration in CM 3500. Principles and theory of organization, ownership, contracts, insurance, bonding, and labor relations pertaining to the construction industry.

14210 Construction Laws and Legal Issues (3) Prereq.: credit or registration in CM 2210. The law of business and current legal problems, rules, and responsibilities associated with the construction industry; emphasis on legal aspects.

14220 Construction Enterprise (3) Prereq.: CM 2210 and 4200. Open to Construction Management majors only. A comprehensive study of construction management as it relates to a single construction enterprise.

14226 Special Topics in Construction Management (3) May be taken for a max. of 6 sem. hrs. of credit when topics vary. Advanced topics, current issues, or recent developments in the construction industry.

14270 Independent Study (3) Prereq.: consent of a chosen faculty member. May be taken for a max. of 6 sem. hrs. of credit when topics vary. Research on a construction topic as chosen by the student under direct supervision of a chosen faculty member.

CURRICULUM AND INSTRUCTION • EDIC

 Admission to courses at the 3000-level and above is restricted to students formally admitted to a teacher education program/concentration. Formal admission includes 2.50 LSU and cumulative grade point averages and passing scores on Praxis I assessments or a minimum ACT composite score of 22 or a minimum SAT composite score of 1030.


1001 Introduction to College Study (3) Intended for entering freshmen. College-level readings and techniques for organizing text and lecture information for effective study; critical thinking and reading; time management; preparation for tests.

2001 Education, Schooling, and Society (3) Introduction to contemporary educational issues, especially as these are situated historically, culturally, socially, and politically; topics include: history of education, especially as related to gender, race, class, and technology.

2025 Foundations and Principles of Teaching in Elementary School (3) 2 hrs. lecture; 2 hrs. field experience in elementary schools. Open only to students enrolled in programs leading to teacher certification.

2030 Teaching, Schooling, and Society (3) Prereq.: Ad- mission to Grades PK-3 or 6 teachers certification program. 2 hrs. lecture; 2 hrs. field experience in elementary school and middle schools. Experiences that join theory to practice: teaching in the elementary school culture; a reflective approach to pedagogy; discussions of teaching in the historical and philosophical dimensions of the instructional process.

2400 Education and Diverse Populations (3) Prereq.: Admission to 1-6 teacher certification education program.
2 hrs. lecture; 2 hrs. lab/field experience in multicultural settings. Differences among elementary students (grades 1-6) associated with their developmental levels, cultural and ethnic backgrounds, and gender.

2700 Characteristics of Learners with Exceptionalities (3) F,S, Su 2 hrs. lecture; 2 hrs. lab/field experience.
Prereq.: Credit or registration in EDCI 2045 and concurrent enrollment in EDCI 2040 and EDCI 2041, or equivalent.

3000 Children’s Literature (3) Survey of children’s literature across time, genres, and media; focus on wide reading and discussion; literature selection, and an appreciation of the value of literature for children.

3001 Student Development and Diversity (3) Prereq.: Credit or registration in EDCI 2040 and concurrent enrollment in EDCI 2041 and EDCI 2042. 2 hrs. lecture; 2 hrs. lab/field experience in multicultural settings. Differences among secondary students (grades 6-12) associated with their developmental levels, cultural, and ethnic backgrounds, gender, learning abilities, and special needs.

3002 Classroom Culture (3) Prereq.: EDCI 2040 and concurrent enrollment in the following: BIOL 3002, CHEM 3002, ENGL 3292, FREN 3402, MATH 3002, PHYS 3002, SPAN 3001, 2 hrs. lecture; 3 hrs. lab/field experience in multicultural settings. Learning processes of middle school and high school students in the social learning environment of the classroom, with attention to individual and group motivation, social interactions, integration of technology, and classroom management.

3112 Reading Instruction in the Elementary School (6) Prereq.: EDCI 2400; concurrent enrollment in EDCI 3113 for elementary grades majors. 3 hrs. lecture; 6 hrs. lab/field experience in multicultural settings. Current instructional approaches for teaching reading in the elementary school level; understanding and skills in a laboratory situation in the public school.

3124 Curriculum Discipline: Mathematics Theory and Practice (6) Prereq.: Professional Practice Block I; 12 sem. hrs. of mathematics, including MATH 2101 and 2102; 11 sem. hrs. of natural science; and concurrent enrollment in EDCI 3125 and MATH 2203. 3 hrs. lecture; 6 hrs. lab/field experience in multicultural, multi-level settings. Instructional materials and methods in teaching language arts communicative skills at the elementary school level; understanding and skills in a laboratory situation in the public school.

3125 Curriculum Discipline: Science (3) Prereq.: Professional Practice Block I; 11 sem. hrs. of natural science, 12 sem. hrs. of mathematics, and concurrent enrollment in EDCI 3124 and MATH 2201. 2 hrs. lecture; 2 hrs. lab/field experience in multicultural, multi-level settings. Structure of science disciplines applied to teaching science in grades K-12; standards-based pedagogical strategies, techniques, and materials coordinated with basic principles of learning.

3126 Curriculum Discipline: Mathematics (3) Prereq.: EDCI 2025 or 2030. 6 hrs. of credit in mathematics courses, and concurrent enrollment in EDCI 3125 and 3127. 2 hrs. lecture; 2 hrs. lab/field experience in multicultural settings. Functions of mathematical disciplines in the curriculum of elementary schools; instruction for teaching mathematics; learning strategies, techniques, basic rationales, and materials.

3127 Curriculum Disciplines: Social Studies (3) Prereq.: EDCI 2700 and concurrent enrollment in EDCI 3113 and 3120. 2 hrs. lecture; 2 hrs. lab/field experience in multicultural, multi-level settings. Structure of the social science disciplines applied to teaching social studies in grades K-12; standards-based pedagogical strategies, techniques, and materials coordinated with basic rationales and principles of learning.

3135 Teaching Reading in the Junior and Senior High School (3) Prereq.: EDCI 2404 or 2405 or equivalent. 2 hrs. lecture; 2 hrs. lab/field experience in multicultural, multi-level settings. Advanced reading instruction experience with particular emphasis on assessment in diverse and multicultural settings.

3136 Reading in the Content Areas (3) Prereq.: EDCI 3135 or equivalent. Content area reading problems and solutions; the reading process, approaches, skills, and materials.

3137 Assessing and Guiding Classroom Reading Instruction (3) Prereq.: EDCI 2400, 3000, and concurrent enrollment in EDCI 3120 and 3127. 2 hrs. lecture; 2 hrs. lab/field experience in multicultural settings. Advanced reading instruction experience with particular emphasis on assessment in diverse and multicultural settings.


3147 Materials and Methods in Secondary School Science (3) Prereq.: EDCI 2400. 8 sem. hrs. of biology (BIOL 1001, 1002, 1101, 1102, 1208, and either BIOL 1402 or 1502); 8 sem. hrs. of chemistry (CHEM 1201, 1202, 1212); 8 sem. hrs. of physics (PHYS 2101, 2002, 2099, 2108 or PHYS 2101, 2102, 2108); 2 hrs. of credit or for registration in at least 8 additional sem. hrs. from among the science courses required for teaching the major (biology, chemistry, or physics) or minor (biology, chemistry, physics, or general science) selected by the student. 2 hrs. lecture; 2 hrs. lab/field experience in multicultural, multi-level settings. Advanced reading instruction experience with particular emphasis on assessment in diverse and multicultural settings.


4003 Curriculum and Pedagogy in Secondary Discipline (3) Prereq.: EDCI 3002 and concurrent enrollment in one of the following: BIOL 4003, CHEM 4003, ENGL 4203, FREN 4403, FREN 4403, MATH 4003, PHYS 4003. Permission of instructor. May be repeated for credit in a second subject area. 2 hrs. lecture; 3 hrs. lab. Field experience in multicultural settings. Credit will not be given for both this course and EDCI 4465. Applying instructional approaches in particular subject areas for middle and high school students.

4004 Critical Issues in Secondary School Content Area Teaching (3) Prereq.: EDCI 4003 or permission of instructor. Critical issues in the nature of knowledge and inquiry in specific school subjects. Critical issues in the nature of knowledge and inquiry in specific school subjects.

4005 Student Teaching in Grades 6-12 (9) Prereq.: EDCI 4003 and concurrent enrollment in EDCI 4004 and in one of the following: BIOL 4003, CHEM 4003, ENGL 4204, FREN 4404, HIST 4404, MATH 4004, PHYS 4004, SPAN 4004. 1 hr. lecture; 24 hrs. lab/field experience in diverse multicultural settings. All day, all semester student teaching experiences, including observation, participation, and a minimum of 180 actual clock hours of teaching (with a substantial amount of time in the classroom, including a full day teaching) under the supervision of an assigned public school mentor teacher.


4030 Middle School Curriculum and Instruction (3) Prerequisites: Principles of Secondary Education and concurrent enrollment in one of the following: BIOL 4003, CHEM 4003, FREN 4004, HIST 4404, MATH 4004, PHYS 4004, SPAN 4004. 1 hr. lecture; 24 hrs. lab/field experience in diverse multicultural settings. All day, all semester student teaching experiences, including observation, participation, and a minimum of 180 actual clock hours of teaching (with a substantial amount of time in the classroom, including a full day teaching) under the supervision of an assigned public school mentor teacher.


4040 Principles of Secondary Education (3) Prereq.: consent of instructor. Analysis of criticisms of secondary education; functions of schools and institutions in a complex political, social, and economic matrix; current theories and relevant research.

4055 Principles and Practices in Kindergarten Education (3) Prereq.: HUCF 3005 or PSYC 2076. 2.50 gpa required for registration. Same as HUCF 4055. Classroom organization and management, using pre-academic objectives for kindergarten as an entry point into elementary school.

4057 Methods of Teaching Nursery School and Kindergarten (3) Prereq.: HUCF 3005 or PSYC 2076. 2.50 gpa required for registration. 2 hrs. lecture; 2 hrs. lab. Same as HUCF 4057. Essentials needed for successful involvement with children from various socioeconomic and cultural groups at the nursery/kindergarten level; teaching methods, and materials providing optimum learning experiences for the child under six.

4058 Student Teaching in the Kindergarten (5) See HUCF 4058.

4113 Language Acquisition and Development of Communication Skills in the Young Child (3) Prereq.: EDCI 3002. 4 hrs. lecture; 3 hrs. lab. Field experience in multicultural settings. Credit will not be given for both this course and EDCI 4465. Critical issues in the nature of knowledge and inquiry in specific school subjects.

4241 Special Studies in Art Education (3) Prereq.: ELRC 4249. 2 hrs. lecture; 2 hrs. lab/field experience. Development of intervention programs based on the principles of applied behavior analysis; emphasis on proactive strategies that promote learning and prosocial behavior.

4242 Student Teaching: Practice and Reflection in Grades 1-3 (22) Prereq.: EDCI 4462 concurrent enrollment in EDCI 4462. 4 hrs. lecture; 24 hrs. lab/field experience in multi-level, multicultural settings. Designed to familiarly fulfill student teaching requirements and to prepare student to be effective classroom teachers in grades 1-3.

4245 Capstone Seminar in Early Childhood Education (3) Prereq.: HUCF 4055 or consent of instructor. Critical issues in the nature of knowledge and inquiry in specific school subjects. Critical issues in the nature of knowledge and inquiry in specific school subjects.

4246 Methods and Materials for Teaching Computer Science (3) Prereq.: 3 hrs. in computer science or equivalent. 3 hrs. lecture plus field experience. Materials and methods for planning instruction in computer science.

4250 Teaching in Multicultural Classrooms (3) Prereq.: EDCI 4700 or equivalent. Interpretation of individually administered standardized tests; design of classroom-based assessment instruments; evaluation of existing research and inference from the classroom experience. Critical issues in the nature of knowledge and inquiry in specific school subjects.

4269, 4270 Art Education Workshop (3,3) Prereq.: Consent of instructor. New methods, trends, and techniques. New methods, trends, and techniques.


4273, 4274 Art Education in the Elementary and Secondary Schools (3,3) For students concentrating in art education. Development of a functional art program for elementary and secondary schools; philosophy of art education, curriculum construction, teaching methods, planning, and measurement of the results of instruction.


4276, 4277 Art Education in the Elementary and Sec- ondary Schools (3,3) For students concentrating in art education. Development of a functional art program for elementary and secondary schools; philosophy of art education, curriculum construction, teaching methods, planning, and measurement of the results of instruction.

4300 Teaching in Multicultural Classrooms (3) Prereq.: Consent of instructor. New methods, trends, and techniques. New methods, trends, and techniques.

4305 Principles and Practices in K-12 Education (3) Prereq.: cohort membership or consent of instructor. Analysis of criticisms of secondary education and of current proposals for reform; conflicting conceptions of teaching, learning, cognition and related approaches to curriculum, instruction, and evaluation; current theoretical and research approaches; implications for educational policy and practice.

4340 Special Topics in Curriculum and Instruction (1- 3) Prereq.: Consent of instructor. May be taken for a max. of 6 sem. hrs. of credit. New methods, trends, and techniques.

4350 Special Topics in Curriculum and Instruction (1- 3) Prereq.: Consent of instructor. May be taken for a max. of 6 sem. hrs. of credit. New methods, trends, and techniques.

7000 Trends and Issues in Mental Retardation (3) An in-depth examination of issues and controversies, including diagnosis, etiology, current theory, and delivery systems.

7005 Trends and Issues in Learning Disabilities (3) F-E An in-depth study of the learning and concepts associated with the field of learning disabilities and the divergent characteristics of children with language, academic, and cognitive impairments. New methods, trends, and techniques.

7006 Trends and Issues in Emotional and Behavioral Disturbance (3) F-O An in-depth examination of issues and controversies, including diagnosis, etiology, current theory, and delivery systems.

7007 Advanced Practicum in Evaluation and Assessment (3) Prereq.: Consent of instructor. Supervised experience in educational evaluation and assessment; practical and in-depth approach; procedures for prereferral screening; evaluation of existing research and inference from the classroom experience. Critical issues in the nature of knowledge and inquiry in specific school subjects.

7011 Administration and Supervision in Special Education (3) Prereq.: Consent of instructor. Supervised experience in educational evaluation and assessment; practical and in-depth approach; procedures for prereferral screening; evaluation of existing research and inference from the classroom experience. Critical issues in the nature of knowledge and inquiry in specific school subjects.

7017 Explicit Instructional Models for Students with Disabilities (3) F Prereq.: ELRC 4249. 2 hrs. lecture; 2 hrs. lab. Evaluating the research base and theories supporting the use of instructional and assessment models, including Direct Instruction Model and curriculum-based assessment.

7021 Teaching Social and Functional Skills to Students with Disabilities (3) Prereq.: EDCI 4701, 4704, or equivalent. Instructional planning and methods for teaching functional and social behavior to students with disabilities.

7021 Legal and Ethical Issues in Special Education (3) Prereq.: ELRC 4249. 2 hrs. lecture; 2 hrs. lab. Evaluating the research base and theories supporting the use of instructional and assessment models, including Direct Instruction Model and curriculum-based assessment.

7023 Teaching Social and Functional Skills to Students with Disabilities (3) Prereq.: EDCI 4701, 4704, or equivalent. Instructional planning and methods for teaching functional and social behavior to students with disabilities.

7025 Contemporary Issues in Special Education (3) Prereq.: Consent of instructor. Critical issues in the nature of knowledge and inquiry in specific school subjects. Critical issues in the nature of knowledge and inquiry in specific school subjects.

7026 Seminar on Transition for Students with Disabilities (3) Prereq.: Consent of instructor. New methods, trends, and techniques. New methods, trends, and techniques.

7027 Consultation, Collaboration, and Co-teaching (3) Prereq.: EDCI 2700 and 4460. 2 hrs. lecture; 2 hrs. lab/field experience. Development of intervention programs based on the principles of applied behavior analysis; emphasis on proactive strategies that promote learning and prosocial behavior.

7040 Teaching in Multicultural Classrooms (3) Prereq.: Consent of instructor. New methods, trends, and techniques. New methods, trends, and techniques.

7101 Consultation, Collaboration, and Co-teaching (3) Prereq.: EDCI 2700 and 4460. 2 hrs. lecture; 2 hrs. lab/field experience. Development of intervention programs based on the principles of applied behavior analysis; emphasis on proactive strategies that promote learning and prosocial behavior.

7105 Teaching Reading in the Elementary School (3) Prereq.: Consent of instructor. New methods, trends, and techniques. New methods, trends, and techniques.

5040 Special Topics in Curriculum and Instruction (3) Prereq.: Consent of instructor. May be taken for a max. of 6 sem. hrs. of credit. New methods, trends, and techniques.
Courses

7106 Teaching Reading to Students with Diverse Cultural Backgrounds (3) Prereq.: EDCI 7105 or consent of instructor. Characteristics of learners from different cultural settings; analysis of methods and materials that foster reading instruction for these. May be taken for a max. of 6 hrs. of credit when topics vary.

7107 Topics in Reading Education (3) Prereq.: EDCI 7105 or 7115 or equivalent. May be taken for a max. of 6 sem. hrs. of credit when topics vary. Issues and practices in elementary through adult reading education.

7108 Studies in the Teaching of Elementary School Science (3) Prereq.: EDCI 3123 or equivalent. Theoretical and practical applications of instructional materials, evaluation, and student needs and characteristics. Topics include: history of science teaching; the nature of science content; and methods of teaching science. May be taken for a max. of 6 hrs. of credit when topics vary.

7109 Studies in the Teaching of Elementary School Mathematics (3) Prereq.: completion of an undergraduate foreign language requirement. Methods and materials in all areas of teaching; demonstration of student production; application of methods and materials for effective teaching instruction.

7110 Developing Learning Skills Through Content Reading (3) Relationships between learning skills and content areas; the reading process; materials and research related to teaching reading.

7111 Topics in Reading Education (3) Prereq.: EDCI 7105 or 7115 or equivalent. May be taken for a max. of 6 hrs. of credit when topics vary. Topics include: reading comprehension; reading in the content areas; reading and learning in other cultures.

7112 Reading in Language Arts and Social Studies (3) Methods and materials for teaching reading in the elementary level social studies.

7113 Social Studies (3) Prereq.: completion of an undergraduate foreign language requirement. Principles, practices, and curricula in the teaching of elementary school language arts.

7114 Reading Readiness in the Pre-Kindergarten (3) Prereq.: completion of an undergraduate foreign language requirement. Methods and materials in all areas of teaching; demonstration of student production; application of methods and materials for effective teaching instruction.

7115 Developing Learning Skills Through Content Reading (3) Relationships between learning skills and content areas; the reading process; materials and research related to teaching reading.

7116 Reading Readiness in the Middle and Secondary School (3) Reading skills appropriate for the grade level; materials for teaching reading; techniques for improving the school reading program.


7118 Studies in the Teaching of Elementary School Social Studies (3) Methods and materials for teaching elementary-level social studies.


7125 Teaching Reading to the Adult Learner (3) Theoretical, practical, and applied issues in literacy and language development for adult learners.

7130 Techniques and Resources for Reading Instruction (3) Prereq.: EDCI 7105 or 7115 or equivalent. Methods and materials in all areas of reading; demonstration of student production; application of methods and materials for effective teaching instruction.

7131 Developing Learning Skills Through Content Reading (3) Relationships between learning skills and content areas; the reading process; materials and research related to teaching reading.

7132 Techniques for Teaching Reading in the Middle and Secondary School (3) Reading skills appropriate for the grade level; materials for teaching reading; techniques for improving the school reading program.

7140 Techniques and Resources for Reading Instruction (3) Prereq.: EDCI 7105 or equivalent. May be taken for a max. of 6 hrs. of credit when topics vary. Selected topics in a specific subject area; level of instruction, or a methodology that addresses reading acquisition. May be taken for a max. of 6 hrs. of credit when topics vary. Selected topics in a specific subject area; level of instruction, or a methodology that addresses reading acquisition.

7142 Topics in Language Arts Education (3) Prereq.: EDCI 7110 or 7140 or equivalent. May be taken for a max. of 6 hrs. of credit when topics vary.

7247 Teaching in the Science Laboratory (5) Prereq.: EDCI 1147 or equivalent. 2 hrs. lecture; 2 hrs. lab. Interpreting research in laboratory science instruction; use of results to generate creative laboratory activities.

7250 Reading Readiness in the Pre-Kindergarten (3) Prereq.: completion of an undergraduate foreign language method course and/or teaching experience; or consent of instructor. Principles and current research related to teaching the foreign language.

7255 Critical Analysis of Current Research in Reading (3) Prereq.: 12 hours of graduate reading courses or equivalent. Evaluation of current and needed research; application of research findings in the instructional program.

7274 Teaching in the Science Laboratory (5) Prereq.: EDCI 1147 or equivalent. 2 hrs. lecture; 2 hrs. lab. Interpreting research in laboratory science instruction; use of results to generate creative laboratory activities.

7275 Development and Administration of an Art Education Curriculum (3,3) Prereq.: EDCI 1147 or equivalent. May be taken for a max. of 6 hrs. of credit when topics vary.

7307 Topics in Curriculum and Instruction (3) May be taken for a max. of 6 hrs. of credit when topics vary.

7308 Reading Readiness in the Pre-Kindergarten (3) Prereq.: EDCI 3147 or 7110; or equivalent. May be taken for a max. of 6 hrs. of credit when topics vary.

7309 Topics in Mathematics Education (3) Prereq.: EDCI 3147 or 7110 or consent of instructor. May be taken for a max. of 6 hrs. of credit when topics vary.

7310 Topics in Social Education (3) Prereq.: EDCI 7110 or 7140; or equivalent. May be taken for a max. of 6 hrs. of credit when topics vary.
economic, social, and environmental impacts; the impacts of natural and man-made disaster and disaster policies, and issues in the public, private, and non-profit sectors.

7910 Disaster Science and Management Seminar (1) May be taken for credit 3 times; 1 credit applies. Fall and spring sessions vary for fall and spring semesters. Reports and discussions with students and faculty concerning a broad range of issues, problems, and topics related to natural and man-made hazards, disasters, and emergency management.

ECONOMICS • ECON

General education courses are marked with stars (*).


★ 2010 Principles of Macroeconomics (3) Prereq.: ECON 2000. Credit will not be given for this course and ECON 2030 or 2035. Study of long-run growth and the role of the government in the economy, including inflation, unemployment, the monetary system, growth, international trade and finance.

★ 2030 Economic Principles (3) An honors course, ECON 2031, is also available. Credit will not be given for this course and ECON 2000 or 2010 or 2020. Economic understanding of both micro- and macroeconomic principles; problems associated with monetary policy, fiscal policy, public finance, government and business, labor, international trade, economic growth, and economic systems.

★ 3231 HONORS: Economic Principles (3) Same as ECON 2030, with special honors emphasis for qualified students.

2035 Money, Banking, and Macroeconomic Activity (3) Prereq.: ECON 2000 and 2010 or 2030. Role of commercial banks, other financial institutions, and the central bank in affecting the performance of the economy; relationships of money and fiscal policy to prices, production, and employment; internal and external effects of U.S. fiscal and monetary policy.

2715 Business Finance (3) See FIN 3715.

3900 Selected Topics in Economics (3) Prereq.: ECON 2010 and 2090 or 2030. May be taken for a max. of 6 hrs. credit when topics vary.

3999 Independent Study: Economic Problems (1-3) May be taken for credit for a max. of 6 sem. hrs. for undergraduate students with a on-time approval of 0.00 or above. Independent economic research and study under the direction of a faculty member.

4010 The United States—Its Economic Growth (3) Prereq.: ECON 2000 and 2010, or 2030; equivalent. The American economy; problems dealing with money and banking, taxation, labor, international trade, and American position in world affairs.

4220 Wage and Employment Analysis (3) Prereq.: ECON 2000 and 2010 or 2030. Labor market; labor supply and demand, human capital, racial and sex discrimination, effects of minimum wage laws, causes of various wage and employment differentials.

4230 Economics of Human Resources (3) Prereq.: ECON 2000 and 2030. Empirical research and economic theory to human resource management and internal labor market; topics include hiring, training, pay, promotion, evaluation, layoffs, and termination from an economic perspective.

4250 International Assignment and Private Labor (3) Prereq.: ECON 2000 and 2030. Role of the theory of the firm, perfect competition, monopoly, collusion and collusive strategies, strategic behavior on the market, labor contracts, cost-sharing, and employment contracts.


4421 Health Care Economics (3) Prereq.: ECON 2000 and 2010 or 2030. Analysis of the determinants of economic growth, and how they interact in specific markets; theories of production, price determination, trade, externality, and public goods.

4720 Intermediate Microeconomics (3) Prereq.: ECON 2000 and 2030. Analysis of the location and growth of urban and regional areas; emphasis on public policy issues and the geographical location and change in regional economic activity, and urban problems such as transportation, housing, and poverty.

4730 Labor Economics (3) Prereq.: ECON 2000 and 2030 or 2010. Causes of economic problems of American wage earners; attempts of wage earners to alleviate and solve these problems through organization and collective bargaining.

4820 Wage and Employment Analysis (3) Prereq.: ECON 2000 and 2010 or 2030. Labor market; labor supply and demand, human capital, racial and sex discrimination, effects of minimum wage laws, causes of various wage and employment differentials.


5445 Internship in Economics (3) Prereq.: consent of instructor. Past work experience in approved positions with economic content.

5450 International Economics (3) Prereq.: ECON 2000 and 2030. Introduction to the basic theories of international trade including classical, neoclassical, and post-neoclassical theories; discussion on how these theories relate to current economic events and policies; brief overview of U.S. trade law; overview and analysis of major bilateral and multilateral trading agreements including the North American Free Trade Agreement, the European Union, and the World Trade Organization.

5450 Economic Forecasting (3) Prereq.: ECON 2000 and 2030, or 2010, and ISDS 2000 or equivalent. Applications of methods used in business and economic forecasting; trend analysis, time-series modeling, regression and other statistical methods and techniques.

5450 International Finance (3) Prereq.: ECON 2035 or equivalent. Exchange rates and the foreign exchange market; exchange rate determination in the short run and in the long run; alternative international currency systems; macroeconomic policy coordination under fixed and floating exchange rates.

5460 Central Banking and Monetary Policy (3) Prereq.: ECON 2035. History, economic functions, operating techniques, and policies of central banks; the role of monetary policy in promoting economic stability and growth; the Federal Reserve System and current problems of monetary policy and control.

5460 Introduction to Mathematical Economics (3) Prereq.: ECON 2000 and 2030, or 2010, and college algebra; or equivalent. Not normally open to students who have had differential calculus. Mathematical techniques used by economists; their application to economic analysis.

4630 Introduction to Econometrics (3) Prereq.: ECON 2035 and 2010, or 2030, and ISDS 2000 or equivalent. Not open to students with credit in ECON 7650. For students interested in a basic knowledge of econometric and statistical tools: estimation of the basic linear model and hypothesis testing; empirical illustrations by reference to contemporary economic issues.

4632 Financial Econometrics (3) Prereq.: ECON 2000 and 2030, or 2030 and ISDS 2000 or equivalent. Econometric methods used to examine and test financial data; tests of market efficiency, forecasting volatility of financial markets, estimating value at risk.

4710 Aggregate Economic Analysis (3) Prereq.: ECON 2010 or equivalent. Microeconomic principles and their application to the nation's current economic problems; topics include national income, employment, and prices; static Keynesian, monetarist, and supply-side models developed and compared.


EDUCATION • EDUC

7585 Seminar in Economic Development (3) Prereq.: consent of instructor. Third World development from neoclassical, neomarxist, and neomalthusian perspectives. 7590 Seminar in Monetary and Fiscal Policy (3) Deter- mining, implementing, and evaluating monetary and fiscal policy; effect on the economy, monetary targets and indica- tors, role of interest rates in understanding monetary poli- cy, sectoral impacts of monetary policy; role of fiscal policy in the economy. 7595 Seminar in Monetary Theory (3) Contemporary monetary theory; theories of supply and demand; integration of monetary and value theory; monetary equilibrium. 7610 Mathematics for Economists (3) Mathematical principles with frequent applications to economics; integral calculus, differential equations, difference equations and optimal control theory. 7630 Econometric Methods (3) Prereq.: calculus and linear algebra, or concurrent enrollment in economics 7610. For students interested in developing research skills in econometrics. Empirical research methods in econom- ics; statistical inference and techniques applied to a general linear model; problems involved in regression analysis; extensions of the general linear model. 7631 Econometric Preparatory, Econ 7610 or equivalent. Econometric techniques for heteroskedasticity, autocorrelation, simultaneous equations, pooling time series and cross-sectional data; model specification tech- niques. 7632 Econometric Theory III (3) Prereq.: ECON 7631 and either ECON 7610 or differential calculus and linear algebra. Emphasis on the pure theory of econometrics; properties of estimators, small sample properties of ordi- nary least squares, asymptotic distribution theory, general- ized least squares and simultaneous equations. 7633 Dynamic Econometric Theory (3) Prereq.: ECON 7631. Time-series analysis; testing and model selection; distributed lag; dynamic properties of simultaneous equa- tion model; autoregressive and moving average process; nonstationarity; autoregressive conditional heteroske- dasticity; causality and exogeneity; unit root, co-integra- tion, and error correction. 7700 Price Theory I (3) Development of microeconomic models of the individual firm, including a nonmathematical approach. 7710 Macroeconomics I (3) Prereq.: ECON 7610 or equivalent. Static models of income, employment, and prices; models include classical, neo-Keynesian, and mon- etarist; models explore demand and supply shocks, and new-Keynesian economics, asset pricing models, endogenous growth theories, and empirical tests of these models. 7740 History of Economic Thought: The Classical Period (3) Development of economics as an autonomous sci- ence; Greek, Judeo-Christian, and enlightenment approach- es to economic phenomena; special attention to Adam Smith. 7750 History of Economic Thought: Modern Period (3) Development of economics from 1800 to 1900; emphasis on classical followers of Smith, Marx, 19th century positiv- ism and socialism, and the marginal revolution. 7799 Seminar in Advanced Economic Problems (3) May be taken for a max. of 6 hrs. of credit. 8000 Thesis Research (1-2 per sem.) “S”/“U” grading. 8900 Pre-dissertation Research (1-9) May be repeated for credit. Pass-fail grading.
Courses

7409 Seminar in Educational Leadership (3) F,S,Su
Perspectives. Critical analysis of educational policy and its development.

7408 School and Community Relations (3) F,S,Su
Prep.: ELRC 4400. Analysis of community demands on schools; organizational response from social science perspectives.

7407 Politics, Policy, and Administration in Education (3) Prereq.: ELRC 4400 and consent of instructor. Primarily for doctoral students in educational administration.

7406 Research Methods (3) F,S,Su
Prereq.: ELRC 4400. Analysis of critical research literature and development of research design.

7405 History of Education (3) F,S,Su
Prep.: ELRC 4400. Critical analysis of historical development, teacher effectiveness research, teacher development, and empowerment, critical thinking, reflective practice, and school administration; school restructuring, leadership in unique contexts, and directions in educational change and reform.

7410 Cultural and Political Issues in Urban School Leadership (3) Focus on the role of leaders, including the principal, in urban schools; impact of societal factors on school leaders in urban elementary and secondary schools.

7222 Introduction to School Improvement/Action Research (3) F,S,Su
Prereq.: ELRC 4400. Introduction to theories of leadership, leading and empowering, and critical thinking, reflective practice, and school administration; school restructuring, leadership in unique contexts, and directions in educational change and reform.

7430 Best Practices of School Leadership I (6) Prereq.: ELRC 7430. Second course in a two course sequence. Focus on the role of leaders, including the principal, in urban schools; impact of societal factors on school leaders in urban elementary and secondary schools.

7431 Best Practices of School Leadership II (6) Prereq.: ELRC 7430. Second course in a two course sequence. Focus on the role of leaders, including the principal, in urban schools; impact of societal factors on school leaders in urban elementary and secondary schools.

7432 Advanced School Improvement/Action Research (3) Prereq.: ELRC 7410 and 7431. Students refine and administer an action research project at a selected school site. Students will assess the success of their interventions through multiple measures and write a research report that reflects their experiences throughout the semester. In class discussions focusing on methodological difficulties that students encounter and how to overcome them.

7430 Advanced School Improvement/Action Research (3) Prereq.: ELRC 7410 and 7431. Students refine and administer an action research project at a selected school site. Students will assess the success of their interventions through multiple measures and write a research report that reflects their experiences throughout the semester. In class discussions focusing on methodological difficulties that students encounter and how to overcome them.

7430 Advanced School Improvement/Action Research (3) Prereq.: ELRC 7410 and 7431. Students refine and administer an action research project at a selected school site. Students will assess the success of their interventions through multiple measures and write a research report that reflects their experiences throughout the semester. In class discussions focusing on methodological difficulties that students encounter and how to overcome them.

7406 Educational Leadership (3) F,S,Su
Prereq.: ELRC 4400. Development of formal and informal education in multicultural settings from earliest times to the present.

7401 History of American Education (3) F,S,Su
Cultural diversity and educational leadership. Education and practice in America from colonial times to the present.

7402 Survey of Philosophy of Education (3) F,S,Su
Key theories of human nature, culture, and society and their bearings on education.

7403 Cultural Pluralism in American Education (3) Basic features of major cultures in American society; their impact on American education; historical approaches to educating persons of different cultures and roles of schools in responding to cultural pluralism.

7400 Seminar in Philosophy of Education (3) Prereq.: ELRC 7401. Seminar with special focus on the context of pluralistic societies.

7001 Ethics and Educational Leadership (3) S
Prereq.: ELRC 7401. Study of ethical theory, judgement, and practice in educational contexts.

EduCATIONAL RESEARCH

3200 Classroom Assessment (3) F,S,Su
Prereq.: credit or registration in a methods course appropriate to the student's teaching major. Principles and techniques in development, administration, scoring, and evaluation of written, performance-based, and other forms of classroom assessment applications of technology in classroom assessment.

4006 Introduction to Applied Statistics in Educational Research (3) F,S,Su
Prereq.: 3 hrs. lecture, 2 hrs. lab. Descriptive and inferential statistics. Testing and statistical analysis.

4200 Introduction to Educational Measurement (3) F,S,Su
Prereq.: 1 yr. of college algebra. Basic theory of educational measurement; measurement in multicultural settings.

4249 Understanding and Applying Research in Education (3) F,S,Su
Prereq.: 3 hrs. lecture, 2 hrs. lab. For the specialist or nonthesis master's degree student. Instructional teachers and administrators to become intelligent consumers of research.

7006 Educational Statistics (4) Prereq.: ELRC 4100 or equivalent. 3 hrs. lecture; 2 hrs. lab. Descriptive and inferential statistics. T-tests and analysis of variance, nonparametric chi-square test.

7010 Principles of Testing and Measurement (3) Prereq.: ELRC 7010 and 7016. Principles and measurement instruments for research purposes; utilization of standardized tests and inventories in research; measurement in multicultural and cross-cultural contexts; implications of measurement research and validity for research design and statistical analysis.

7016 Advanced Educational Statistics (4) Prereq.: ELRC 7008 or equivalent. 3 hrs. lecture; 2 hrs. lab. Advanced statistical procedures and computerized data analysis using SPSS or SAS; analysis of variance and covariance; application of multiple regression techniques in educational research.

7018 Advanced Computerized Data Analysis for Research (3) Prereq.: ELRC 7010 or equivalent. Utilization of statistical packages such as SPSS and SAS for analysis of research data with complex structure; preparation and analysis of multi-level, nested, and repeated measures data; hands-on data analysis in design, statistical analysis and interpretation of complex data files; review and application of specialized data analysis programs in educational research.

7201 Theory of Educational Measurement (3) Prereq.: ELRC 4200. Principles of psychometric theory as applied in the educational setting; classical measurement theory and recent psychometric techniques such as response theory and criterion-referenced measurement.

7202 Seminar in Educational Measurement (3) Prereq.: ELRC 7006. Basic theory and problems in educational measurement.

7203 Computer Assisted Testing (3) Prereq.: ELRC 7006. Computer adaptive testing; computerized item and test development; computer and intelligent measurement; analyzing and reporting test results; legal issues and professional standards.

7220 Education Program Evaluation (3) F Prereq.: ELRC 4249 and either ELRC 4900 or 7006. Current methodology in educational program evaluation. Role-function of the supervisor of child welfare and attendance; seminars, field study, and individual research; legal provisions, history, and principles of evaluation.

7221 Performance Evaluation in Education (3) S Prereq.: ELRC 4249 and 4240; or equivalent. Current procedures and research concerning performance evaluation of students, teachers, and administrators; methodological, professional, and legal issues.

7241 Educational Research Methodology I (3) F,S,Su
Prereq.: ELRC 7400 and 7401. Design and development of a professional practice; design and development of a comprehensive evaluation plan that includes specification of theoretical framework, problem identification, data collection/analysis procedures, report writing format, and dissemination plans.

7242 Experimental and Quasi-Experimental Designs in Educational Research (3) F Prereq.: ELRC 7016 and 7401. Experimental and quasi-experimental designs in educational research, including nested and block designs and evaluation of internal/external validity; design and implementation of projects; analyzing variance data through computer programs and the qualitative approaches of analysis of variance and covariances; multiple regression.

7243 Qualitative Methods in Educational Research (3) Prereq.: ELRC 4249 and 4240, or equivalent. Introduction to qualitative research traditions and methods in education, including: ethnography, grounded theory, and case study; major methods in qualitative research: thematic analysis, interviews, and document analysis; philosophical issues regarding the qualitative research approach; emphasis on qualitative data analysis, including use of the computer programs, such as ATLAS.ti.

7248 Introductory Research Practicum (3) F
By arrangement with a state agency, a local school system, or other educational agency, students assist in the conducting of a variety of research methodologies under the supervision of the course instructor and the professional practice supervisor at the site.

7249 Advanced Research Practicum (3) Prereq.: ELRC 7248. By arrangement with a state agency, a local school system, or other educational agency, students assume a leadership role in conducting research studies under the supervision of the course instructor and the professional practice supervisor at the site.

7251 Technology Systems in Educational Research (3) Prereq.: ELRC 4249 and 4240 or permission of instructor. 2 hrs. lecture; 2 hrs. lab. Technology innovations and models that facilitate educational research; telecommunications and technology-assisted assessment; technology-based data collection devices; computer analysis of text-based data; computer-aided dissemination of data.

7260 Advanced Methods in Educational Program Evaluation (3) Prereq.: ELRC 7220. Evaluation of a selected educational program; estimation of parameters; formative/summative evaluations; guides for conducting evaluations and small experiments; report writing.

7263 Advanced Qualitative Methods in Education (3) Prereq.: ELRC 7221. Construction of a case study of an educational institution or an individual's life; single- and multiple-case designs; analyzing case study evidence; preparing a case study report.

7270 Mixed Methods Research in Education (3) Prereq.: ELRC 4249 or 7241. Mixed methods as a separate research methodology integrating both the quantitative and the qualitative approaches.

7280 Content Analysis (3) Prereq.: ELRC 4249 or 7241. Principles, theories, and strategies for systematically examining and summarizing and evaluating the content of textual and other mediated communication.

7290 Seminar: Educational Research Methodology (1-3) May be taken for a max. of 9 sem. hrs. of credit when topics vary. Advanced topics in educational research methods.

EDUCATIONAL TECHNOLOGY

2507 Introduction to Classroom Technology (3) Introduction to technology tools and innovative technology integration methods to enhance student learning.

3501 Utilization of Instructional Materials (3) F,S,Su
Open only to candidates for teacher certification. Basic techniques for preparing effective instructional materials.
4501 Selection and Utilization of Educational Media (3) Prereq.: introductory technology characteristics of media, objective specifications, and evaluation of instructional modules and systems.

4507 Computer Technology in Education (3) Applications of computers in instruction; educational data processing; computer-assisted and computer-managed instruction; information storage and retrieval; use of micro/multi computers.

4512 Fundamental Computer Science for Teachers (3) Prereq.: ELRC 4507 or prior programming experience and credit in an education methods course numbered 3000 or above. See CSC 4652.

4535 Educational Telecommunications and the Internet (3) S Prereq.: ELRC 4507 or equivalent. 2 hrs. lecture; 2 hrs. lab. Use of tools found in educational settings; integration of telecommunication resources into instruction; research using the World Wide Web: design, development, and evaluation of Web-based materials that include multimedia, security, and legal issues; configuration of school and district networks; distance education applications; and emerging trends and research issues.

5505 Production of Instructional Materials (3) Instructional graphics production techniques; principles of visual design and instructional message design.

7240 Critical Analysis of Current Research in Educational Media (3) Su Prereq.: ELRC 4520, 4507, or equivalent. Restatement in the field; evaluation of current and needed research; systems approach to solving instructional problems.

7240 Administration of Technology Programs (3) S Prereq.: ELRC 4507. Design instructor. Primarily for personnel responsible for planning, implementing, and evaluating educational technology programs. Topics include planning, facilities, financing, acquisitions, and staff development.

7500 Technology in Educational Leadership (3) F,S,Su Overview of salient advances in theory, research, and practice in educational technology: examining leadership roles in regard to emerging trends and issues in educational technology; analyzing current technology integration models.

7502 Principles of Distance Education (3) F,S,Su Prereq.: ELRC 4507 or consent of instructor. Applications of the principles of distance education to teaching and learning in educational and training contexts.

7503 Instructional Design (3) F Prereq.: ELRC 4507 or approved equivalent. Instructional design theories and models and their application in solving real world instructional/learning problems.

7504 Educational Technology and the Law (3) Legal issues concerning educational technology.

7505 Design Principles for Multimedia Instructional Units (3) Prereq.: ELRC 4507 and 7503; or equivalent. Instructional design for computer-assisted instruction; emphasis on high priority, events of instruction, structuring instructional sequences for maximum content retention.

7509 Authoring Systems for Educators (3) Prereq.: ELRC 4507 and 7503; or consent of instructor. Advanced topics in instructional technology.

7520 Educational Technology in Business, Industry, and Government Agencies (3) Prereq.: ELRC 7501 and one of the following: ELRC 5505, 7502. Techniques used to meet training and development needs in business, industry, and government agencies.

7525 Professional Development for K-12: Technology Integration (3) F Analyze effective professional development strategies; plan, design and implement, and evaluate teacher development activities.

7535 Advanced Telecommunications and Electronic Learning (3) F,S,Su Prereq.: ELRC 4507 or consent of instructor. Scope and elements of the online environment; technologies for online teaching and learning; design, development, or conversion of courses for online delivery; course management, assessment, and evaluation; policy issues.

7550 Theory and Research in Educational Technology (3) F Prereq.: ELRC 7503. For advanced graduate students. Theoretical foundations and research in educational technology; emphasis on theories of communication, learning, educational psychology, and behavioral sciences.

7791 Educational System Analysis (3) V Prereq.: completion of a required first course in construction of computer systems. Same as EDCJ 1779. Basic techniques for designing instructional systems; emphasis on instructional objectives; design and selection of instructional alternatives; and evaluation of instructional systems.

HIGHER EDUCATION

4364 Student Affairs in Higher Education (3) V Basic concepts and issues in the college student affairs field.

7500 Issues of Race and Gender in Higher Education (3) Historical and socio-political perspectives on the higher education experiences of women, African-Americans, Asian-Americans, and Hispanics focusing primarily on the period from the 1960s to the present.

7601 Foundations of Higher Education (3) History of the sociological and philosophical foundations for higher education in the United States.

7603 Leadership in Higher Education (3) S Analysis of leadership issues and theory relating to postsecondary education, including the academic and administrative governance; institutional culture; student diversity; curricular change, and new providers of higher education.

7604 Politics and Policy of Higher Education (3) Political and policy issues in higher education; issues of race and gender, politics, and policy of student loans; policies toward unprepared college students; collective bargaining; the accreditation process.

7605 Higher Education and the Law (3) Legal issues concerning higher education, including tenure, academic freedom, campus crime, sexual harassment, laws against discrimination, student discipline, and liability for accidents and injuries.

7606 Curriculum and College Teaching (3) Critical analysis of college curricula and approaches to teaching; historical development of curricular models; introduction to teaching and learning theories.

7607 Finance in Higher Education (3) Public policy and theory of financing higher education; topics include tuition, pricing, tuition policy, financial management of institutions, and financial aid.

7609 Strategic Planning in Higher Education (3) Strategic plans for institutions of higher education; processes by which those plans are developed; higher education strategy within the context of the cultural and competitive environment; emphasis on planning and implementation at the institutional level.

7610 Assessment and Evaluation in Higher Education (3) Analysis of assessment and evaluation practices in higher education; assessment and policy development and strategic planning.

7611 College Students in the United States (3) Critical analysis of issues related to college students in the United States, including academic, administrative, student organizations, and development and identity.

ELECTRICAL ENGINEERING • EE

2120 Circuits I (3) Prereq.: credit or registration in MATH 2080 or consent of department. Time-domain analysis of electrical networks.

2130 Circuits II (3) Prereq.: EE 2120 and MATH 2090. Frequency-domain analysis of electrical networks.

2230 Electronics I (3) Prereq.: EE 2210. Terminal behavior of semiconductor devices and basic circuits.

2311 Electronics Laboratory I (2) Prereq.: concurrent registration in EE 2230. 1 hr. lecture; 2 hrs. lab.

2720 Digital Logic I (2) Prereq.: Admission to the College of Engineering. Boolean algebra; logic gates; minimization methods; analysis and synthesis of combinational logic networks; design examples.

2730 Digital Logic Laboratory I (2) Prereq.: EE 2720. Analysis and design of sequential circuits; practical impact of design choices.

2731 Digital Logic Laboratory II (2) Prereq.: EE 2730. 1 hr. lecture; 2 hrs. lab. Familiarity with conventional logic gate and flip-flops; design and testing of various combinational and sequential circuits.

2950 Comprehensive Electrical Engineering (3) Prereq.: MATH 1552 or equivalent. For nonelectrical engineering majors. Elementary circuits, devices, and systems in electrical engineering.

3066, 3061 Special Projects (2,2) Prereq.: consent of department. Pastoral grading. Normally the instructor is a faculty advisor or project supervisor on special project selected by instructor and student.

3077 Engineering Practice (3) Prereq.: permission of department and either completion of one co-op session or six months of full-time employment in an appropriate area as paid work. Work experience in solving electrical and computer engineering problems in an engineering environment.

3140 Probability for Electrical and Computer Engineering (3) Prereq.: MATH 2050. Basic concepts of probability theory with application to electrical and computer engineering; probability axioms; continuous, discrete, and conditional probability density and distribution functions; expectations and characteristic functions; introduction to statistical inference and stochastic processes.

3160 Introduction to Digital Signal Processing (3) Prereq.: EE 3160 or equivalent. Digital processing of continuous-time signals; Discrete-time Fourier transform; z-transforms, signals and systems in the transform domains; Digital filter design techniques; Discrete Fourier transform and FFT algorithm.

3220 Electronics II (3) Prereq.: EE 2130, 2230, and 2511. Analysis and design of electronic circuits; emphasis on concepts and device models.

3221 Electronics Laboratory II (2) Prereq.: EE 2231 and concurrent registration in EE 2320. 1 hr. lecture; 2 hrs. lab.

3232 Solid State Devices I (3) Prereq.: EE 2230 and 2310. Physics and analysis of basic semiconductor devices; principles of integrated circuit fabrication.

3239 Electrical and Magnetic Fields (3) Prereq.: MATH 2057 and EE 2130. Maxwell's equations; wave propagation and reflection in isotropic media; static fields.

3410 Electric Power (3) Prereq.: EE 2310 and PHYS 2182. Basic principles of electrical energy conversion and power system analysis.

3431 Electric Power Laboratory (2) Prereq.: concurrent registration or credit in EE 3410; 1 hr. lecture; 2 hrs. lab.

3550 Introduction to Control Engineering (3) Prereq.: EE 2130. Modeling, simulation, realization, analysis, and feedback control design of dynamic systems.


3750 Microprocessor Systems (2) Prereq.: CSC 1253 and EE 2730. Theory and design of microprocessors; microprocessor technologies, architectures, assembly language, software development, input/output design, applications, and interfacing.

3751 Microprocessor Laboratory (2) Prereq.: EE 3730. 1 hr. lecture; 2 hrs. lab.

3755 Computer Organization (3) Prereq.: EE 2710 or equivalent. Structure and organization of computer system; instruction set; arithmetic; data path and control design.


3950 Electronics (2) Prereq.: EE 2950. For nonelectrical engineering majors. Basic electronics and instrumentation.

3951 Electrical and Electronics Laboratory (2) Prereq.: credit or registration in EE 2950 or equivalent. 1 hr. lecture; 2 hrs. lab. For nonelectrical engineering majors. Basic electrical and electronics laboratory.

4000 Special Topics in Electrical Engineering (3) May be taken for a max. of 6 hrs. of credit when topics vary. Students in curricula other than electrical engineering should consult the instructor. ABET category: 3 hrs. engineering science. Selected topics of current interest.

4001 Special Topics in Electrical Engineering (3) May be taken for a max. of 6 hrs. of credit when topics vary. Students in curricula other than electrical engineering should consult the instructor. ABET category: 1 hr. design; 2 hrs. engineering science. Selected topics of current interest.

4002 Special Topics in Electrical Engineering (3) May be taken for a max. of 9 hrs. of credit when topics vary. Students in curricula other than electrical engineering should consult the instructor. ABET category: 2 hrs. design; 1 hr. engineering science. Selected topics of current interest.

4120 Network Analysis (3) Prereq.: EE 3360 and MATH 2057. ABET category: 2 hrs. design; 1 hr. engineering science. Linear networks, with introduction to filters and network synthesis.
Courses

4130 Graph Theory (3) Prereq.: EE 2130 or equivalent. Graphs, graph operations, enumeration techniques, and applications to analysis and synthesis of electric networks; Kirchhoff’s third and fourth laws.

4140 Introduction to Communication Systems (3) Prereq.: EE 3120 or equivalent. Communication systems, digital modulation, channel coding, and an introduction to digital signal processing.

4232 Solid State Devices II (3) Prereq.: EE 3232. Physics and analysis of advanced semiconductor devices, including photonic and high-frequency devices.

4240 Linear Circuit Design (3) Prereq.: EE 3220 and 3221. Design and analysis of linear circuits. 2 hrs. lecture; 2 hrs. lab. ABET category: 2 hrs. design; 1 hr. engineering science.

4242 VLSI Design (3) Prereq.: EE 2730, 3220. 2 hrs. lecture; 2 hrs. lab. ABET category: 2 hrs. design; 1 hr. engineering science.

4250 Digital Integrated Circuits (3) Prereq.: EE 3320, 3221, and 3232. 2 hrs. lecture; 2 hrs. lab. ABET category: 2 hrs. design; 1 hr. engineering science. Design and analysis of digital circuits using CMOS technology.

4260 Semiconductor Measurements and Characterization (3) Prereq.: EE 3220 and 3410. 2 hrs. lecture; 2 hrs. lab. ABET category: 2 hrs. design; 1 hr. engineering science. Measurement of semiconductors and their operations.

4270 Optical Electronics (3) Prereq.: EE 3230 or equivalent. 2 hrs. lecture; 2 hrs. lab. Interaction of optical radiation with various media; theory of laser oscillations and specific laser systems; modulation and detection of optical radiation; fiber optic applications.

4320 Microwave Engineering (4) Prereq.: EE 3320 or equivalent. 3 hrs. lecture; 3 hrs. lab. Waves and cavities, signal sources, and microwave devices.

4330 Antenna Theory and Design (4) Prereq.: EE 3320 or equivalent. 3 hrs. lecture; 3 hrs. lab. Antennas and antennas measurement of impedances and far-zone radiation patterns.

4340 Fiber Optic and Microwave Propagation (3) Prereq.: EE 3610 and 3320 or equivalent. Wave propagation and optical and microwave frequencies in metallic waveguides and optical fibers.

4350 Electric Machine Engineering (3) Prereq.: EE 3340 or equivalent. Generalized theory of electric machinery; transient and steady-state analysis of symmetrical/unsymmetrical electric machines.

4380 Power System Analysis (3) Prereq.: EE 3410 or equivalent. Power system analysis using computer methods; power flow, economic power dispatch, and faults.

4450 Distribution System Design (3) Prereq.: EE 3410 or equivalent. ABET category: 2 hrs. design; 1 hr. engineering science. Design and analysis of distribution systems; emphasis on design and applications.

4460 Power Electronics (3) Prereq.: EE 3240 and 3410. 2 hrs. lecture; 2 hrs. lab. ABET category: 2 hrs. design; 1 hr. engineering science. Design of power semiconductor converters including controlled rectifiers, inverters, ac voltage controllers, and DC-DC converters.

4470 Harmonics and Filter Compensator Design (3) Prereq.: EE 3220 and 3410 or equivalent. ABET category: 2 hrs. design; 1 hr. engineering science. Design and analysis of harmonic filters for distribution systems with nonsinusoidal voltages and currents.

4480 Nonlinear Power System Analysis (3) Prereq.: EE 3410 or equivalent. Analysis of nonlinear systems, harmonic generation, compensation, and filtering.

4490 Adjustable Speed Drives (3) Prereq.: EE 3410, 4420. ABET category: 2 hrs. engineering design; 1 hr. engineering science. Design and simulation of DC and AC motor variable speed drives combined with an analysis of static and dynamic properties.

4560 Introduction to Modern Control (3) Prereq.: EE 3530. State variable methods for analysis and design of control systems; realization, stability, and stabilization; observers, control design.

4580 Topics in Control System Design (3) Prereq.: EE 3530. ABET category: 2 hrs. design; 1 hr. engineering science. Compensator design, multiloop systems; state estimation; stability; application to industrial controllers; design using computer simulation packages.

4585 Discrete Control System Design (3) Prereq.: EE 3530. ABET category: 2 hrs. design; 1 hr. engineering science. Sampling and reconstruction of signals; analysis and design of sampled data systems; discrete time systems and control.

4610 Analog Communication (3) Prereq.: EE 3120 and 3140. Amplitude, frequency, phase and pulse modulation, noise in analog modulation, applications.

4625 Digital Communication and Networking (3) Prereq.: EE 3530 and 3410 or equivalent. Digital coding of analog information, bandwidth transmission, decision theory, modulation, design considerations, applications.

4660 Random Processes (1) Prereq.: EE 3140 or equivalent. Probability spaces; random variables and processes; second order processes; spectral analysis; filtering.

4700 Special Topics in Computer Engineering (3) Prereq.: EE 3220 and 3410. 3 hrs. engineering science. Selected topics of current interest.

4701 Special Topics in Computer Engineering (3) Prereq.: EE 3220 and 3410. 3 hrs. engineering science. Selected topics of current interest.

4702 Special Topics in Computer Engineering (3) Prereq.: EE 3220 and 3410. 3 hrs. engineering science. Selected topics of current interest.

4710 Communications in Computing (3) Prereq.: EE 2730 and 3140 or equivalent. Theoretical and practical factors in designing computer communications networks; communication principles and codes; computer architecture; protocols; layered computer and current and advanced applications.

4720 Computer Architecture (3) Prereq.: EE 3370 and 3355 or equivalent. Memory hierarchy; pipelining techniques; design philosophies; parallel computing fundamentals.

4740 Discrete Structures for Computer Engineering (3) Prereq.: EE 3270 or equivalent. Mathematical logic and proof methods; graph theory; complexity of algorithms; algebraic structures; applications in computer engineering.

4745 Neural Computer (3) Prereq.: EE 3750 and MATH 2090. ABET category: 2 hrs. design; 1 hr. engineering science. Neural networks and automation; network architecture; learning models; applications in signal processing, vision, speech, and robotics; VLSI implementations.

4750 Microprocessor Interfacing Techniques (3) Prereq.: EE 3751. 2 hrs. lecture; 6 hrs. lab. ABET category: 2 hrs. design; 2 hrs. engineering science. Theory and design techniques of microprocessor interfaces to memory and input/output devices.

4760 Introduction to Compiler Optimization (3) Prereq.: EE 3755 and CSC 3102. ABET category: 2 hrs. design; 1 hr. engineering science. Design of compiler optimization techniques, compiler design.

4770 Real Time Computing Systems (3) Prereq.: EE 3370. ABET category: 2 hrs. design; 1 hr. engineering science. Real time computing systems; time division multiplexing; time division multiplexing systems; memory, and design considerations; an introduction to real-time systems.

4780 Introduction to Computer Vision (3) Prereq.: EE 3370. ABET category: 2 hrs. design; 1 hr. engineering science. Computer vision systems; image processing; image recognition; image segmentation; computer vision; computer vision software and hardware.

4785 Introduction to Expert Systems (3) Prereq.: EE 3370 or equivalent. Introduction to expert systems, including rule-based systems, search strategies, representation and logic programming.

4790 Structure of Computers and Computations I (3) Prereq.: EE 3500 and CSC 3102 or equivalent. ABET category: 2 hrs. design; 3 hrs. engineering science. Analysis of computer organization, software and hardware complexity analyses; structures of both computers and computations.

5000 Advanced Topics in Electrical Engineering (3) Prereq.: consent of instructor. Network analysis, synthesis, and design; graph theory; state space analysis of linear systems; digital computer-aided design and analysis.

5120 Linear Active Network Analysis and Synthesis (3) Prereq.: consent of instructor. Active network analysis and design, multiport networks, pathalgetic elements, inductorless filter theory.


5150 Theory and Application of Digital Signal Processing (3) Prereq.: EE 3140 or equivalent. Digital filter design, signal processing, digital hardware implementations, and applications.

5200 Advanced Topics in Electronics (3) Prereq.: consent of instructor. Modeling of active and passive solid-state devices; modeling theory to relate device physics to circuit performance; selected circuit applications.

5220 Semiconductor Devices I: Bipolar (3) Prereq.: EE 3232 or equivalent. Semiconductor material properties, equilibrium and nonequilibrium processes, physical principles of device junctions, and quasi-neutral material; modeling of devices and bipolar transistors.

5222 Semiconductor Devices II: Field Effect (3) Prereq.: EE 3232 or equivalent. Surface effects; metal-insulator-semiconductor structure; modeling of MOS capacitors and IGETS.

5230 Physics of Device Electronics (3) Prereq.: consent of instructor. Semiconductor physics and necessary prerequisites for tractable device analysis; elements of statistical physics, transport phenomena in solids, band theory of solids, and semiconductor junctions.

5232 Small-Geometry and High-Speed Devices (3) Prereq.: EE 7230 or equivalent. Charge carrier transport in small and high-electron mobility semiconductor devices, hot-electron effects, current crowding; Scattering in bound-states, heterostructure devices, tunneling devices, ballistic transport devices, and surfaces and interfaces in heterostructures.

5240 Integrated Circuit Engineering (3) Fabrication processes and device design for monolithic integrated circuits; relation to circuit performance; thin- and thick-film circuits.

5243 VLSI Systems (3) Prereq.: consent of instructor. Design and implementation of very large scale integrated systems; structured design methodology using MOS technology.

5244 Advanced Lithography and Metrology (3) Prereq.: EE 7240 or consent of instructor. Physical principles used in state-of-the-art microlithography; optical techniques, x-rays, e-beams, resists, measurement and inspection techniques.

5246 Integrated Sensors and Actuators (3) Prereq.: EE 7240 and EE 4422 or consent of instructor. Sensor principles and design considerations; bulk and surface micromachining fabrication processes including LIGA; microactuator and micromechanical devices; integration of sensors/actuators and electronic circuits on the same chip.

5248 Mixed-Signal Integrated Circuit Design (3) Prereq.: EE 4240 and 4242 or consent of instructor. Design and technology of analog and mixed-signal integrated circuits, analog design and design and implementation of mixed-signal circuits, mixed-signal circuit testing and measurements.

5250 Semiconductor Power Devices (3) Prereq.: EE 3220 or equivalent. Operation and characteristics of semiconductor energy conversion devices with emphasis on physical mechanisms involved; fabrication of energy conversion devices.
7260 Semiconductor Materials (3) Theory and application of crystal growth methods and chemical vapor deposition; preparation and purification of elemental and compound semiconductors; structural properties and their effect on electronic and physical parameters; amorphous semiconductors.

7270 Magnetic Materials and Devices (3) Prereq.: EE 3352 or equivalent. Theory and analysis of magnetic materials, domain structures, and magnetic memory; current developments and applications of magnetic devices.

7310 Electromagnetic Theory and Techniques (3) Electromagnetic theory and applications to propagation, waveguides, and microwave systems.

7350 Boundary Value Problems in Engineering (3) Prereq.: consent of instructor. Separation of variables method for solving certain classes of partial differential equations, including properties of special functions and their applications to engineering problems.

7400 Advanced Topics in Power (3) May be taken for a max. of 12 hrs. of credit when topics vary.

7410 Faulted Power System Analysis (3) Development of positive, negative, and zero sequence parameter of power system components and their application in a variety of power system fault conditions.

7420 Power System Dynamics (3) Modern approach to power system transient and dynamic stability studies; detailed simulation machine models; their linearization, excitation systems, and multimachine system stability analysis.

7430 Power System Reliability (3) Reliability analysis of power systems, including generation, transmission, and distribution.

7440 Power Transmission and Control (3) Prereq.: EE 4460 or equivalent. Analysis of DC/DC transmission systems; high power switches and limiters; converter circuits, modeling control, and stability analysis of DC transmission, misoperation of converters, protection, harmonics, and filters.

7450 Power System Protection (3) Identification of conditions for parallel system protection; special problems associated with protection of variable system components; protection devices, and their application.

7460 Static Power Converters (3) Prereq.: EE 4460 or equivalent. Converters and drives, including voltage controllers, PWM inverters, cycloconverter and switched-mode power supplies.

7470 Power Generation and Control (3) Prereq.: EE 4460 or equivalent. Modern approaches for the analysis and identification of linear, discrete and continuous time control systems; state variable and fractional description techniques, functional analytic methods.

7500 Optimal Control Theory (3) Prereq.: EE 4460 or equivalent. Dynamic optimization applied to control systems; minimum principle, Hamilton-Jacobi-Bellman theory, dynamic programming, gradient algorithms, and functional analytic methods.

7525 Robust Control (3) Prereq.: EE 4650 and 4580. Robust control design techniques, i.e. robust stability, robust performance, controller parametrizations, design limitations, loop shaping H_∞ control and other optimal robust control design techniques.

7530 System Identification (3) Prereq.: EE 4560, 4660 or equivalent. Conventional parameter estimation and adaptive modeling; control oriented identification; model uncertainty; theory of review of research literature on system identification.


7560 Topics in Modern System Science (3) Prereq.: EE 4560 or equivalent. Research literature, operator theory and functional analysis applied to control engineering problems.

7570 Nonlinear System Analysis (3) Prereq.: EE 4560. Systems approach to study of nonlinear systems; includes limit cycles, bifurcations, singular perturbations, describing functions, Liapunov's stability, Lure's problem, Popov's criteria, and input-output stability.

7580 Computer Process Control (3) Prereq.: EE 4385 or equivalent. Theory and design of implementation of computer-based control systems; includes supervisory, DDC, and hierarchical configurations, process and operator interface, real-time operations, industrial computer control systems; implementation of advanced control algorithms, time series analysis, and online process optimization.

7585 Advanced Digital Control Systems (3) Prereq.: EE 4385 and EE 4560. Theory and design of sampled-data control systems; including discretization of continuous-time systems and design of sampled-data systems; performance analysis in frequency and time domain; design techniques based on optimal controls; robustness analysis of sampled-data feedback control systems under plant perturbations.

7600 Advanced Topics in Communications (3) May be taken for a max. of 12 hrs. of credit when topics vary.

7610 Analog Communication (3) Prereq.: EE 4660 or equivalent. Random waveforms, receiver design, linear and nonlinear modulation; pulse modulation.

7620 Digital Communication (3) Prereq.: EE 4660 or equivalent. Optimal receiver principles and design; modulation schemes; digital coding of information; transmission requirements; channel capacity and cutoff rate; intersymbol interference; random system analysis.

7630 Detection and Estimation Theory (3) Prereq.: EE 4660 or equivalent. Hypothesis testing, detection of known and unknown signals, estimation of signal parameters, signal resolution.

7640 Information Theory, Coding, and Cryptography (3) Prereq.: EE 4660 or equivalent. Measures of information, channel capacity, Shannon and Huffman coding, rate-distortion theory, linear codes, cyclic codes, BCH and Goppa codes, convolutional codes, problems of data security, probabilistic ciphers, computational complexity ciphers.

7660 Random Processes II (3) Prereq.: EE 4660 or equivalent. Sequences of random variables, renewal processes, Markov chains, and queuing models.

7670 Communication Networks (3) Prereq.: EE 7660. Protocols, performance, and implementation of the data link layer and the network layer of communication networks.

7672 Switching and Broadband Networks (3) Prereq.: EE 7660. Theory, implementation, and performance analysis of switching architectures and broadband integrated networks; traffic and congestion control.

7674 Wireless Communication Networks (3) Prereq.: EE 7620. Theory, implementation, and security issues in mobile wireless communication networks.

7700 Advanced Topics in Computer Engineering (3) May be taken for a max. of 12 hrs. of credit when topics vary.

7710 Advanced Digital Logic (3) Prereq.: EE 3750 or equivalent. Mathematical foundations of Boolean algebra; vector switching functions, Boolean differential calculus, and fault detection.

7715 Computer Arithmetic (3) Prereq.: EE 3755 or equivalent. Number systems; arithmetic algorithms; high-speed integer and floating-point arithmetic; residue number systems; hardware implementation.

7720 Advanced Computer Architecture (3) Prereq.: EE 4720 or equivalent. Computer architecture: arithmetic units; vector processing; parallel processing and interconnection networks.

7725 Interconnection Networks (3) Prereq.: EE 4720 or equivalent. Interconnection network theory, analysis, and implementation; shared memory, coherent caches, and related topics.

7730 Image Analysis I (3) Prereq.: EE 3120 or equivalent. Basic fundamentals and techniques of digital image processing; hardware and software, applications, 2 D transforms, preprocessing, texture analysis, and edge detection; emphasis on application of theory to practical problems.

7740 Image Analysis II (3) Prereq.: EE 4660 and 7730. Continuation of EE 7730. Formal mathematical treatment of image segmentation, shape analysis, texture analysis, and scene analysis.

7745 Neural Networks and Iterative Maps (3) Prereq.: EE 4650 or equivalent. Neural network approach to artificial intelligence; general properties of iterative maps; mapping networks for pattern recognition; optimization; genetic algorithms; implementation issues.

7750 Machine Recognition of Patterns (3) Prereq.: EE 4650 or equivalent and knowledge of programming languages. Decision functions, Bayesian decision theory, cluster analysis; design of deterministic, stochastic, and fuzzy classifiers; unsupervised learning; feature selection.

7760 Logic Testing and Testable Design (3) Prereq.: EE 4755 or equivalent. Design of deterministic, stochastic, and fuzzy systems. Test generation for combinational and sequential circuits, VLSI test, design for testability.

7765 Distributed Computing System Reliability (3) Prereq.: EE 3140 and 4720 or equivalent. Reliability measures, standards, evaluation, and bounds; multinode and statistical dependent failure analysis; distributed and parallel system reliability and availability; graceful degradation, performability; software reliability.

7770 Interntetworking Principles (3) Prereq.: EE 4710 or equivalent. Internet concepts, networks, and transport layers, IP switching, Routing techniques, Internet security, Firewalls.

7780 Software Design Principles (3) Prereq.: CSC 3102 or equivalent. Engineering approach to computer software development; structured and modular programming concepts; software design and management; program testing and correctness proofs; design level software measurement; software size, effort, and cost measures; other topics from software engineering.

7785 Program Parallelization (3) Prereq.: EE 3755 or equivalent. Analysis and optimization of programs for a variety of architectures; impact of parallel systems.

7790 Structure of Computers and Computations II (3) Prereq.: EE 4790 or consent of instructor. Mathematical treatment of space and time complexity of computations, formal and informal models of computers and computations.

7795 Models and Methods for Parallel Computation (3) Prereq.: EE 4740 or consent of instructor. Abstract models of parallel computation; algorithms, complexity, and simulations.

8000 Thesis Research (1-12 per sem.) Prereq.: permission of department. “S”/“U” grading.

9000 Dissertation Research (1-12 per sem.) Prereq.: permission of department. “S”/“U” grading.

**ENGINEERING**

**ENGR**

Students who are not exempt will be required to pass one, two, or three English composition courses. Placement level depends on ACT/SAT/AP scores, a placement test, or prior college credit. Required courses must be taken progressively. The completion of English 2000 or its equivalent (English 10085 for international students, or approved transfer credit) is required of all students.

The satisfactory completion of English 1001 or equivalent credit is prerequisite for all English courses numbered 2000 and higher.

General education courses are marked with stars (★).

0004 English Composition (5) For international students whose diagnostic tests indicate the need for intensive work in basic writing skills. Pass-no credit grading. Not for degree credit. Required during the first semester of residence for all international students (graduates, undergraduates, and transfer students) who are not excused on the basis of the placement examination required of every new international student.

★ 1001 English Composition (3) Placement by department. Introduction to writing in forms of expressive and informative discourse.

★ 1002 English Composition (3) Prereq.: ENGL 1000/1001 or placement by department. An honors course, ENGL 1003, is also available. Introduction to
writing persuasive, evaluative, and other forms of argu-
ments to discourse.

1003 HONORS: English Composition (3) Same as ENGL 1002, with special honors emphasis for qualified students.

1004 English Composition (3) Prereq.: ENGL 0004 or placement by department. For international students. Same as ENGL 1000/1001, with emphasis on usage and idiom problems specific to international students. Required during the first semester of residence for all international students (graduates, undergraduates, and transfer students) who demonstrate on the placement examination need for work in English, but not at the intensive level of ENGL 0004. Graduate students graded pass-no credit.

1005 English Composition (3) Prereq.: ENGL 1004 or placement by department. For international students. Same as ENGL 1002, with continued work on problems specific to international students. Graduate students graded pass-no credit.

1051 Spoken English for International Graduate Assis-
tants (3) Oral interview and permission of pro-
gram coordinator. For current and potential international graduate assistants only. Pass/no credit grading. May be taken for a max. of 9 sem. hrs. of credit. Developing spoken English skills (pronunciation, stress, intonation, rhythm); improving overall comprehensibility through tasks/activities, drills, and videotaped oral presentations.

1052 Reading (3) Prereq.: ENGL 1001 or equivalent. Credit will not be given for both this course and ENGL 1002. Practice in the processes of academic and non-academic reading.

2001 Advanced English Composition (3) Credit will not be given for both ENGL 2001 and 3101. Theory and practice of exposition, description, and narration.

2002 Business Writing (3) Credit will not be given for both ENGL 2002 and 2102. Preparing business documents such as reports, articles, and letters.

2005 Introduction to Writing Short Stories (3) Prereq.: consent of instructor. Writing short stories for workshop criticism; practice in techniques of using point of view, dialogue, setting, and characterization.

2007 Introduction to Writing Poetry (3) Writing poems for self-critical activity in both open and closed forms; emphasis on contemporary techniques and prosody.

2008 Introduction to Writing Drama (3) Also offered as THTR 2008. Writing plays for workshop criticism; practice in techniques of exposition, characterization, and dramatization.

2009 Introduction to Writing Screenplays (3) Writing screenplays for workshop criticism; techniques of exposition, characterization, and dramatization.

2012 Practical Grammar and Usage (3) Practical grammar, usage, and punctuation; effective word choices and sentence structures of common errors; use of dictionaries; current language controversies, regional and social language variation.

2024 Critical Strategies (3) Skills for reading and writing about a variety of critical perspectives; approaches such as reader response, psychoanalysis, myth, new historicism, and feminism applied to a range of literary texts.

2025 Fiction (3) Skills for reading and writing about fiction; attention to generic conventions and critical perspectives; section emphasis may vary, consult departmental handbook.

2027 Poetry (3) Skills for reading and writing about poetry; attention to generic conventions and critical perspectives; section emphasis may vary, consult departmental handbook.

2029 Drama (3) Skills for reading and writing about drama; attention to generic conventions and critical perspectives; section emphasis may vary, consult departmental handbook.

2085 Science Fiction Studies (3) Science fiction literature, particularly that of the 20th century.

2086 Fantasy Literature (3) Variety of literary types employing conventions of the fantastic; uses of older litera-
tures in modern fantasy novels; themes such as quest for identity; effects of nature and change on language and the human condition.

2102 Business Writing for International Students (3) Credit will not be given for both ENGL 2002 and 2102. Preparing business documents such as reports, articles, and letters for international students (graduates, undergraduates, and transfer students). May be taken for a max. of 9 sem. hrs. of credit. Graduate students graded pass-no credit.

2123 Studies in Literary Traditions and Themes (3) Skills for reading and writing about literature; attention to historical development in context, and critical perspectives; topics such as “The Epic,” “Imagining the Family,” “Literature and the City,” section emphasis will vary, consult departmental handbook.

2148 Shakespeare (3) The more popular plays.

2173 Louisiana Literature (3) Fiction, poetry, essays, and drama of Louisiana.

2175 The Civil War in Literature (3) Portrayal of the Civil War in fiction, poetry, and letters.

2201 Introduction to World Literary Traditions (3) See CPLT 2201.

2202 Introduction to Modern World Literature (3) See CPLT 2202.

2220 Major British Authors (3) Selected major British authors from the Anglo-Saxon period to the present.

2222 Popular Fictions (3) Critical analysis of popular literature, television programs, and advertisements; emphasis on development of textual interpretive skills.

2311 Reading Film as Literature (3) Introduction to film as literature; mastery of film language and literary bases; fictional narrative and drama; film classics.

2370 Major American Authors (3) Selected major American authors from the Colonial period to the present.

2390 Interpreting Discourse (3) Study of and writing about discourse forms (fiction, popular and critical texts, technical and legal documents), using linguistic, rhetorical, and cultural analysis.

2423 Introduction to Folklore (3) Also offered as ANTH 2423. Introduction to the world, sources of folklore; literary, sociological, and anthropological, and historical approaches to folklore; relationship to folklore and written literature.

2593 Images of Women: An Introduction (3) Critical analysis of women’s representations, addressing a range of traditional and/or popular genres, historical periods, and/or critical approaches; emphasis on developing textual and interpretive skills; section emphasis may vary, consult departmental handbook.

2673 Literature and Ethnicity (3) Literature of America’s ethnic cultures.

2674 Introduction to African-American Literature (3) Major figures and popular texts of Black American literature, including writers of fiction, poetry, drama, and essays; influence of genre on the articulation of common political and social themes.

2710 Descriptive Grammar of English (3) Examination of what every English speaker has internalized about English, including sentence structure, sound patterns, and word formation.

2823 HONORS: Studies in Literary Traditions and Themes (3) Honors equivalent of ENGL 2123.

2824 HONORS: Critical Analysis of Literature (3) Honors equivalent of ENGL 2024. Study and writing about literary forms.

2920, 2921, 2922 Independent Work (1,1.5,1) Prereq.: Sophomore standing and an average of not less than 2.00 in all previous English courses. Consult department before registering. Reading, conferences, and reports under departmental faculty direction.

3000 HONORS: Honors Thesis (3) Conclusion of the English honors program; for details, consult the department.

3011 Writing Professionally in the Arts and Social Sciences (3) Prereq.: junior status or consent of instructor. Practice in writing common to the arts and social sciences; includes proposals, research studies, and reports.

3020 Technical Writing (3) Prereq.: junior status. Credit will be given for only one of the following: ENGL 3002, 3003, and 3102. Training in skills of practicing scientists, engineers, and technical managers.

3030 Technical Writing for Nontechnical Majors (3) Prereq.: junior status. Credit will not be given for both ENGL 3002 and 3003. This course will not substitute for 3002 requirements. |

3044 Writing with Style: Advanced Expository Prose (3) Experimentation with different styles of writing in a workshop format.

3051 Composition Tutoring (3) Prereq.: consent of instructor, 1 hr. lecture; 6 hrs. lab composition course. Composition technique as applicable to undergraduate tutoring.

3060 British Literature I: The Middle Ages, Renais-
sance, and 18th Century (3) Survey of English literature from the Anglo-Saxon period through Chaucer, Shae-
kepeare, the 17th century.

3062 British Literature II: Romantics, Victorians, and Moderns (3) Survey of British literature from the French Revolution through the Industrial Revolution into the 20th century.

3074 Criticism (3) Involuntary works of literary criticism from the classical to the modern period.

3076 American Literature I: Focusing a Nation (3) Emergence of an American national consciousness in major writings from the Colonial era to the Civil War.

3077 American Literature II: Coming of Age (3) American literature from the Civil War to the present; realism, naturalism, modernism; effects of industrialization, immigration, the women’s movement, the civil rights struggle, the world wars.

3080 Post-colonial Literature (3) Survey of literature from former British colonies in South Asia, Africa, and the Caribbean; colonialism; nationalism; independence; transnationalism; hybridity; women’s rights; building a new nation, etc.

3084 Modern Critical Theory (3) Involuntary works of literary criticism and theory written in the 20th century.

3086 Contemporary Fiction (3) Survey of contemporary fiction from a comparative perspective; authors such as Achebe, Bellows, García Márquez, Lessing, Morrison, Pynchon, Updike; developments in magical realism, minim-
imalism, cyberpunk.

3101 Legal Writing (3) Credit will not be given for both this course and ENGL 2301. Writing assignments tailored to forms of writing common in law and in law-related fields; emphasis on writing clear, pre-
cise, effective prose.

3102 Technical Writing for International Students (3) Prereq.: junior status. Credit will not be given for only one of the following: ENGL 3002, 3003, 3102. Training in writing for non-native speakers of English in skills required of practicing scientists, engineers, and technical managers.

3124 The Literature of the English Bible (3) Also of-
fered as REL 3124. Literary themes and forms in the King James version; particular reference to the literary influence of the Bible on later literature.

3201 Language Development and Diversity (1) Prereq.: ENGL 3001. Concurrent enrollment in ENGL 3002. 3 hrs. lab/field experience in multicultural settings. Language development and diversity of adolescent speakers, writers, and readers of English.

3202 Dynamics of Learning in the English Classroom (1) Prereq.: EDCI 3001 and ENGL 3201. Concurrent enrollment in ENGL 3002. 3 hrs. lab/field experience in multicultural settings. Language development and diversity of adolescent speakers, writers, and readers of English.

3220 English Composition (3) See also ENGL 3223. Critical analysis and survey of literature with adolescents as main characters and written for adolescent and adult audiences.

3236 Literature and Religion: an Overview (3) Also offered as REL 3236. Comparative analysis of world views in representative works of Western literature; theory and practice of the religious interpretation of literary texts; writers studied may include, Aeschylus, Dante, Shakespeare, Melville, and Walker Percy.

3300 Rhetoric: Texts and Historical Contexts (3) Devel-
opment of rhetoric and writing within their cultural context; modes of writing and rhetoric particular to historical periods, classical to modern.

3301 Writing: Practice, Pedagogy, and History (3) Cultural, technological, and historical influences on writ-
ing, the teaching of writing, and today’s teaching practices.


3348 Cultural and Textual Studies (3) Introduction to the theory and practice of cultural studies; reading of theoretical statements; analysis of exemplary texts (films, videos, literary works, autobiographies, historical and legal documents).

3401 The Study of Folklore (3) See ANTH 3401.
3593 Survey of Women and Literature (3) Significance of gender for the author, the reader, and the work itself; connections between texts and society; literary influences and relations between mainstream and nontraditional literature.

3674 Survey of African-American Literature (3) Literature of the black experience in the U.S. from slave narratives to the present; topics may vary. Authors such as Sophocles, Shakespeare, Ibsen, Wilde, O’Neill, Beckett, Pinter; topics such as “The Beginnings of English Drama,” “Shakespeare to the Contemporaries,” “Irish Drama,” “Women in the Theatre.”

4029 Studies in Comedy and Tragedy (3) May be taken for a max. of 6 hrs. of credit when topics vary. Authors such as Sophocles, Aristophanes, Shakespeare, Ibsen, Wilde, O’Neill, Beckett, Pinter; topics such as “The Beginnings of English Drama,” “Shakespeare to the Contemporaries,” “Irish Drama,” “Women in the Theatre.”

4030 Studies in the Middle Ages (3) May be taken for a max. of 6 hrs. of credit when topics vary. Authors such as Chaucer, Langland, the Gawain Poet, Julian of Norwich; topics such as “Love and Chivalry in Middle English Lyric and Romance,” “Dream Vision and Allegory,” “Reading Anglo-Saxon Literature.”

4031 Studies in Satire and Irony (3) May be taken for a max. of 6 hrs. of credit when topics vary. Authors such as Donne, Jonson, Matthew, Webster, Milton; developments in metaphysical poetry, revenge tragedy, urban comedy, court satire such as “Public Playhouse and Courtly Stage,” “Poetry and Politics.”

4050 Studies in the Restoration and 18th Century (3) May be taken for a max. of 6 hrs. of credit when topics vary. Novels such as Fielding, Richardson, Austen; developments in satire, comedy of manners; the novel such as “The Life of Wing.”

4055 Studies in the Novel and the Idea of Narrative (3) May be taken for a max. of 6 hrs. of credit when topics vary. Novels such as Tremain, Shandy, Madame Bovary, The Trial, To the Lighthouse, Beloved; theorists such as Booth, Bakhtin, Kermode, Girard, Barthes, Kristeva, Said; topics such as time, structure, voice, self-reflectivity.

4060 Studies in the Romantic Movement (3) May be taken for a max. of 6 hrs. of credit when topics vary. Authors such as Blake, Wordsworth, Coleridge, Byron, Percy and Mary Shelley, Keats; topics such as “Romanticism and the French Revolution,” “The Poetic Imagination,” “The Romantic Novel.”

4062 Studies in the Victorian Age (3) May be taken for a max. of 6 hrs. of credit when topics vary. Authors such as Dickens, the Brontës, the Eliots, Thackeray, Browning, Arnold, Ruskin, Wilde; topics such as “The Bildungsroman,” “London, Crime, and Victorian Literature,” “The Victorian Novel.”

4070 Studies in American Literature to 1865 (3) May be taken for a max. of 6 hrs. of credit when topics vary. Authors such as Franklin, Poe, Emerson, Hawthorne, Douglass, Melville, Whitman, Dickinson; themes such as American identity, nature and culture; topics such as “The Puritan Imagination,” “Rethinking the American Renaissance.”

4071 Studies in American Literature since 1865 (3) May be taken for a max. of 6 hrs. of credit when topics vary. Authors such as Twain, James, Wharton, Eliot, MacLeish, Mailer; topics such as modernism, developments in the novel, poetry, nonfiction prose; topics such as “The American Self,” “Naturalism,” “Postmodernism.”

4080 Studies in British Commonwealth (3) May be taken for a max. of 6 hrs. of credit when topics vary. Authors such as Pound, Eliot, Stein, Joyce, Woolf, and Faulkner; topics such as “The Avant-Gardes of the 20th Century,” “Nationalism and Literature,” “War Poetry,” “The Expatriates.”

4086 Studies in the Short Story (3) May be taken for a max. of 6 hrs. of credit when topics vary. Authors such as Chekhov, Joyce, Hemingway, Cather, Wright, Garcia Marquez, Flannery O’Connor; theorists such as Poe, Frank O’Connor, Friedman, Pratt; topics such as short story sequences, beginnings and endings, compression, conflict.

4076 Survey of African-American Literature (3) May be taken for a max. of 6 hrs. of credit when topics vary. Psychoanalytic readings of literature such as Hume; literary readings of psychoanalytic authors such as Freud, Jung, Lacan; topics such as “Feminism and Psychoanalysis.”

4076 Survey of African-American Literature and Film (3) Also offered as POL 4234. May be taken for a max. of 6 hrs. of credit when topics vary. Literary theory and important political film, film and ideology, “Adaptations of Literary Classics,” “Film Genres,” “Film and Gender.”

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Courses

4716 Introduction to Sociolinguistics (3) Also offered as LING 7713. May be taken for a max. of 9 sem. hrs. of credit when topics vary. Specialized explorations in critical theory and cultural studies; topics include “Derrida and American Deconstruction,” “Critical Theory and Science Fiction,” “Marxism and the Western” “Anti-Response Theory and Popular Romance,” “Postmodernism.”

7211 Topics in Critical Theory and Cultural Studies (3) May be taken for a max. of 9 sem. hrs. of credit when topics vary. Analysis of an aspect of gender theory in relation to literary or cultural study; topics such as “Gender, Narrative, and Property,” “Film and Gender,” “Psychoanalysis and Sexuality.”

7241 Topics in Women’s Writing (3) May be taken for a max. of 9 sem. hrs. of credit when topics vary. Major female genres and approaches to their study; relationships between folklore and other disciplines, such as literary study and anthropology.

7243 Topics in Folklore (3) May be taken for a max. of 9 sem. hrs. of credit when topics vary. Examination of particular folk genres, issues, or methods in the study of folklore.

7251 Topics in the History of Rhetoric and Poetics (3) May be taken for a max. of 9 sem. hrs. of credit when topics vary. Topics may cover any aspect of the historical relationship between formal rhetoric, poetic theory, and English literature from the Middle Ages to the present.

7252 Topics in Rhetorical and Poetic Theory (3) May be taken for a max. of 9 sem. hrs. of credit when topics vary. Intensive study of a topic in rhetorical and poetic theory, such as “Rhetorics of the Self,” “Lacanian Poetics,” “Rhetoric and Politics.”

7541 Topics in Rhetoric, Media, and Representation (3) May be taken for a max. of 9 sem. hrs. of credit when topics vary. Analysis of writing and language in light of their contextual and material influences and the methods for their study; emphasis on class and gender.

7621 Research Methods in Composition, Literacy, and Rhetorical Studies (3) Survey and theoretical discussion of research methods in the fields of composition studies, literacy studies, and ethnography in the fields of composition studies, literacy studies, and cultural studies. May be taken for a max. of 9 sem. hrs. of credit when topics vary. An exploration of a topic or topics in the history of English, of the Germanic language, or of the Indo-European language family.

7713 Topics in Syntax and Semantics (3) Also offered as LING 7714. May be taken for a max. of 9 sem. hrs. of credit when topics vary. Exploration of a topic or topics in the history of English, of the Germanic language, or of the Indo-European language family.

7714 Topics in Sociolinguistics (3) Also offered as LING 7714. May be taken for a max. of 9 sem. hrs. of credit when topics vary. An exploration of a topic or topics in the
sociolinguistics of English and related languages, including English-based dialects and creoles.

7715 Topics in Language Acquisition (3) Also offered as LING 7715. May be taken for a max. of 9 sem. hrs. of credit when topics vary. An exploration of a topic or topics in the acquisition of English syntax, morphology, or phonology.

7724 Topics in Feminist Theory and Criticism (3) May be taken for a max. of 9 sem. hrs. of credit when topics vary. Analysis of a particular aspect of feminist theory, such as feminist psychology, feminist film theory, gender and popular culture.

7783 Topics in Film and Video Studies (3) May be taken for a max. of 9 sem. hrs. of credit when topics vary. Intensive examination of a topic in the history or theory of film, television, or other audiovisual productions, or in the relation of such productions to literature.

7910 Language (3) May be taken for a max. of 6 sem. hrs. of credit when topics vary.

7915 Teaching College Composition (3) Prereq.: Students must be graduate teaching assistants in the English Department. Course is designed for graduate students teaching in the First-Year Writing program. Theoretical and pedagogical issues in the teaching of college writing.

7920 English Seminar (1-3) May be taken twice for credit when topics vary.

7921 Topics in Genres (3) May be taken for a max. of 9 sem. hrs. of credit when topics vary. Intensive study of works in a literary genre from different national and cultural traditions and from different historical periods; topics include “Medieval and Renaissance Drama,” “The Long Poem in English,” “The Origins of the Novel,” “The Short Story.”

7922 Authors Seminar (3) May be taken for a max. of 9 sem. hrs. of credit when topics vary. Detailed study of one or two authors in American, British, or other Anglophone cultural traditions and from different historical periods; topics such as “Southern Sexualities,” “The Color Purple.”

7924 Bibliography and Textual Research (3)

7926 Topics in the British Novel (3) May be taken for a max. of 9 sem. hrs. of credit when topics vary. Topics such as “Victorian Women Poets,” “Youth and Identity in 19th Century Literature,” “British Working-Class Writing.”

7934 Topics in Medieval Literature (3) May be taken for a max. of 9 sem. hrs. of credit when topics vary.

7937 Beowulf (3)

7942 Topics in Renaissance Literature (3) May be taken for a max. of 9 sem. hrs. of credit when topics vary.

7943 Studies in Shakespeare (3) May be taken for a max. of 6 sem. hrs. of credit when topics vary.

7951 Topics in Restoration and 18th Century Literature (3) May be taken for a max. of 9 sem. hrs. of credit when topics vary. Topics such as “Romanticism and Place,” “Literature and Revolution,” “Romanticism and Linguistic Theory.”

7962 Studies in the Victorian Period (3) May be taken for a max. of 9 sem. hrs. of credit when topics vary. Topics such as “Victorian Literature and Race,” “Victorian Literature and Economics,” “Victorian Literature and the City.”

7963 Topics in 19th Century British Literature (3) may be taken for a max. of 9 sem. hrs. of credit when topics vary. Topics such as “19th Century British Women Poets,” “Youth and Identity in 19th Century Literature,” “British Working-Class Writing.”

7970 Topics in American Genres (3) May be taken for a max. of 9 sem. hrs. of credit when topics vary. Focused study of genres in the American context; genres may include the novel, the short story, drama, poetry, the captivity narrative, or the essay.

7972 Topics in Southern Literature (3) May be taken for a max. of 9 sem. hrs. of credit when topics vary.

7973 Topics in Louisiana and Caribbean Studies (3) May be taken for a max. of 9 sem. hrs. of credit when topics vary.

7974 Topics in American Literature (3) May be taken for a max. of 9 sem. hrs. of credit when topics vary.

7975 Topics in African-American Literature (3) May be taken for a max. of 9 sem. hrs. of credit when topics vary.

7976 Black Drama and Poetics (3) Comparative study of African and New World black dramatists and poets.

7977 Black Criticism and Literary Methodologies (3) May be taken for a max. of 6 sem. hrs. of credit when topics vary.

7978 Cross-Cultural Souths (3) Southern literature and culture in relation to other cultures of the United States and other regions of the world.

7981 Topics in Modern and Contemporary Literature (3) May be taken for a max. of 9 sem. hrs. of credit when topics vary. Intensive study in modern and contemporary literature; topics include “Modern Irish Literature,” “Modernism,” “Postmodern Literature,” “Contemporary Australian Literature.”

7983 Topics in Ethnic and Postcolonial Literatures (3) May be taken for a max. of 9 sem. hrs. of credit when topics vary. Detailed study of different aspects of American ethnic literatures such as Asian American, Native American, Latino/Chicano, and postcolonial literatures such as Indian, African, West Indian, Trinidadian.

8000 Thesis Research (1-12 per sem.) “S”/“U” grading.

8900 Independent Study (1-3) May be taken for a max. of 3 sem. hrs. in an M.A. program, 6 sem. hrs. in an M.F.A. program, and 9 sem. hrs. in a PhD program. Directed individual readings guided by the graduate faculty.

9000 Dissertation Research (1-12 per sem.) “S”/“U” grading.

ENTOMOLOGY • ENTM

2001 Insects in the Environment (3) F Prereq.: BIOL 1201, 1208; and either BIOL 1402 or BIOL 1502; or BIOL 1001, 1082, 1003, 1004; or equivalent. 2 hrs. lecture; 2 hrs. lab. Insect identification, classification, and life cycles; factors affecting insect diversity and abundance; interactions between insects and the natural environment.

2050 Introduction to Pest Management (4) See PLHL 2050.

3000 Pest Management Internship (3) Prereq.: Students must be graduate teaching assistants in the English Department. Course is designed for graduate students teaching in the First-Year Writing program. Prereq.: consent of instructor. May be taken for a max. of 9 sem. hrs. of credit when topics vary. Lab work may be required. Subject not covered in other entomology courses.

3001 General Entomology (4) F-E. No Entomology training necessary. 3 hrs. lecture; 3 hrs. lab. Provides a framework of information about the evolution of insects and related arthropods, anatomy, functional morphology and physiology, and an introduction to insect diversity at the ordinal level.

7002 Plant Resistance to Arthropods (4) F-O Prereq.: consent of instructor. 3 hrs. lecture; 3 hrs. lab. Detailed examination of the mechanistic basis of plant-insect interactions, with special reference to host-plant resistance in agricultural systems; integrates relevant concepts from diverse fields including insect physiology, plant physiology, plant biochemistry, and ecology; evaluation of the current theoretical basis for research in plant-insect interactions; laboratory demonstrations and exercises emphasize the techniques used in host-plant resistance research.

7003 Medical/Veterinary Entomology (4) F-E. Prereq.: ENTM 2001 or equivalent. 3 hrs. lecture; 3 hrs. lab. Relationship of insects and other arthropods to human and animal health.

7005 Classification of Immature Forms of Insects (3) S-O Prereq.: ENTM 4005 or equivalent. 2 hrs. lecture; 2 hrs. lab. Principles of insect taxonomy; emphasis on field crops insect pest management; interdisciplinary perspective.

4017 Forensic Entomology (3) S-O 2 hrs. lecture; 2 hrs. lab. No entomology training necessary. Determining the succession and species composition of necrophagous insects and other arthropods on carcasses; estimate time of death using insects; learning investigative procedures used by police and wildlife officers in human and animal deaths; review of case studies from crime scene to courtroom.

4018 Biology and Management of the Honey Bee (3) Prereq.: ENTM 2001 or 2050 or 4018 or BIOL 1502, 1509; or BIOL 1001, 1082, 1003, 1004; or equivalent. 2 hrs. lecture; 2 hrs. lab. Insect recognition, classification, and life cycles; factors affecting insect diversity and abundance; interactions between insects and the natural environment.

4030 Introduction to Pest Management (4) See PLHL 2050.

4005 Insect Taxonomy (4) S-O Prereq.: ENTM 2001. 2 hrs. lecture; 4 hrs. lab. A collection is required. Identification, nomenclature, phylogenetic relationships, and life histories of insects in the family level.

4006 Fundamentals of Applied Entomology (3) S Prereq.: ENTM 2001 or ENTM/PLHL 2050 or consent of instructor. 2 hrs. lecture; 2 hrs. lab. Principles and methodology of managing insect pests; emphasis on field crops insect pest management; interdisciplinary perspective.

4007 Forensic Entomology (3) S-O 2 hrs. lecture; 2 hrs. lab. No entomology training necessary. Determining the succession and species composition of necrophagous insects and other arthropods on carcasses; estimate time of death using insects; learning investigative procedures used by police and wildlife officers in human and animal deaths; review of case studies from crime scene to courtroom.

4011 Biology and Management of the Honey Bee (3) S-O Prereq.: BIOL 1201, 1208 and either BIOL 1402 or BIOL 1502; or BIOL 1001, 1082, 1003, 1004; or equivalent for instructors in graduate programs. 2 hrs. lecture; 2 hrs. lab. Insect recognition, classification, and life cycles; factors affecting insect diversity and abundance; interactions between insects and the natural environment.

4012 Fundamentals of Horticultural Entomology (3) S Prereq.: ENTM 2005, 2081. 2 hrs. lecture; 2 hrs. lab. Principles of insect control; recognition of major pest species of insects and their injury to horticultural plants; economic and aesthetic injury thresholds; methods of control, including identification and utilization of beneficial species.

4015 Conservation Biology (3) Prereq.: 11 sem. hrs. of biological sciences; genetics recommended. Same as BIOL 4015. Evolutionary ecology principles relevant to conservation; origin and threats to biodiversity; conceptual biology theory and ecological problem solving; dynamics of community and ecosystem structure and function.
supervising faculty. Student will be exposed to different learning styles and various teaching approaches. Course credit will range from 1-3 hrs. depending on anticipated involvement.

7014 Insect Morphology and Phylogeny (3) F
PreReq.: 5 sem. hrs. of 4000-level entomology courses or equivalent, or consent of instructor. 3 hrs. lecture; 3 hrs. lab. Principles of insect anatomy with a conceptual emphasis on understanding the evolutionary relationships among major lineages.

7015 Insect Pathology and Biological Control (4) F
Prereq.: 15 sem. hrs. of 4000-level entomology courses, or equivalent. 3 hrs. lecture; 3 hrs. lab. Practice and theory of biological control of insect pests and weeds; noninfectious and infectious diseases of insects; infection processes, pathogenesis, and host responses.

7017 Introduction to Insecticide Toxicology (3) F-E
Prereq.: organic chemistry or equivalent. 3 hrs. lecture; 3 hrs. lab. Host responses.

7019 Determination of Noninsecticidal Infection Processes (3) F
Prereq.: 6 sem. hrs. of 4000-level entomology courses or equivalent. 3 hrs. lecture. Lab of insects; etiology, infection processes, pathogenesis, and host responses.

7946 Seminar: Current Topics in Molecular Evolution (3) F
Prereq.: CHEM 2101, ENGL 2010, 2200, 3 hrs. lecture; 3 hrs. lab. Application and interpretation of standard sanitary chemical and microbiological methods to water quality problems in the areas of water supply, wastewater treatment, and pollution of natural waters.

4139 Lakes Management and Modeling (3) F
Prereq.: CE 2200, 3 hrs. lab. Application of environmental engineering principles to the development of engineered restoration and management solutions for lakes and their watershed; design of dynamic models for system management and solution development.

4140 Design of Wastewater Management Facilities (3) F
Prereq.: CE 3100, 3110. Civil engineering students enrolled in this course must have credit in CE 4732. 3 hrs. lecture; 3 hrs. lab. Design of wastewater management facilities; process selection and evaluation using computer-assisted design and screening of classical management systems.

4150 Integrated Environmental System Design (3) F
Prereq.: CE 3110 and CHE 3102. Preliminary designs will be applied to final full designs in ENV 4151. Principles of integrated environmental system design; economic, regulatory, and risk-based requirements in initial preliminary design; computer programs used in project design, implementation, and screening of classical management systems.

4151 Integrated Environmental System Design I (3) S
Prereq.: CE 4150. Continuation of ENV 4150. Final project designs are presented to representatives of the public and private sectors. Economic, regulatory, and risk-based requirements in completion of environmental design projects developed in ENV 4150; minimization, destruction, treatment, and disposal technologies in all media; emphasis on preliminary design and screening of classical management systems.

4153 Hazardous Waste Management (3) Prereq.: consent of instructor and classification of hazardous wastes; regulations; treatment, storage, and disposal facilities; parameters. Prereq.: senior standing. 3 hrs. lecture; 3 hrs. lab. Design of systems for in-situ remediation of hazardous and industrial waste sites; unit processes for containment and recovery integrated into design of treatment trains; control of sources and attainment of cleanup goals; emerging technologies for vapor extraction, soil washing, bioremediation, and natural recovery employed to minimize cost and risk.

4158 Design of Natural Systems for Wastewater Treatment (3) F
Prereq.: ENV 3100. Design of constructed wetlands, lagoons, and land application systems for wastewater treatment; economic analysis, design, and selection criteria of natural systems for treatment of municipal and industrial wastewater.

4780 Special Topics in Environmental Engineering Science (3) Prereq.: senior standing and department approval. May be taken for a max. of 6 sem. hrs. of credit when topics vary. More than one section of this course may be taken for credit concurrently when topics differ. Selected topics in environmental engineering science.

4781 Special Topics in Environmental Engineering Science (3) Prereq.: senior standing and department approval. May be taken for a max. of 6 sem. hrs. of credit when topics vary. More than one section of this course may be taken for credit concurrently when topics differ. Selected topics in environmental engineering science.

ENVIRONMENTAL ENGINEERING • EVEG

2000 Introduction to Environmental Engineering (3) Prereq.: CHEM 1202 and MATH 1550. Basic principles of calculations in environmental engineering; overview of professional ethics; regulations and legal aspects of environmental problems and solutions with emphasis on fundamental concepts and definitions.

3100 Water Distribution and Wastewater Collection (3) Prereq.: 1200, 1210, 1211, 1600. Practice and theory of collection and distribution of water systems supplies and storm and wastewater collection systems.

3110 Water and Wastewater Treatment (3) Prereq.: CE 2200, 2201. Physical, chemical, and biological characteristics of water and wastewater; water quality regulation; basic reactor engineering; operation and simple design of physical, chemical, and biological unit processes in water and wastewater treatment.

3271 Senior Project I: Consulting Format (3) Prereq.: EVEG 2200, 2201. Student-picked design projects of specific environmental engineering problems. Course may not be taken for graduate credit. 1 hr. lecture; 2 hrs. lab. May not be taken for graduate credit.

3272 Senior Project II: Consulting Format (3) Prereq.: EVEG 2200, 2201. Student-picked design projects of specific environmental engineering problems. Course may not be taken for graduate credit. 1 hr. lecture; 2 hrs. lab. May not be taken for graduate credit.

3273 Independent Undergraduate Research Project (1-4) Prereq.: EVEG 4135 and consent of department. Independent research project under the direction of a faculty member. Students develop the objectives and scope of the research and conduct appropriate analytical and experimental (field and/or laboratory) studies. Results and conclusions of the project are summarized in a report and defended orally.

3400 Environmental Engineering II (3) F-S Prereq.: CHEM 2060 (2261); EVEG 2060. Also offered as BE 3400. Fundamentals of microbiology, ecology, enzyme kinetics, and biochemistry as applied to environmental engineering; applications to biological wastewater treatment, bioremediation of soil, air, surface and ground waters, and environmental systems.

4105 Quantitative Water Management (3) Prereq.: EVEG 3100, 4135. Understanding of the physical, biological, and chemical operations and processes commonly utilized in environmental engineering; presentation of theoretical concepts and operational problems; laboratory or computer-based formal reports.

4120 Design of Solid and Hazardous Waste Management Systems (3) Prereq.: ENV 3100 and CHE 3102. Design of hazardous waste systems; process selection, elements of waste management systems; physicochemical, biological, and thermal process design; regulations related to design of waste management systems.

4130 Control and Treatment of Urban Storm Water (3) Prereq.: ENV 3100, 3110 or equivalent background. Realistic design of stormwater treatment systems for urban hydrology, storm water quality, and storm water treatment as impacted by anthropogenic activities within our constructed environment; design of hydraulic controls and unit operations and process control for storm water as a wastewater or reuse water.

4135 Water Quality Analysis for Natural Systems (4) Prereq.: CHEM 1201, ENGL 2000, EAST 2200, 3 hrs. lecture; 3 hrs. lab. Application and interpretation of standard sanitary chemical and microbiological methods to water quality problems in the areas of water supply, wastewater treatment, and pollution of natural waters.

4150 Integrated Environmental System Design (3) F
Prereq.: EVEG 3100 and CHE 3102. Preliminary designs will be applied to final full designs in ENV 4120. Principles of integrated environmental system design; economic, regulatory, and risk-based requirements in initial preliminary design; computer programs used in project design, implementation, and screening of classical management systems.

4157 Design of In-Situ Waste Remediation Processes (3) F
Prereq.: CHEM 1202, 1212, 2001. 2 hrs. lecture; 2 hrs. lab. Economic, regulatory, and risk-based requirements in completion of environmental design projects developed in ENV 4150; minimization, destruction, treatment, and disposal technologies in all media.

4158 Design of Natural Systems for Wastewater Treatment (3) F
Prereq.: ENV 3100. Design of constructed wetlands, lagoons, and land application systems for wastewater treatment; economic analysis, design, and selection criteria of natural systems for treatment of municipal and industrial wastewater.

4780 Special Topics in Environmental Engineering Science (3) Prereq.: senior standing and department approval. May be taken for a max. of 8 sem. hrs. of credit when topics vary. More than one section of this course may be taken for credit concurrently when topics differ. Selected topics in environmental engineering science.
environmental conflicts and facilitate participatory group decision-making among stakeholders.

7043 Environmental Law and Regulation (3) Prereq.: EnVS 1126 or OCS 1065 or OCS 1096; or OCS 2098 and 2099 or equivalent. Introduction to basic principles of federal and state laws, regulations, and court decisions involving pollution of the environment, including the National Environmental Policy Act, Clean Water Act, Clean Air Act, Resource Conservation and Recovery Act, Oil Pollution Act; current topical legal issues; under the direction of instructor. Interdisciplinary course open to both natural and social sciences. Also offered as EnVS 7465.

7044 Regulation of Toxic Substances (3) Federal, state, and local laws, judgments, decisions, and policies regarding the development, manufacture, use, and disposal of toxic substances, including the Toxic Substances Control Act, Federal Insecticide, Rodenticide, and Fungicide Act, and the Food, Drug, and Cosmetic Act; toxic tort lawsuits will be reviewed.

7045 Land Use Law and Regulation (3) Federal, state, and local laws, judgments, decisions, and policies regarding the regulation of land use, including: zoning; subdivision regulation; planned unit development (PUD); condemnation proceedings; and environmental laws relating to composts on urban and rural properties; and regulatory "takeovers." 

7046 International Environmental Law (3) International and multilateral agreements and practices for controlling pollution and depletion of natural resources; relationships between international trade agreements and environmental quality; other international environmental issues.

7047 Environmental Impact Assessment (3) Prereq.: ECON 4270 or equivalent or consent of instructor. Economic concepts applied to the development of appropriate policies for achieving environmental protection goals; emphasis given to how impacts are modified by the market, and the role of regulatory agencies in the process; and economic instruments that can be used to address environmental concerns.

7050 Spatial Modeling of Environmental Data (3) Prereq.: ExST 7000 or 7004 or 7005. Development of an approach to analyze spatial and temporal processes for environmental data modeling.

7061 Water Quality Management and Policy (3) Types, sources, and effects of water pollutants; water quality standards and criteria for water and effluent quality management; application of mathematical models to water quality management; federal regulations: the Federal Water Pollution Control Act and the Safe Drinking Water Act; policy analysis for water quality management planning.

7100 Environmental Toxicology (3) Prereq.: CBS 4001. Technical, ecological, and economic considerations related to air, water, and soil contamination; classification and detection of environmental toxicants; their biological effects on current and future trends in agronomy and the chemical, transport, and power industries.

7110 Toxicology of Aquatic Environments (3) Prereq.: EnVS 7100. Cross-listed with OCS 7110. Aquatic pollution and toxicological effects of chemicals related to environmental risk assessment in coastal areas; physical, chemical, and biological factors affecting the fate of toxicants in marine and estuarine ecosysystem areas.

7112 Concepts in Marine Ecotoxicology (3) Prereq.: EnVS 7100 and 7110 or permission of instructor. Also offered as OCS 7112 Marine pollution and toxicology of industrial and non-point sources related to ecological risk assessment in coastal and marine areas; biological processes and wastes in the ocean; physiological, metabolic, and developmental consequences of pollution; laboratory and field techniques in ecotoxicology, behavioral studies; ecological effects on coastal and marine areas; toxicological and ecological consequences of pollution; approaches to ecological risk assessment in marine environments.

7151 Watershed Hydrology and Floodplain Analysis (3) See RNR 7151.

7200 Comparative Metabolism of Environmental Pollutants (3) Prereq.: BIOL 4093 or consent of instructor. Same as CBS 7620. Biochemical systems from various invertebrate, vertebrate, and plant species involved in metabolic activation and detoxification; xenobiotic substances; use of these systems as biomarkers of pollution impact.

7220 Biochemistry and Toxicity of Metals (3) Prereq.: BIOL 4093, 4944; CHEM 2262. Also offered as BIOL 7220. Integration of metal and metal complex biochemical processes; adaptations of the coordination sphere of metal complexes to life function; metalloenzymes and metalloproteins; properties and modifications of metals that impart specialized biochemical function, as well as toxicity, mutagenicity, carcinogenicity, immunosuppression, and reproductive impairment.

7335 Water Quality Modeling for Management (3) Prereq.: ENVS 7074 or permission of instructor. Problems and approaches in water quality modeling, with particular attention to model uncertainty, model choice, and application for management; basic modeling concepts, mechanistic models, empirical models, and simulation techniques. Methods and uncertainty analysis applied to problems of eutrophication, toxic substance transport, and groundwater contamination.

7385 Decision Theory and Environmental Risk Analysis (3) Fundamental principles and techniques involved in decision making and environmental risk analysis; methods for identifying decisions that optimize outcomes; rationality (utility) and interactive (game theory) decision theory, and application of decision theory to natural resources and environmental management.

7622 Fundamentals of Carcinogenesis (3) S-E Prereq.: CBS 7603 or consent of instructor. Same as CBS 7662 and BIOL 7662.

7641 Toxicology I (3) See CBS 7623.

7642 Toxicology II (3) See CBS 7624.

7645 Toxicology III (3) See CBS 7625.

7676 Toxicology IV: Genetic Toxicology (3) S-E Prereq.: EnVS 4500 or EnVS 7624 and 7626 or approval of instructor. Also offered as CBS 7626; BIOL 8656. Evaluation of induced heritable and/or phenotypic changes in the organism and individual cell; emphasis on human and mammalian species; regulatory aspects of oncogenesis; testing and screening agents for genotoxic activities; molecular genetic approaches to human and environmental carcinogenesis.

7699 Toxicology Seminar (1) See CBS 7699.

7900 Special Problems in Environmental Sciences (1-4) May be taken for a max. of 4 hrs. credit. Individual study of a specific environmental problem.

7950 Special Topics in Environmental Sciences (1-6) F,S,Su Research and methodological review of current topics.

7999 Environmental Seminar (1) F,S,Su Reports and discussions of student/faculty activities in environmental sciences.

7999 Environmental Colloquium (2) Non-thesis students only. May only be taken during semester of graduation. Written and oral presentation of a literature review on a selected environmental issue, as approved by the departmental non-thesis committee.


EXPERIMENTAL STATISTICS

EXT

General education courses are marked with stars (★).

2000 Introduction to Microcomputers (3) F,S,Su 2 hrs. lecture; 2 hrs. lab. Credit will not be given for this course and CSC 1100, IDS 1100, and LIS 2001. A user-oriented introduction to microcomputers and applications software; terminology, hardware, software components, word processing, spreadsheets, data management, graphics, communications.

★ 2201 Introduction to Statistical Analysis (4) F,S 3 hrs. lecture; 2 hrs. lab. Prereq.: MATH 1021 or equivalent. Descriptive statistics; inferential statistical methods including confidence interval estimation and hypothesis testing for one and two population means and proportions; one-way analysis of variance; simple linear regression and correlation; analysis of categorical data.

2215 Exploratory Statistical Data Analysis (3) V Prereq.: EXST 2201 or equivalent. 2 hrs. lecture; 2 hrs. lab. Prereq.: Applied statistical modeling; multiple regression, variable selection, residual correlation, repeated measures, multivariate tools, logistic regression, blocking and factorial design, categorical data analysis, and nonparametric techniques.

3999 Supervised Independent Study and Research (1-4) N Prereq.: consent of instructor. May be taken for a max. of 8 sem. hrs. credit with permission of department head. Investigation of areas of interest not covered in other departmental courses, under the guidance of the departmental faculty.

4012 Introduction to Sampling Techniques (3) Prereq.: EXST 2201 or equivalent. Simple random, stratified random, cluster, systematic, multistage, stratified random sampling, and analytic techniques.
Courses

4085 Seminar in Statistics (1) V Prereq.: Application. 2 hrs. lecture; 2 hrs. lab. Credit will be given only for one of the following: EXST 7003, 7004, 7005, 7009. Basic concepts of statistical models and sampling; descriptive and inferential methods; normal, t, chi-square, and F distributions; tests of hypothesis and estimation; analysis of variance, correlation, regression, analysis of categorical data; emphasis on social and behavioral sciences research problems; computer software applications.

7004 Experimental Statistics I (4) F,S 3 hrs. lecture; 2 hrs. lab. Prereq.: MATH 1021 or equivalent. Credit will be given only for one of the following: EXST 7003, 7004, 7005, 7009. Basic concepts of statistical models and use of sampling methods; measures of central tendency; normal, t, chi-square, and F distributions; tests of hypothesis, analysis of variance, regression, and correlation; emphasis on field-oriented life sciences research problems; computer software applications.

7005 Experimental Statistics II (4) F,S 3 hrs. lecture; 2 hrs. lab. Prereq.: MATH 1021 or equivalent. Credit will be given only for one of the following: EXST 7001, 7004, 7005, 7009. Basic concepts of statistical models and sampling methods, descriptive statistical measures, tests of significance, analysis of variance, regression, correlation, and chi-square; emphasis on field-oriented life sciences research problems; computer software applications.

7012 Fundamental Sampling Techniques (3) Su Prereq.: MATH 1021 or equivalent and knowledge of SAS statistical analysis software. Credit will be given only for one of the following: EXST 7001, 7004, 7005, 7009. Basic concepts of statistical models and use of samples; measures of variation and central tendency, normal, t, chi-square, and F distributions; tests of hypothesis, analysis of variance, regression, and correlation; emphasis on field-oriented life science research problems; computer software applications.

7013 Statistical Techniques I (4) F,S 3 hrs. lecture; 2 hrs. lab. Prereq.: MATH 1021 or equivalent. Credit will be given only for one of the following: EXST 7004, 7005, 7009. Topics not covered in other experimental statistics courses, such as best linear unbiased prediction of genetic merit; likelihood-based methods for genetic parameter estimation; and methods for quantitative genetic analysis of discrete data.

7024 Biological Population Statistics I (3) V Prereq.: EXST 7005 or equivalent. Specialized sampling for estimation of population parameters including density and abundance, survival, recruitment, space-use, and spatial pattern; methods used include quadrats, line transect techniques, change-in-ratio estimators including capture-recapture and explosion or catch-per-effort estimators, and home range models.

7025 Biological Population Statistics II (3) V Prereq.: EXST 7015 or equivalent. Extensive development and application of statistical techniques to parameter estimation in population dynamics; principles of model building and role of model building in population management.

7031 Experimental Design (3) S Prereq.: EXST 7013 or 7014 or 7015, and permission of instructor. 3 hrs. lecture; 2 hrs. lab. Credit will be given only for one of the following: EXST 7001, 7004, 7005, 7009. Topics not covered in other experimental statistics courses, such as best linear unbiased prediction of genetic merit; likelihood-based methods for genetic parameter estimation; and methods for quantitative genetic analysis of discrete data.

7084 Practicum in Statistical Consulting II (2) F,S,Su Prereq.: permission of instructor. 4 hrs. independent study. Pass-fail grading. May be taken for a max. of 6 hrs. credit when topics vary. Pass-fail grading. Develop and present a 58-hour seminar on an advanced topic in statistics as a part of the department seminar series.

7087 Advanced Topics in Statistics I (3-V) F,S 3 hrs. lecture; 2 hrs. lab. Prereq.: EXST 7013 or 7014 or 7015, and permission of instructor. 4 hrs. independent study. Pass-fail grading. May be taken for a max. of 6 hrs. credit when topics vary. Pass-fail grading. Development of a topic in advanced statistics under faculty supervision.

7099 Independent Study (1-3) F,S,Su Prereq.: consent of instructor. May be repeated for credit when topics vary. Pass-fail grading. May be taken for a max. of 6 hrs. credit. Primary responsibility for statistical consulting projects under the supervision of graduate faculty.

7120 Sampling Methods (3) S Prereq.: EXST 7003 and permission of instructor. 3 hrs. lecture; 2 hrs. lab. Credit will be given only for one of the following: EXST 7001, 7004, 7005, 7009. Basic concepts of statistical models and use of samples; measures of variation and central tendency, normal, t, chi-square, and F distributions; tests of hypothesis, analysis of variance, regression, and correlation; emphasis on field-oriented life science research problems; computer software applications.

7121 Sampling Variability (3) Su Prereq.: EXST 7003 or 7004 or 7005 or equivalent. Simple and stratified random sampling; ratio and regression estimation; cluster, multi-stage, and multiple sampling procedures; systematic sampling; nonresponse and nonsampling errors; links between methodology and application emphasized.

7123 Advanced Topics in Statistics I (3) V Prereq.: EXST 7005 or equivalent. 3 hrs. lecture; 2 hrs. lab. Credit will be given only for one of the following: EXST 7013, 7014, 7015, 7019. Multiple classification analyses of variance and covariance, sampling designs, parameter estimation, multiple regression and correlation, tests of specific hypotheses, and factorial experiments; emphasis on field-oriented life sciences research problems.

7124 Biological Population Statistics I (3) V Prereq.: EXST 7005 or equivalent. Specialized sampling for estimation of population parameters including density and abundance, survival, recruitment, space-use, and spatial pattern; methods used include quadrats, line transect techniques, change-in-ratio estimators including capture-recapture and explosion or catch-per-effort estimators, and home range models.

7125 Biological Population Statistics II (3) V Prereq.: EXST 7015 or equivalent. Extensive development and application of statistical techniques to parameter estimation in population dynamics; principles of model building and role of model building in population management.

7131 Experimental Design (3) S Prereq.: EXST 7013 or 7014 or 7015, and permission of instructor. 3 hrs. lecture; 2 hrs. lab. Credit will be given only for one of the following: EXST 7001, 7004, 7005, 7009. Topics not covered in other experimental statistics courses, such as best linear unbiased prediction of genetic merit; likelihood-based methods for genetic parameter estimation; and methods for quantitative genetic analysis of discrete data.

7134 Regression Analysis (3) F Prereq.: EXST 7013 or 7014 or 7015 or equivalent, and knowledge of matrix algebra. Fundamentals of regression analysis, stressing an understanding of underlying principles; response surfaces, variable selection criteria, and model building techniques.

7135 Applied Least-Squares (3) Prereq.: EXST 7013 or equivalent. Applications of least squares methods; usual constraints, no constraints, and constraints on model prediction; objects grouping; and variables classification.

7142 Statistical Data Mining (3) F Prereq.: EXST 7013, 7014, 7015, 7019 or equivalent. Statistical techniques used in analyzing data from discrete distributions; contingency tables, loglinear and logit models, logistic regression, and repeated measures for nominal and ordinal data; emphasis on computer analysis and interpretation.

7151 Bayesian Data Analysis (3) Prereq.: EXST 7013 or 7014 or 7015 or EXST 7060; consent of department head. Introduction to Bayesian statistical methods and their application in fields such as agriculture, biology, engineering, and medicine; topics include non-informative, conjugate and elicited priors; posterior development; common single and multiple parameter models such as binomial, normal, Poisson, and exponential; hierarchical models; hypothesis testing and credible sets; posterior simulation via Markov Chain Monte Carlo; and performance of diagnostic procedures.

7199 Independent Study (1-3) F,S,Su Prereq.: permission of instructor. May be taken for a max. of 9 sem. hrs. of credit when topics vary. Independent study under the guidance of graduate faculty.

8000 Thesis Research (1-2 per sem.) "S" or "U" grading.

FILM & MEDIA ARTS • FMA

2001 Introduction to Film and Media Arts (3) Study of film, television, and video.

3001 Special Topics in the Film and Media Arts (3) May be taken for a max. of 6 hrs. of credit when topics vary. Selected topics relevant to the study of the film and media arts.

4001 Advanced Topics in Film and Media Arts (3) May be taken for a max. of 6 hrs. of credit when topics vary. Advanced topics relevant to the study of film and media arts.
FINANCE  •  FIN

In the Department of Finance, the second digit of the course number denotes the subject area of the course, as follows:

2 — business law; 3 — real estate; 4 — risk and insurance; 6 — finance (capital markets and financial institutions); 7 — finance (financial management); 8 — finance (investment analysis/portfolio theory); 9 — general courses.

Prerequisites for any finance course may be waived with the instructor's and the department chair's approval.

3205 Mineral Rights (3) Prereq.: FIN 3355. Law of mineral rights; emphasis on Louisiana oil and gas law; leases, royalties, surface and subsurface Royalty, unitization, and pooling; mineral law of other states and of hard materials.

3351 Principles of Real Estate (3) Prereq.: BLAW 3201 or FIN 3715. Purchasing, owning, and operating real estate relative to various types of contracts, deeds, titles, leases, brokerage, management.

3352 Real Estate Valuation and Investment (3) Prereq.: FIN 3351 or 3715, or equivalent. Principles of valuation applied to single-family and income-producing real property; techniques for making investment decisions in alternative types of real property; cash flow analysis considering the income-generating aspects of the financial leverage; risk-return trade-offs, and alternative methods of disposition.

3353 Real Estate Finance (3) Prereq.: FIN 3351 or 3715, or equivalent. Real estate financing decisions for residential and income-producing properties; risk-return analysis for mortgage financing; consumer credit; real estate financial leverage; decision making related to pricing, alternative financing methods, refinancing, mortgage portfolio management; financing methods; government involvement in mortgage market and housing finance.

3354 Topics in Real Estate (3) Prereq.: FIN 3352 or 3353 or consent of instructor. Topics vary.

3355 Real Estate Law (4) Prereq.: BLAW 3201. Rights and obligations that attach to various types of ownership of immovable property both in Louisiana and Anglo-American jurisdictions.

3440 Risk and Insurance (3) Prereq.: BLAW 3201. Nature of nonspeculative risks and possible alternative methods of treating them; specific application of these methods to personal and business risks arising from life, health, property, and liability contingencies; influence of public policy on risk treatment.

3441 Life and Health Insurance (3) Prereq.: FIN 3440. Analysis of insurance protecting against economic loss caused by termination of earning capacity through premature death, disability, or old age; derivation of premiums, reserves, costs of insurance, mortality, and morbidity contingencies; influence of public policy on risk treatment.

3442 Property and Liability Insurance (3) Prereq.: FIN 3440. Property and liability risks; insurance coverages available to meet these risks; basic insurance principles that apply in various property and liability insurance contracts; functional aspects of insurance company operations.

3460 Risk Management (3) Prereq.: FIN 3715. Risk management from the business manager's viewpoint; insurance and financial methods of pooling and managing risk; identification and evaluation of risk; hedging, self insurance, re-contracting and organizational design.

3622 Bank Administration (3) Prereq.: FIN 3715. For students interested in commercial banking careers or in the role of banks within the economy. Economic role and evolution of banks; structure of banking; lending and investment techniques; bank organization and banking law; management of the checking account; consumer credit; operational features; use of contracts and provisions; disability income protection.

3715 Business Finance (3) Prereq.: ECON 2000 and 2010, or 2030; and ACC 2080 or 2081. Also offered as ECON 3715. Emphasis on the business enterprise; techniques of financial management, concepts of capital structure and dividend policy, working capital management, capital expenditure development and international environment of the firm.

3717 Advanced Business Finance (3) Prereq.: FIN 3715. Material presented in real-world cases. Hands on applications and applications as found in FIN 3715; financial analysis, forecasting, capital budgeting, and business evaluation.

3718 Multinational Managerial Finance (3) Prereq.: FIN 3715. Multinational financial management; nature of international finance system; financing, investment, and risk management of the multinational corporation.

3826 Investments (3) Prereq.: FIN 3715. Open only to majors; open to others with permission of the department. Characteristics and valuation of common stocks, bonds, options, futures, and equities; risk and efficiency of U.S. securities markets; theory and practice of portfolio selection.

3840 Fixed Income Securities (3) Prereq.: FIN 3826. Mechanics of fixed-income markets and securities; valuation of fixed-income securities and contingent claims; interest rate risk, term structure, product fundamentals, and risk management.

3845 Student Managed Investment Fund (3) Prereq.: FIN 3715 or equivalent and permission of instructor. Course may be repeated for credit. Emphasis on investment techniques and fundamental analysis; operation of investment reporting systems.

3900 Directed Study and Research (1-6) Prereq.: consent of instructor. Prerequisites: 6 sem. hrs. of credit. Research under direction of faculty member; written proposal must be approved by faculty member and department chair prior to registration.

3910 Topics in Finance (1-3) Prereq.: FIN 3715 and 3826, or consent of instructor. May be taken for a max. of 6 sem. hrs. of credit when topics vary. Topics of current interest.

4240 Cyberlaw and Intellectual Property (3) Prereq.: BLAW 3201 or BADM 7140, and consent of instructor. Fundamentals of patent, trademark, and copyright law; legal principles applied to the regulation of the Internet and electronic commerce, including intellectual property, torts, contracts, constitutional principles, and crimes.

4440 Group Insurance and Pensions (3) Prereq.: FIN 3440. Life and health insurance in various areas involving mortality and morbidity contingencies; types of health risk bearers and contracts offered; employee benefit plans with emphasis on the private pension function, including contractual arrangements, benefit formulas, and approaches to financial analysis; the economics of the benefit program.

4828 Security Analysis and Portfolio Management (3) Prereq.: FIN 3826 or equivalent. Security selection and portfolio diversification; market, portfolio theory and management; portfolio building and selection; portfolio performance evaluations.

4830 Analysis of Corporate Financial Statements (3) Prereq.: FIN 3715 or equivalent. Analysis of financial statements; emphasis on their use in credit analysis and in evaluation of security risks and returns; recent research in accounting and finance; predictive ability of financial statement data.

4850 Financial Derivatives (3) Prereq.: FIN 3363, 3717, or 3826. Options, forwards, futures, and other derivative instruments; principles of pricing, valuation methods, marketing, and using derivative instruments in risk management; hedging, self insurance, re-contracting and organizational design.

7180 Multinational Financial Management (3) Prereq.: BADM 7090 or equivalent. Cross border investment, financial analysis, capital planning, foreign currency exposure, and cash management; concepts of political risk assessment; techniques in international trade; alternative financing methods; models of housing markets.

7191 Advanced Financial Management (3) Prereq.: BADM 7090. Theory of business finance and evaluation of its usefulness to financial managers; capital expenditure, capital structure, and dividend decisions; hedging, self insurance; alternative decision criteria; concepts of uncertainty and imperfect capital markets on firm financial decisions.

7750 Seminar in Corporate Finance (3) Prereq.: BADM 7090 or equivalent. Cross border investment, financial analysis, capital planning, foreign currency exposure, and cash management; concepts of political risk assessment; techniques in international trade; alternative financing methods; models of housing markets.

7750 Seminar in Corporate Finance (3) Prereq.: FIN 3715. Theory of choice under uncertainty and imperfection and the development of effective risk management measures; valuation of the private pension function, including contractual arrangements, benefit formulas, and approaches to financial analysis; the economics of the benefit program.

7970 Financial Risk Management (3) Prereq.: BADM 7090 or equivalent. Risk management of corporations, financial institutions, governments, and non-profit organizations; characteristics of financial contracts and derivatives; management of financial risk management, measuring exposures, financial contracts for managing risk, the enterprise risk management industry, and the accumulation and regulation framework; market and credit risks are the primary focus, but some attention is also given to operational and other sources of risk.

7800 Seminar in Financial Research Methods (3) Primarily for doctoral students. Financial economics; empirical behavior of financial markets; topics including trading rules and the efficient market hypothesis; market microstructure; event studies.

7550 Theory of Finance (3) Prereq.: BADM 7090 or equivalent. Theory of choice under uncertainty and imperfection and the development of effective risk management measures; valuation of the private pension function, including contractual arrangements, benefit formulas, and approaches to financial analysis; the economics of the benefit program.

7585 Advanced Topics in Financial Economics (3) Prereq.: consent of instructor. May be taken for a max. of 9 sem. hrs. of credit. Also offered as ECON 7545. Specific areas of finance and insurance applied to rigorous empirical methodologies and theory.

7632 Seminar in Commercial Banking (3) Cross border investment, financial analysis, capital planning, foreign currency exposure, and cash management; concepts of political risk assessment; techniques in international trade; alternative financing methods; models of housing markets.

7653 Financial Markets (3) Prereq.: BADM 7020 and 7080. Theoretical and empirical exposition of financial markets and institutions; their role in the economy; determination of the general level, risk structure, and the transaction structure of security returns; emphasis on U.S. financial markets.

7656 Seminar in Financial Markets and Intermediaries (3) Prereq.: FIN 7550. Primarily for doctoral students. Markets and intermediaries as alternative institutional mechanisms for structuring financial transactions; transaction services provided by these institutions; benefits and costs of these transaction services as determinants of the structure and extent of the financial sector.

7710 Public Finance Management (3) Cross-listed as PADM 7710.

7719 Multinational Financial Management (3) Prereq.: BADM 7090 or equivalent. Cross border investment, financial analysis, capital planning, foreign currency exposure, and cash management; concepts of political risk assessment; techniques in international trade; alternative financing methods; models of housing markets.

7718 Multinational Financial Management (3) Prereq.: BADM 7090 or equivalent. Cross border investment, financial analysis, capital planning, foreign currency exposure, and cash management; concepts of political risk assessment; techniques in international trade; alternative financing methods; models of housing markets.

7716 Multinational Financial Management (3) Prereq.: BADM 7090 or equivalent. Cross border investment, financial analysis, capital planning, foreign currency exposure, and cash management; concepts of political risk assessment; techniques in international trade; alternative financing methods; models of housing markets.
Courses

5705 Preservation technologies of various food processing operations and raw ingredients to final product.

7094 Seminar in Nutrition (1) Same as ANSC 7094; DART 7094; HUCE 7094; PLSC 7094. May be taken for a max. of 2 hrs. of credit. Prereq.: ANSC 7093, DART 7091, FDS 7091, HUCE 7091. Lecture or previous slide (not poster) presentation at a professional meeting.

7699 Toxicology Seminar (1) See CBS 7699.

8000 Thesis Research (1-12 per sem.) "S"/"U" grading.

9000 Dissertation Research (1-12 per sem.) "S"/"U" grading.

FRENCH • FREN

Native speakers of French will not receive credit for courses marked with an asterisk (*).

General education courses are marked with stars (★).

★1001. ★1002 Elementary French (4,4) F,S,Su Students with previous study of French should take the French placement exam. Students who do not place in FREN 1002 or higher through the placement exam should enroll in FREN 1001. Students with no previous study of French should enroll in FREN 1001. FREN 1001 or equivalent prior study is prerequisite for FREN 1002. Basic lexicon and structure of French; emphasis on communicative language use; supplementary work in language laboratory.

★1020 French for Reading Knowledge (5) Su Specialized course to satisfy reading requirement for graduate students, but carrying no graduate credit. Undergraduates may enroll on pass-fail basis only. Does not count toward satisfaction of foreign language requirement for undergraduates, although hours may count toward baccalaureate. Credit will not be given for both this course and introductory French courses.

1201. ★1202 Elementary Cajun French (4,4) F,S,Su Credit will not be given for both FREN 1001 and FREN 1201 nor for both FREN 1002 and FREN 1202. Students with previous study of French should take the French placement exam. Students who do not place in FREN 1002 or higher through the placement exam should enroll in FREN 1201. FREN 1001, 1201 or equivalent prior study is prerequisite for FREN 1202. Basic lexicon and structure of Cajun French; emphasis on communicative language use; supplementary work in language laboratory.

★2001 French for Travelers (3) F,S,Su Credit not applicable toward a major in French. Does not count toward satisfying foreign language requirement for undergraduates. Basic communication patterns; practical everyday vocabulary, with exercises in comprehension and conversation.

★2022 French for Travelers II (3) S Prereq.: FREN 2001. Credit not applicable toward a major in French. Does not count toward satisfying foreign language requirement for undergraduates. Intermediate level structures with emphasis on communication, comprehension, and conversation.

2028 French for Music (3) S Prereq.: music majors are expected to have taken FREN 2028 and/or 2040 prior to enrollment in this course. Study of French language with emphasis on opera libretti and song texts.

2057 Introduction to French Phonetics (2) F Phonetic system of French; intensive oral practice with individual sounds; analysis of basic theoretical principles involved in French pronunciation.

★2101, 2102 Intermediate French (3,3) F,S,Su Honors courses, FREN 2101 and 2102 are also available. FREN 1002 or equivalent prior study is prerequisite for FREN 2101. FREN 2101 or equivalent prior study is prerequisite for FREN 2102. Continued study of elementary French. Structures and lexicon of French; additional emphasis on reading and writing; supplementary work in language laboratory.

★2103, 2104 HONORS: Intermediate French (3,3) F,S,Su Same as FREN 2101, 2102, with special honors emphasis for qualified students.

★2185 Intermediate Oral Communication (3) V Prereq.: FREN 2101, 2102 or concurrent enrollment in 2101 or 2201. Development of listening and speaking competency.

★2185 Readings in French Literature (3) F,S,Su Prereq.: FREN 2102 or equivalent. Introduction to interpretive reading of French texts; development of competence in written expression.

★2201, 2202 Intermediate Cajun French (3,3) F,S Prereq.: FREN 2202, 1202 or equivalent prior study is prerequisite for FREN 2201. FREN 2201, 2101 or equivalent prior study is a prerequisite for FREN 2202.
2242 Intermediate Oral Communication in Cajun French (3) Prereq.: FREN 2101, concurrent enrollment in 2201 or 2201L Development of listening and speaking competency using video and text materials; special problems in spoken French including register and variation.

4001 French Literature of the 16th Century (3) V Major aspects of the literature of the period. May be taken for a max. of 6 hrs. of credit with consent of department if credit differs. Topics focus on an author, a theme, or a genre.

4014 Introduction to French Linguistics (3) F French phonology, morphology, and syntax.

4015 Advanced French Grammar (3) V Theoretical principles of French phonetics and their application.

4020 French Literature of the 17th Century (3) V Major aspects of the literature of the period.

4030 French Literature of the 18th Century (3) V Major literary, philosophic, and scientific currents of the period and their interrelations.

5031 The French Film (3) V Art of the French film from Louis Lumière to the present; its interrelations with French literature; screening and analyses of representative films.

4040 French Literature of the 19th Century (3) V Major aspects of the literature of the period.

4041 Translation Skills (3) O An analytic approach to the student's translation problems, including the written translation in the technical, and scientific contexts.

5050 French Literature of the 20th Century (3) V Major aspects of the literature.

5051 French for Business (3) V Language acquisition for students preparing for careers involving trade or business activities with French-speaking areas.

4060 French Literature of Quebec (3) V Major aspects of the literature of Quebec.

4064 Pidgin and Creole Languages (3) V See ANTH 4064 and LING 4064.

4065 Louisiana French (3) V Dialect areas of Louisiana, including Cajun and Creole speech communities; language contact, language variation, and problems of analysis.

4070 Languages of Africa and the Caribbean (3) Major aspects of francophone African and Caribbean literature.

4080 Special Topics in French/ Francophone Cultures and Civilizations (3) V Taught in French. May be taken for a max. of 6 hrs. of credit with consent of department.

4081 French Literature in Translation (3) F Credit not applicable toward a major in French; knowledge of French not required. May be taken for a max. of 6 hrs. of credit when subject varies. Selected periods, topics, or movements.

4090 French and Francophone Women Writers (3) V Women's writing in France and in Francophone countries from the middle ages to the present.

4095 Studies in Gender and French Literature (3) Prereq.: 3000-level French course or equivalent. May be taken for a max. of 6 sem. hrs. of credit when topics vary. Examinations of selected periods, themes, and genres.

4100 Special Topics in Francophone Language and Literature (3) V May be taken for a max. of 6 hrs. of credit when topics vary.

4103 Instructional Strategies for the Second Language Classroom (3) V Taught in French. May be taken for a max. of 18 hrs. of credit when topics vary.

4105 Critical Methods and Theory (3) V Current and past modes of critical discourse and their application to literary texts.

4106 Advanced French Syntax and Stylistics (3) V Syntactical structure of French, with attention to stylistic improvement of written and oral expression.
Courses

7800 Seminar in French Linguistics (3) Y May be taken for a max. of 6 hrs. of credit when topics vary. Topics to be announced.

7990 Topics in Gender Representations in French Literature (3) With consent of department, may be taken for a max. of 6 sem. hrs. of credit when topics vary. Dynamics of exchange, influence, and collaboration between male and female writers.

7995 French Feminist Theories (3) Current and past modes of feminist theoretical discourse; implications for literary studies.

8000 Thesis Research (1-12 per sem.) "S"/"U" grading.

9000 Dissertation Research (1-12 per sem.) "S"/"U" grading.

GEOGRAPHY • GEOG

General education courses are marked with stars (★).

CORE CURRICULUM

(Required of majors.)

★ 1001 Human Geography: Americas and Europe (3) 1001 and 1003 need not be taken in numerical order. Credit will not be given for both this course and GEOG 2062. Principal themes of human geography, including the spatial distributions and interactions of culture, history, economy, population, and environment, with a regional emphasis on the Americas and Europe.

★ 1003 Human Geography: Africa and Asia (3) 1001 and 1003 need not be taken in numerical order. Credit will not be given for this course and GEOG 2062. Principal themes of human geography, including the spatial distributions and interactions of culture, history, economy, population, and environment, with a regional emphasis on Africa and Asia.

★ 2050 Physical Geography: The Atmosphere (3) Credit will not be given for both this course and GEOG 2061. May be taken for elective geology credit. Physical principles, processes, and operations in the atmosphere; world climatic regions.

★ 2051 Physical Geography: Land and Water Surfaces, Plant and Animal Realms (3) Credit will not be given for both this course and GEOG 2061. Surface elements of the earth's environment; relationships among these elements.

2055 Map Reading (3) 2 hrs. lecture; 2 hrs. lab. Nature and interpretation of topographic maps.

MAPPING SCIENCES

(All majors select three courses.)

Cartography

2039 Cartographic Drafting and Graphic Presentation (3) 1 hr. lecture; 2 hrs. lab. Basic drafting techniques and techniques necessary for preparation of maps and scientific graphics.

4049 Advanced Cartography (3) Prereq.: GEOG 2039 or equivalent. Cartographic history; map projection; advanced techniques of data presentation and cartographic production.

4044 Computer Cartography (3) No programming knowledge necessary. Introduction to selected mapping packages.

4045 Advanced Computer Cartography (3) Prereq.: CSC 1235 or 1253 and GEOG 4044. Use of computer mapping programs; theory and methods of display of point, line, and area data; data-base structure; programming languages involved in encoding, editing, storing, retrieving, and displaying data from a digital cartographic data base.

Remote Sensing

4049 Aerial Photo Interpretation of Cultural Features (3) 2 hrs. lecture; 2 hrs. lab. Credit will not be given for both this course and GEOG 4020. Analysis of land/sea/contain, urban, industrial, and military aspects from aerial photographs.

4040 Aerial Photo Interpretation (3) Prereq.: GEOG 1001 or 1003 or GEOG 2051. Credit will not be given for both this course and GEOG 4040. 2 hrs. lecture; 2 hrs. lab. Analysis and mapping of geologic structure, lithology, and landforms from aerial photographs.

4045 Environmental Remote Sensing (3) Consent of instructor. May be taken for elective geology credit. 2 hrs. lecture; 2 hrs. lab. Basic energy and matter relationships; principles of primary remote sensors; environment studied via remote sensing techniques.

GIS/Techniques

4041 Field Methods in Geography (3) 1 hr. lecture; 4 hrs. lab. Cannot be repeated for credit. Students must have Saturdays free. Fall semester emphasis on interpretation of the cultural landscape; spring semester emphasis on the physical landscape.

4047 Geographic Information Systems (3) Prereq.: CSC 1235 or 1253 or equivalent. Geographic information systems used in land resource management and planning; data structures and algorithms for automated retrieval and analysis of spatial data; structuring cartographic data into spatial data; integration of remotely sensed data into geographic information systems.

4048 Methods of Spatial Analysis (3) Prereq.: ESTK 4001 or equivalent. Mathematical, statistical, and spatial analytical methods for handling and interpreting data related to geography.

HUMAN GEOGRAPHY

(BA candidates select two systematic and one regional course.) Systematic

2010 Human Geography (3) Survey of patterns and processes of world's cultures and landscapes.

3010 Humans and the Environment (3) Exploration of geographic concepts that underlie nature-society relationships and human-dimensions of environmental change.

4012 Elements of Cultural Geography (3) Culturally oriented proseminar in American geographical thought during the past 250 years.

4060 Political Geography (3) Systematic, cultural-political geography; emphasis on technical and philosophical aspects and on American political landscapes; territorial political entities (cadastral, civil, national, imperial); role of the lands and seas, nature and objects of war; impacts of political entities on the landscape.

4072 Urban Historical Geography (3) Spatial evolution of cities and city-systems in western civilization through the classical, medieval, mercantile, and industrial periods to 1945.

4073 Urban Geography (3) Internal arrangement, external relations, and locational aspects of urban places, with emphasis on U.S.; urban places identified by presence of tertiary economic activities.

4074 Place and Culture (3) See ANTH 4074.

4077 Economic Geography (3) Location, characteristics, and relationships of primary, secondary, and tertiary economic activity; measurements and theories of location of economic endeavor.

4078 Environment and Development (3) Geographic theories and methods for analyzing relationship between environment and development.

4080 Historical Geography (3) Advanced concepts and principles of historical geography.

4086 Human-Environment Interactions (3) Also offered as ANTH 4086. Cultural adaptation to difficult and distinctive environments, including mountains and highlands, the arctic, deserts, the humid tropics, and grasslands; subsistence strategies, local knowledge, household economies, land use practices, and resource management institutions.

4087 Gender, Place, and Culture (3) Also offered as ANTH 4087 and WGS 4087. The geographies of everyday life showing how notions of maleness and femaleness influence how we understand and relate to the world around us, to our built environment, to the places we invest with meaning, and the very ways we live, work, travel, and explore.

Regional

3001 Geography of Louisiana (3) Development and current distribution of physical and human geography of Louisiana.

4000 Modern India: Society and Culture (3) See SW 4000.

4002 South Asian Society, Polity, and Culture (3) See INTL 4002.

4031 Latin America and the Caribbean (3) Physical and cultural geography of Latin America and the Caribbean.

4035 Geographical Survey of East Asia (3) General survey of the physical and cultural geography of the region; focus on economic development and international relations.

4050 Historical Geography of the South (3) Physical and cultural geography of southern U.S.; emphasis on geographical elements identified with the south and their historical development; environment, exploration, population, agriculture, and land use.

4052 Geography of the United States and Canada (3) Physical and cultural geography of the United States and Canada.

4055 Geography of Europe (3) Geographical survey of the natural, cultural, and economic resources of Europe and their relationships to the rest of the world.

PHYSICAL GEOGRAPHY (BS candidates select any three courses.)

4013 Meteorology (3) May be taken for elective geology credit. Temporal and areal variations in composition and structure of the atmosphere; meteorological instruments and measurements.

4014 Climatology (3) Climatic phenomena; methods in development of regional climatology.

4015 Physical Climatology (3) Prereq.: GEOG 4013 or 4014 or equivalent and MATH 1552 or equivalent. May be taken for elective geology credit. Exchanges of radiation, energy, matter, and momentum between the earth's surface and the atmosphere that produce characteristic environmental conditions near the ground important to both rural and urban environments.

4016 Methods of Climatological Analysis (2) Prereq.: GEOG 4013 and 4014, or equivalent. Analysis and interpretation of climatological data and application to physical and human problems.

4017 World Climates (3) Prereq.: GEOG 2050 or equivalent. Analysis of atmospheric circulation processes that produce differences in climates throughout the world; the earth's problem climates and climatically sensitive zones most susceptible to floods, droughts, and other environmental stresses.

4018 Geophysical Hydrography (3) Prereq.: MATH 1021 or equivalent. 2 hrs. lecture; 2 hrs. lab. Analysis of basic hydrologic processes with geographical perspective; variability of runoff and groundwater; floods and droughts; climatic and land use impacts on local and global water resources.

4221 The Tropical Atmosphere (3) Prereq.: GEOG 4013 or 4014. Comparative analysis of the tropical and mid-latitude atmospheric circulation systems, including monsoon systems, tropical cyclones, and easterly waves; elements of interannual tropical variability such as El Niño-Southern Oscillation.

Geomorphology and Coastal

4021 Alluvial Morphology (3) Prereq.: GEOG 1001, 1003. May be taken for either geology or geography credit. Processes that originate and change land and hydrographic forms of alluvial surfaces; emphasis on Louisiana.

4022 Geomorphology (3) Prereq.: GEOG 1001, 1003. May be taken for either geology or geography credit. Processes underlying the study of land forms; emphasis on processes shaping the natural landscape.

4024 Coastal Morphodynamics (3) Prereq.: MATH 1021, 1022, or 1023. See OCS 4024.

4028 The Ocean World (3) May be taken for elective geology credit. Physical geography of the world's oceans; geologica and biological aspects of oceanography; ocean-atmosphere interactions; geomorphology and ecology of oceanic islands.

4029 Coastal Resources and Management (3) Introduction to coastal environments and contemporary global coastal and estuarine management.

Biogeography and Environment

4070 Environmental Conservation (3) Factors governing human use of the earth and its resources.

4082 Biogeography (3) Different approaches to description and interpretation of plant and soil distribution patterns.

4083 Quaternary Paleoclimatology (3) Prereq.: GEOG 4092 and a basic course in historical geology, or equivalent. 2 hrs. lecture; 4 hrs. lab. Also offered as ANTH 4083. Theory and method of reconstructing climatic, biological, geological, and human history during the Pleistocene and Holocene periods.

4085 Tropical and Subtropical Biogeography (3) Prereq.: GEOG 4082 or equivalent. Includes field trip during spring vacation. Principles of tropical ecology and biogeography taught as preparation for an expedition to...
8000 Thesis Research (1-12 per sem.) "S"/"U" grading. 9000 Dissertation Research (1-12 per sem.) "S"/"U" grading.

GEOLOGY • GEOL

General education courses are marked with stars (*).

* 1001 General Geology: Physical (3) An honors course, GEOL 1001, is also available. Earth materials and land forms; processes at work on and within the earth. * 1002 HONORS: General Geology: Physical (3) Same as GEOL 1001, with special honors emphasis for qualified students.

* 1003 General Geology: Historical (3) Prereq.: GEOL 1001 or GEOL 1002. Geologic history of the earth and life on it, as deciphered from study of its rocks and fossils. * 1004 HONORS: General Geology: Historical (3) Same as GEOL 1003, with special honors emphasis for qualified students.

* 1066 Dinosaurs, Catastrophes, and Extinctions (3) Major credit for geology majors. History of dinosaur discoveries and methods of study; dinosaurs’ relationship to birds and mammals; place of dinosaurs in Earth’s history. Survey, emphasis on catastrophes and patterns of extinction.

1111 Geology of National Park Areas (3) Credit will not be given for this course and either GEOL 1001 or GEOL 1002. Geologic study of areas supervised by the National Park Service. Areas covered will include most of the National Parks and Monuments, and many other federally owned lands.

* 1601 Physical Geology Laboratory (1) Prereq.: credit or concurrent enrollment in GEOL 1001. Lab related to GEOL 1001. Properties of minerals and rocks; practical application of geological principles, using topographic and geological maps; geological factors relating to energy exploration and environmental problems, with emphasis on oil and gas resources in south Louisiana.

* 1602 Historical Geology Laboratory (1) Prereq.: GEOL 1601; credit or concurrent enrollment in GEOL 1001. Lab related to GEOL 1002. Sedimentary rocks and environments, geological sequences, fossils, and the historical geologic record as interpreted from maps.

2020 Geology and the Environment (3) S Prereq.: GEOL 1001. Introduction to the interaction between human activities and geological processes, hazards, and materials; emphasis on environmental geology of Louisiana and the Gulf Coast region.

2061 History of the Biosphere (3) Prereq.: GEOL 1001, 1502; BIOL 1201, 2 hrs. lecture; 3 hrs. lab. One or two field trips required. Characteristics and geographic history of selected taxa with significant fossil records; use of paleontologic data (paleobiologic, paleoenvironmental, geologic-stratigraphic) in geology and paleontology; evolutionary studies; influence of the biosphere on Earth geologic time.

2066 Continents Adrift and Global Tectonics (3) S Prereq.: GEOL 1001. Plate tectonics; implications for the evolution of continents and ocean basins; observational evidence for continental drift; historical development of plate tectonics as a scientific hypothesis.

2081 Mineralogy (3) Prereq.: CHEM 1201, 1202, and 1212; 2 hrs. lecture; 3 hrs. lab. Elementary crystallography; general chemical and physical properties of minerals.

3023 Introduction to Sedimentology and Depositional Environments (3) Prereq.: GEOL 1001, 1003, 1601, or equivalent; GEOL 2001, or consent of instructor. 2 hrs. lecture; 2 hrs. lab. One field trip and one field exercise in nearby area. Sediment types, textures, sedimentary structures, and major processes used to understand sedimentary processes leading to different depositional environments.

3041 Igneous and Metamorphic Petrology (3) Prereq.: GEOL 2001, 2 hrs. lecture; 2 hrs. lab. Composition, textures, structures, distribution, and origin of igneous and metamorphic rocks.

3071 Structural Geology (3) Prereq.: GEOL 1003, 1602; credit in MATH 1550, 2 hrs. lecture; 3 hrs. lab. Geometric, kinematic, and dynamic analysis of geologic structures and structural systems resulting from deformation; introduction to tectonics; introduction to field techniques and geological maps; generation of geologic maps and geologic cross-sections.

3666 Field Geology (6) S only Prereq.: GEOL 3032, 3041, and 3071; or equivalent. Students planning to take this course should apply to the camp director no later than March 15, Camp Fee. Six weeks of field-based projects in the Rocky Mountains of Colorado, New Mexico, and Wyoming; fundamentals of the study of rocks and geologic features in their natural settings.

3999 Geological Research (1-3) S, Su. May be taken for a max. of 9 sem. hrs. of credit when topics vary. Primarily for geology majors. Directed reading, conference, and field/laboratory investigations. 

4002 Special Topics in Geology and Geophysics (3) V Prereq.: senior standing in geology or consent of instructor. May be taken for a max. of 9 sem. hrs. of credit when topics vary. Advanced and/or emerging topics in the geosciences.

4112 Introduction to Micropalaeontology (3) F Prereq.: GEOL 1602 or equivalent. Morphology, classification, stratigraphy, paleoecology, and evolutionary patterns of common marine microfossils.

4199 Geomorphology (4) Prereq.: GEOL 1001 or ANTH 2013 or GEOG 2051 or permission of instructor. 3 hrs. lecture; 3 hrs. lab devoted to an applied fieldwork problem. Geological, stratigraphical, geochemical, and geophysical techniques employed in the study of archaeological sites and materials.

4203 Coastal and Shallow-Marine Depositional Systems (3) S, Su. May be repeated for credit. Some min. of 20 hrs. in geology courses, including GEOL 3032, 4071, and GEOL 3341. An honors course, GEOL 4203, is available. Supervised reading or research on topics selected by qualified students.

4998 Independent Reading and Research in Geography (1-6) May be repeated for credit. An honors course, GEOG 4998, is also available. Supervised reading or research on topics selected by qualified students.

5999 Independent Reading and Research in Geography (1-6) Same as GEOL 4998, with special honors emphasis for qualified students.

7006 Settlement Geography: Exploration (3) Prereq.: GEOG 2050 or GEOG 2051 or permission of instructor. 3 hrs. lecture; 3 hrs. lab. All students must have completed GEOG 2050 or GEOG 2051. May be substituted for this course.

7901 Introduction to Graduate Study (1) May be taken for a max. of 9 hrs. of credit with consent of department.

7901 HONORS: Introduction to Graduate Study (1) May be repeated for credit. An honors course, GEOG 7901, is also available.

7906 Settlement Geography: Exploration (3) May be repeated for credit.

7921, 7922, 7923 Research and Field Work in Geography (3-6 each) May be repeated for credit. An honors course, GEOG 7921, 7922, 7923, is also available.

7973 Advanced Geographic Information Systems (3) Prereq.: GEOG 4028 or consent of instructor. May be taken for a max. of 9 sem. hrs. of credit when topics vary. Geographic information systems and geospatial technologies employed in the study of archaeological sites and materials.
Courses

3071 2 hrs. lecture, 3 hrs. lab. Structural geology of the U.S. - S. Structural geology of problems of folding, faulting, rock mechanics, and plate interactions.

4081 Chemical Oceanography (3) Prereq.: consent of instructor. 3 hrs. lecture/seminar. Also offered as OCS 4126. Balance and distribution of major elements, trace elements, heavy metals, dissolved gases, and nutrients in estuarine and open-ocean systems.

4082 Geomorphology (3) Prereq.: GEOG 2081 and MATH 1550 or equivalent. Principles of nuclear chemistry, radioactive decay, and isochron dating. Geomorphological processes and radiometric dating techniques and stable isotopic studies.

4084 Geomicrobiology (3) Prereq.: GEOG 3032 or BIOL 2031 or consent of instructor. Also offered as BIOL 4084. Microorganisms on geologic time, geological controls of the origin and migration of pore fluids, and their interaction with geological phenomena; concepts in mantle convection, rock rheology, faulting, flexure, and heat transfer.

7001 Isotope Geochemistry (3) Prereq.: consent of instructor. 2 hrs. lecture, 2 hrs. lab. Study of stable and radiogenic isotopes in natural systems; emphasis on oxygen, hydrogen, and carbon isotope-ratio variation in natural waters, and the biological and chemical processes that give rise to it.

7002 Scientific Stratigraphy (3) Prereq.: GEOL 1071 or equivalent. Interpretation of scientific reflection data in terms of stratigraphic facies, stratigraphic sequences, and implications for petroleum exploration.


7005 Geodynamics (3) Prereq.: GEOL 2075 and 2090 or equivalent; and GEOL 4044 or equivalent. Fundamental phenomena of the Earth's interior; tectonics; plate tectonics; seismology; geodynamics; and the evolution of the Earth system.

1102 German for Business (3) Prereq.: consent of instructor. Basic lexical and grammatical structures of German; emphasis on communicative competence; readings from business and economic literature.

1103 Germanic Mythology (3) Prereq.: GERM 1101 or equivalent. Development of the Germanic myths and legends; major manifestations in religion, literature, art, and music.

1104 Historical German Literature (3) Prereq.: consent of instructor. Critical examination of major historical periods and representative works of German literature from the Middle Ages to the present. Readings in primary sources.也希望内容翻译成中文，以便于理解。
3061 German Discourse (3) Prereq.: GER 2102. Intensive practice in reading, oral and written communication, special problems in German structure; thematic treatment of contemporary issues in German-speaking countries.

3062 Advanced German Discourse (3) Prereq.: GER 3061. Continued intensive practice in listening, comprehension, oral and written communication, special problems in German structure; thematic treatment of contemporary issues in German speaking countries.

3081 Survey of German Literature and Culture: Beginning to 1700 (3) Prereq.: GER 2155 or equivalent. Readings from, and a historical overview of, the Middle Ages, the Renaissance, the Reformation, and the Baroque periods.

3082 Survey of German Literature and Culture: 1700-1830 (3) Prereq.: GER 2155 or equivalent. Readings from, and an overview of, the Enlightenment, Storm and Stress, Weimer Classicism, and Romanticism.

3083 Survey of German Literature and Culture: 1830-1890 (3) Prereq.: GER 2155 or equivalent. Readings from, and a historical overview of, Biedermeier/Vormarz, Realism, and Naturalism.

3084 Survey of German Literature and Culture: 1890- the Present (3) Prereq.: GER 2155 or equivalent. Readings from, and a historical overview of, Expressionism, New Objectivity, the Group 47, GDR literature, and Post-Modernism.

3090 Friedrich Nietzsche (3) Knowledge of German not required. Also offered as HEBR 1090. Major works of Nietzsche studied in the context of the three periods of productivity and evolution of his thought.

3091 Special Topics in German Literature in Translation (3) Knowledge of German not required. May be taken for a max. of 6 hrs. of credit when topics vary.

4005 German for Reading Knowledge (5) Specialized course intended to satisfy departmental foreign language reading requirement for graduate students. This course will not count toward a graduate degree. Undergraduates may enroll on a pass/fail basis only. Does not count toward satisfying foreign language requirements for undergraduates, although hours may count toward baccalaureate degree requirements if given for both this course and introductory German courses.

4030 German Drama (3) Dramatic literature in German.

4031 German Poetry (3) Study of German poetic expression.

4032 German Prose (3) Emphasis on stylistic analyses and narrative theories.

4041 Special Topics in Older Germanic Literature and Culture (3) May be taken for a max. of 6 hrs. of credit when topics vary.

4042 Special Topics in 18th Century German Literature and Culture (3) May be taken for a max. of 6 hrs. of credit when topics vary.

4043 Special Topics in 19th Century German Literature and Culture (3) May be taken for a max. of 6 hrs. of credit when topics vary.

4044 Special Topics in 20th Century German Literature and Culture (3) May be taken for a max. of 6 hrs. of credit when topics vary.

4045 Special Topics in Contemporary German Literature and Culture (3) May be taken for a max. of 6 hrs. of credit when topics vary.

4046 German Film (3) Knowledge of German not required. German film in its socio-historic contexts with some attention to cinematic technique.

4091 Special Topics in German Literature and Culture in Translation (3) May be taken for a max. of 6 hrs. of credit when topics vary.

39751 Introduction to the role of the social sciences in the teaching of history. Course will count toward the fulfillment of a foreign language requirement only when taken under the HEBR rubric. Biblical narratives; details of syntax; development of vocabulary.

3001 History and the Social Sciences I (1) Prereq.: EDCI 2001. Concurrent enrollment in EDCI 3001. Supervised tutorial experience in local middle or high schools. Introduction to the role of the social sciences in the teaching of history; course will assist student in the teaching of social studies to small groups in middle and high schools.

3002 History and the Social Sciences II (1) Prereq.: EDCI 3001. Concurrent enrollment in EDCI 3001. Supervised tutorial experience in local middle or high schools.

3071 Louisiana (3) The role of the social sciences in the study of history. Course will assist student in the teaching of social studies to small groups in middle and high schools.

3115 Introduction to Historical Method (3) Survey of different methods and perspectives used in the research and writing of history.

3177 Undergraduate Proseminar in World History (3) Prereq.: consent of instructor. Open to students with at least 6 sem. hrs. of credit in history and with an overall 3.00 gpa. May be taken for a max. of 9 hrs. of credit when topics vary. Supervised reading and research in an assigned field of historical study.

3188 Undergraduate Proseminar in European History (3) Prereq.: consent of instructor. Open to students with at least 6 sem. hrs. of credit in history and with an overall 3.00 gpa. May be taken for a max. of 9 hrs. of credit when topics vary. Supervised reading and research in an assigned field of historical study.

3198 Undergraduate Proseminar in United States History (3) Prereq.: consent of instructor. Open to students with at least 6 sem. hrs. of credit in history and with an overall 3.00 gpa. May be taken for a max. of 9 hrs. of credit when topics vary. Supervised reading and research in an assigned field of historical study.

4001 Greece of the City State (3) Political, social, and cultural evolution of the Greek world from the Bronze Age to the formation of the Macedonian Empire of Alexander the Great; attention to growth of democratic institutions.

4002 Roman W orld: Republic to the Fall of the Empire (3) Prehistory of Italy to St. Augustine.

4003 History of the Christian Church: 50-450 (3) See REL 4005.

4004 History of the Christian Church: 450-1550 (3) See REL 4005.
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<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
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<tbody>
<tr>
<td>4007</td>
<td>Early Middle Ages, 300-1000 (3) History of Europe from the Fall of the Roman Empire to the end of the Carolingians; development of medieval society and institutions.</td>
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<td>4008</td>
<td>Greater Middle Ages, 1000-1500 (3) History of Europe from the Investiture Controversy to the voyages of Columbus; developments in social, cultural, and political institutions.</td>
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<td>4009</td>
<td>The Renaissance (3) Italian society and thought from Dante to Machiavelli, with emphasis on the medieval foundations of Renaissance culture; northern Europe from the Hundred Years War to the Reformation, with emphasis on political and economic development.</td>
<td>3</td>
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<tr>
<td>4105</td>
<td>Age of the Reformation (3) Also offered as REL 4011. Sixteenth century Europe with emphasis on Protestant and Catholic reform movements.</td>
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<td>4106</td>
<td>History of Modern Christian Thought (3) See REL 4012.</td>
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<td>4107</td>
<td>The Old Regime and the Enlightenment (3) Traditional authority, the origins, with emphasis on the Enlightenment, 1660-1760.</td>
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<tr>
<td>4108</td>
<td>French Revolution and Napoleon (3) Background, consecutive developments, and territorial changes resulting from the wars of the period, with emphasis on Europe's emergence into a new era.</td>
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<td>4109</td>
<td>17th Century (3) The period 1615-1789.</td>
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<td>4110</td>
<td>18th Century (3) Survey of 18th-century Europe; major changes and new trends: an emphasis on eighteenth-century France.</td>
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<tr>
<td>4111</td>
<td>19th Century (3) Intellectual, economic, social, and political history of the Industrial Revolution; emphasis on the French Revolutionary Wars.</td>
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<tr>
<td>4112</td>
<td>19th Century Britain (3) The impact of the Industrial Revolution; emphasis on the role of labour.</td>
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<td>4113</td>
<td>20th Century (3) Social, political, and cultural change and the impact of political and social transitions since 1900, including</td>
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<td>4114</td>
<td>21st Century (3) The period 1914-2015 with emphasis on the role of total war in the 20th century.</td>
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<td>4115</td>
<td>22nd Century (3) World War II; post-war economic development and terrorism.</td>
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<td>4116</td>
<td>The Cultural Revolution (3) Intellectual and Social History of the United States from 1865 to 1945.</td>
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<td>4117</td>
<td>The Age of Jackson (1820-1860) (3) The transformation of American society from the Civil War to the present.</td>
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<td>4118</td>
<td>The Age of Lincoln (1865-1880) (3) Examine the political, social, and cultural developments that shaped the United States and its role in the world.</td>
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<td>4119</td>
<td>The Age of Roosevelt (1880-1945) (3) Political, social, and cultural developments in the United States since 1880, with an emphasis on the role of Franklin D. Roosevelt.</td>
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<td>4120</td>
<td>The Age of FDR (1933-1945) (3) Political, social, and cultural developments in the United States since 1933.</td>
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<td>4121</td>
<td>The Age of American Imperialism (1890-1920) (3) Political, social, and cultural developments in the United States since 1890, with an emphasis on the role of the United States on the world stage.</td>
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<td>4122</td>
<td>The Age of World Wars (1914-1945) (3) Political, social, and cultural developments in the United States since 1914, with an emphasis on the role of the United States on the world stage.</td>
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<td>4123</td>
<td>The Age of the Cold War (1945-1991) (3) Political, social, and cultural developments in the United States since 1945, with an emphasis on the role of the United States on the world stage.</td>
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<td>4124</td>
<td>The Age of the Superpowers (1991-2015) (3) Political, social, and cultural developments in the United States since 1991, with an emphasis on the role of the United States on the world stage.</td>
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<tr>
<td>4126</td>
<td>The Age of the Information Age (1991-2015) (3) Political, social, and cultural developments in the United States since 1991, with an emphasis on the role of the United States on the world stage.</td>
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Courses

2122 Herbaceous Plant Materials (2) S-O
Establishment and maintenance of high quality turf areas; 2 hrs. lab. Required field trips. Also offered as AGRO 2086. Turfgrass identification and adaptation; establishment and maintenance of high quality turf areas; turfgrass pests and their control.

2125 Woody Plant Materials II (2) S
Identification and study of plant materials; ecological and visual characteristics of plant materials used in landscape design.

2129 Growth and Development of Agricultural Crops (3) F-O Prereq.: CHEM 1002 or 1202 and BIOL 1002 or 1202. 3 hrs. lecture; 2 hrs. lab. Physiology of agricultural plants, including water relations, respiration, photosynthesis, and growth and development.

3004 Horticultural Internship (3) Prereq.: HORT 2124 and written consent of instructor. May be taken for a max. of 9 sem. hrs. credit. Experience in horticultural industries culminating in acceptable written reports and a seminar presentation.

3110 Research Problems (3) Written consent of the instructor. May be taken for a max. of 6 sem. hrs. credit. Independent research under a faculty member culminating in an oral and written research report.

3200 Greenhouse Production and Management (4) F -O Prereq.: CHEM 1002 or 1202 or BIOL 1002 or 1202. 4 hrs. lab. Management of the landscape through proper installation, soil management, plant care, pesticide management, employment, and quality control accounting.

3402 Landscape Construction (2) S -O 1 hr. lecture; 2 hrs. lab. Survey of construction techniques and materials used in landscape contracting including drainage systems, paving, retaining walls, decks, and fencing.

4122 Tropical/Subtropical Horticulture (3) S -O Prereq.: HORT 2124 or equivalent. Current status of cultivation throughout the world; production practices; postharvest handling; international trade of tropical/subtropical horticultural crops.

4051 Processing of Fruits and Vegetables (3) S-O Prereq.: FDSIC 1049 or HORT 2050 or equivalent. 2 hrs. lecture; 2 hrs. lab. Methods of processing horticultural crops; includes canning, freezing, dehydration, and fermentation.

4052 Horticulture Processing Facilities (2) S -E Prereq.: HORT 4051 or FDSC 4075 or consent of instructor. Required field trips. Review of criteria for GMP design and construction of fruit and vegetable processing plants, including process lines; design and construction of facilities.

4061 Plant Propagation (3) S-O Prerequisites: HORT 2051 or equivalent. crops; lab includes propagation and culture of garden plants, fruits and nuts, ornamentals, houseplants, and florist crops; lab includes propagation and culture of garden plants in field and greenhouse.

4063 Principles and Practices in Orniculture (4) F-E Prereq.: AGRO 2051 and HORT 2050. 3 hrs. lecture; 3 hrs. lab. Required field trips. Review of U.S. commercial vegetable industry, seed handling, field microclimate modification, transplant handling, stand establishment, influence of soil chemical and physical properties, and greenhouse vegetable production.

4085 Principles and Practices in Fruit and Nut Production (4) S-O Prereq.: HORT 2050 or equivalent. 3 hrs. lecture; 2 hrs. lab. Required field trips. Principles and practices involved in commercial production, management, and marketing of nursery crops.

4090 Golf Course Operations (4) S-O Prereq.: HORT 2050 or equivalent. 3 hrs. lecture; 2 hrs. lab. Golf course management; construction; cultural practices; environmental concerns.

4096 Postharvest Physiology (4) S -E Prereq.: PLHL 3060. 4 hrs. lecture; 2 hrs. lab. Physiological changes associated with storage and handling of fruits and vegetables; current practices used in extending shelf-life; basic and applied laboratory analysis techniques.

7051 Plant Tissue Culture (4) Prereq.: BIOL 4024, PLHL 3060, HORT 2061. 4 hrs. lecture; 2 hrs. lab. This in vitro culture of selected higher vascular plants; media preparation; cell, callus, and organ cultures; protoplast isolation, culture, and fusion; embryo genesis and plantlet regeneration.

7060 Advanced Plant Breeding (4) S -E Prereq.: AGRO 7070. 2 hrs. lab. Identification and study of plant materials; ecological and visual characteristics of plant materials used in landscape design.

7070 Plant Breeding Principles (4) S -E Prereq.: AGRI 3070. 3 hrs. lecture; 2 hrs. lab. The influence of adult-child relationships on child outcomes and adult behavior.

7075 Adult-Child Relationships (3) S Prereq.: HUEC 301. 3 hrs. lecture; 2 hrs. field observations with infants and toddlers, observations and practical experience in the School of Human Ecology’s Preschool Laboratory and in other early childhood settings. Principles and practices involved in commercial production, management, and marketing of nursery crops.

7090 Research and Project Development in Human Ecology (1-6) Prereq.: HUEC 7090 or equivalent and EXST 7013 or 7014 or 7015 or equivalent. 2 hrs. lecture; 2 hrs. lab. Research methods and applications in human ecology.

7091 Independent Research for Doctoral Students (1-6 per sem.) Prereq.: consent of instructor. May be repeated for a max. of 12 sem. hrs. donated by the student. Required of all doctoral students in human ecology during the supervision of the major professor.

8000 Thesis Research (1-12 per sem.) Prereq.: consent of the major professor. May be repeated for a max. of 6 sem. hrs. when topics vary. Lectures and/or laboratories on selected topics not covered in other human ecology courses.

8090 Research Problems in Human Ecology (1-3) Prereq.: consent of director. May be repeated for a max. of 6 sem. hrs. when topics vary. Lectures and/or laboratories on selected topics not covered in other human ecology courses.

8900 Research Problems in Human Ecology (1-3) Prereq.: consent of the major professor. May be repeated for a max. of 6 sem. hrs. when topics vary. Lectures and/or laboratories on selected topics not covered in other human ecology courses.

9000 Dissertation Research (1-12 per sem.) Prereq.: consent of director. May be repeated for a max. of 12 sem. hrs. when topics vary. Lectures and/or laboratories on selected topics not covered in other human ecology courses.

9091 Independent Research for Doctoral Students (1-6 per sem.) Prereq.: consent of instructor. May be repeated for a max. of 12 sem. hrs. when topics vary. Lectures and/or laboratories on selected topics not covered in other human ecology courses.

9092 Human Ecology Research Seminar (1) S-O Prereq.: 3092 2075 or equivalent. Required of all doctoral students in human ecology during each semester of full-time residence. Only 3 sem. hrs. of credit may be applied toward a max. of 3 sem. hrs. of credit. “S”/“U” grading. Research reports and discussion of current topics and issues in human ecology.

9093 Advanced Research Methods in Human Ecology (3) Prereq.: HUEC 7090 or equivalent and EXST 7013 or 7014 or 7015 or equivalent. 2 hrs. lecture; 2 hrs. lab. Research methods and applications in human ecology.

97090 Research and Project Development in Human Ecology (1-6) Prereq.: HUEC 7090 or equivalent and EXST 7013 or 7014 or 7015 or equivalent. 2 hrs. lecture; 2 hrs. lab. Research methods and applications in human ecology.
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4016 Cultural Food Patterns (3) Prereq.: HUEC 2041, 2045. The development of current concepts of nutritional effects on health and disease through the use of cellular/molecular tools.

4017 Applied Medical Nutrition Therapy II (2) Prereq.: HUEC 4014. Clinical dietary modification relevant to food allergy, AIDS, and other immunological disorders, weight aberrations, diabetes, cancer, and disorders of the heart or kidney; nutritional needs during surgery, trauma, and burns; quality assurance programs; emphasis on case study practices.

4021 Contemporary Topics in Nutrition (1) Prereq.: CMST 2060 or 2090; enrollment limited to students with senior standing who are majoring or minoring in nutritional sciences. May be taken for a max. of 2 hrs. credit when topics vary. Oral presentations of independent library or other research on selected contemporary issues in food, nutrition, dietetics, or food systems.

4023 Management in Dietetics (3) Prereq.: ACCT 2090; HUEC 3019; MGT 320. Senior standing in dietetics major. Management theory and principles of planning, organizing, leading, and controlling; applications to food service systems, clinical dietetics, and community programs.

4027 Practicum in Dietetics (1-3) Prereq.: dietetics majors only; 60 hrs. in dietetics curriculum; overall GPA of 2.50; and permission of instructor. Each hour of credit requires 4 hrs. of supervised experience. May be taken for a max. of 3 hrs. of credit. Supervised professional experience designed to integrate academic learning with practice in dietetics.

4110 Capstone in Nutritional Sciences (3) Prereq.: EXST 2201, 2091; credit or registration in HUEC 3111. Integration and application of current concepts of nutritional effects on health and disease through the use of cellular/molecular tools.

7000 Dietetic Internship (2-4) Prereq.: Department approval; supervision of the MS thesis. May be taken for a max. of 6 hrs. credit. Pass-fail grading. Preprofessional field experience in clinical dietetics, food systems and policy, and community nutrition that meets the registration eligibility requirements of the American Dietetic Association.

7003 Vitamins in Nutrition (2) Prereq.: credit or registration in BIL 4087. History, chemistry, function and evaluation of nutritional status, requirements for various species, assay methods, and interrelationships of vitamins.

7004 Molecular and Clinical Nutrition I (2) Prereq.: BIL 4087 or 4094 or permission of the coordinator. The development of current concepts of nutritional effects on health and disease through the use of cellular/molecular tools.

7005 Molecular and Clinical Nutrition II (2) Prereq.: HUEC 4014 or equivalent or consent of instructor. The development of current concepts of nutritional effects on health and disease through the use of cellular, molecular, genetic, and epidemiologic tools.

7100 Food and Nutrition Seminar (1) May be taken for a max. of 9 sem. hrs. of credit when topics vary. Recent research and developments in food, nutrition, dietetics, or food systems.

7107 Advanced Human Nutrition (3) Prereq.: HUEC 4010 and BIL 4087; consent of instructor. Human requirements, evaluation of nutritional status, and problems related to kind and amount of food consumed.

7108 Proteins in Nutrition (3) Prereq.: BIL 4087; consent of instructor. Nutritional aspects of proteins and amino acids; deficiencies, interrelationships, requirements, and related metabolic pathways.

7109 Advanced Medical Nutrition Therapy (3) Prereq.: HUEC 4014 or equivalent or consent of instructor. Progressive, updated information on medical nutrition therapy and intervention strategies in specific clinical diseases; rationale for biochemical and physiological bases of diseases.

7109 Seminar in Nutrition (1) Same as ANSC 7094.

7120 FASH 3304. The development of current concepts of nutritional effects on health and disease through the use of cellular/molecular tools.

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Courses

7637 Consumer Behavior in the Apparel Mercehership (3) Emphasis on consumer behavior theories and their applications to apparel purchase and patronage decisions and merchandising activities of stores.

7640 Bio-based Composites: Production and Evaluation (3) Bio-based material products and applications, with case studies to illustrate end-use evaluation of related agricultural materials.

7641 Introduction to Research in Textiles, Apparel Design, and Merchandising (3) Introduction to research and literature in textiles, apparel design, and merchandising.

7642 Research in Textiles (3) 1 hr. lecture; 4 hrs. lab. Research methods applied to fabric analysis and testing; trends and recent developments.

7643 Seminar: Textiles, Apparel Design, and Merchandising (1) May be taken for a max. of 2 hrs. of credit if topics vary. Reports and discussion of current literature and research.

7644 Selected Topics in Textiles, Apparel Design, and Merchandising (3) Prereq.: consent of instructor. May be taken for a max. of 6 hrs. of credit when topics vary. Analysis and discussion of selected research and creative topics.

7646 Microscopy of Fibers and Polymers (3) Analysis and characterization of fibers and polymers using microscopic techniques; emphasis on textile fibers and fabrics, including modern, historic, and archaeological specimens.

7647 Modern Fiber Science and Technology (3) 2 hrs. lecture; 2 hrs. lab. New techniques for obtaining fiber forming polymers derived from renewable resources, such as laccase and cellulose; woven fabrics; examination of polymer matrices used for the development of high performance fibers for space and other industrial applications.

7648 Thermal Characterization of Fibers and Polymers (3) 2 hrs. lecture; 2 hrs. lab. Analysis and characterization of fibers and polymers: thermal and mechanical techniques.

7649 Advanced Individual Field Experience in Textiles, Apparel Design, and Merchandising (3) Prereq. or Coreq.: HUEC 7091; or consent of instructor. May be taken for a max. of 6 hrs. of credit when topics vary. Advanced individual, supervised, field-based study in selected areas of textiles, apparel design, and merchandising.

7518 Studies in American and European Dress (3) See also THTR 1751; THTR 3751; THTR 3851; THTR 7520.

7520 Seminar in American Dress: 18th Century to 1880 (3) See THTR 7515.

7604 Human Resource Education • HRE

1000 Keyboarding (1) 2 hrs. lab. Presentation of the complete keyboard; keyboarding using the "touch" system; emphasis on correct keystroking using proper techniques; introduction to simple letter styles, tabulations, manuscripts, and simple business forms.

1001 Industrial Enginner: Maintenance and Repair (3) V 6 hrs. lab. Design, construction, operation, and maintenance procedures of industrial engines, including electrical, cooling, lubricating, and fuel systems.

1003 Keyboarding Applications and Document Processing (2) Prereq.: HRE 1000 or equivalent. 1 hr. lecture; 2 hrs. lab. Students are expected to be familiar with Microsoft Word or other word processing software packages. Students are also expected to know how to navigate in a document, select text, edit text, print documents, and understand the basics of using email. Offered through correspondence study only. Applying basic skills to the formatting of letters, documents, and reports; specialized documents and terms (legal, medical, technical); emphasis on production skills.

2000 Document Introduction (3) Prereq.: HRE 1003 or equivalent. 2 hrs. lecture; 2 hrs. lab. Application of advanced word processing functions to the production of letters, documents, and reports; specialized documents and terms (legal, medical, technical); emphasis on production skills.

2001 Foundations of Human Resource Education (3) F 2 hrs. lecture; 4 hrs. lab. Emphasis on the economic, sociological, and political influences on the historical development of workplace education; organization and delivery of workplace training and practices at the secondary and post-secondary levels.

2008 Individual Field Experience in Occupational Home Economics (1-3) Prereq.: consent of instructor. A max. of 3 sem. hrs. may be earned in each occupational area: Pass-fail grading. Individual, supervised, field-based study in selected businesses and industries; emphasis on business practices, procedures, and regulations in a specified occupational home economics area.

2012 Woodworking Technology (3) V 4 hrs. lab. Advanced machine tool operations, job procedures, design and finishing.

2022 Advanced Metals (3) V 6 hrs. lab. Founding, forging, casting, forming, and machining.

2030 Electrical Power (3) 2 hrs. lab. Fundamental principles of electricity; direct and alternating currents.

2031 Basic Electronics (3) V 6 hrs. lab. Basic electronic principles and circuitry as applied to diodes, vacuum tubes, power transformers, inductors, capacitors, resistors, and rectifiers.

2040 Technical Drawing, Reading, Sketching, and Takeoff (3) V 4 hrs. lab. Blueprint reading of the mechanical and building trades; freehand sketching, modeling, drafting, and estimating.

2041 Industrial Arts for Elementary Teachers (3) V 6 hrs. lab. Techniques of art metalwork, plastics, and leathercraft.

2045 Fundamentals of Air Conditioning and Refrigeration (3) V 4 hrs. lecture; 4 hrs. lab. Principles, parts, components, and application of air conditioning and refrigeration systems; problems in equipment performance, operation, inspection, repair, and maintenance.

2060 Research in Textiles (3) V 6 hrs. lab. Communication theory and its application to business; basic forms of business communication.

2061 Practicum in Business and Office Education (2-One-hour weekly seminar with instructor to discuss topics relative to student's job. Actual office experience of at least 10 hrs. per week providing on-the-job training in a clerical, secretarial, or bookkeeping position.

2061 Practicum in Distributive Education (2-One-hour weekly seminar with instructor to discuss topics relative to student's job. Students work at least 10 hrs. per week in a selling position in an approved retail establishment.

2723 Introduction to Leadership Development (3) F Introduction to leadership and leadership development; emphasis on students understanding their personal traits, values, characteristics, and development tasks as a foundation for leadership development.

3000 Word Processing (3) Prereq.: HRE 2000 or equivalent. 2 hrs. lecture; 2 hrs. lab. Processing concepts and skills, procedures, systems, equipment, and careers.

3010 Internship in Cooperative Extension Service (6) Su only. Open to selected students completing their junior year who are considering a career with the cooperative extension service. Seven-week period of student observation, practice, and training in a parish Louisiana Cooperative Extension Service office plus a 2-week period of classes in extension education. Permission of instructor.

3043 Industrial Arts for Elementary Teachers (3) V 4 hrs. lecture; 4 hrs. lab. Organization and construction of handicrafts activity units and methods of correlating with subject matter of course.

3055 Occupational Analysis Techniques (3) V Essential elements of an occupation or activity identified for purposes of job classification and instruction.

3061 Industrial Supervisory Practice (3) V The supervisor as a key person in the industrial organization; duties, responsibilities, and successful supervisory practices.

3062 Principles of Industrial Training (3) V Functions of a training director, and teaching methods used to develop goals of teamwork and production in business and industry.

3065 Professional Supervision (3) V Prereq.: HRE 2053 or equivalent. Supervisory practices applied to loss prevention and control; analysis of loss prevention programs; certification, professional ethics; functions of the safety professional.

3068 Fire Prevention and Protection (3) V Prereq.: HRE 2053 or equivalent. Principles of controlling fire potential and methods of extinguishment.


3101 Instructional/Curriculum Design for Human Resource Education (3) V Curriculum, course unit, and lesson plan development in human resource; selection and evaluation of course materials.

3117 Instructional Design for Training (3) S Prereq.: HRE 3071. Principles and practices of instructional design for developing effective training; course, unit, and lesson development.

3204 Professional Development Management (3) S Principles of records creation, retention, transfer, and disposal; organization and management of stored records; coding, microfilming, and retrieval of information; manual, mechanical, and computer means of storing and retrieving information.

3201 Presentation Methods in Human Resource Education (3) S Recognized methods of group presentation and individual training.

3271 Leading Learning in Human Resource Development (3) S Prereq.: HRE 3071. Introduction to the principles and practices of instructional delivery strategies to facilitate learning in training and development; methods for leading learning in traditional classroom training; on-the-job training; small group learning; and individual learning.

3400 Office Management (3) Facilitating office work through management of environment, organization, communication, personnel, systems, productivity, and cost factors.

3500 Administrative Assistant Procedures (3) Prereq.: HRE 2000 or equivalent. Responsibilities of administrative supervisor; skills needed for supervision, decision making, and human relations; planning, organizing, and disseminating information.


3602 Learning Styles (1) V How individuals perceive and process information; learning cycle applications in teaching management; work-team performance; business, industry, and career development.

3603 Classroom Management in Human Resource Education (1) V Prereq.: Concurrent enrollment in HRE 3602 and HRE 4600. Managing the human resource education classroom; emphasis on student behavior; techniques for preventing, diagnosing, and handling student discipline problems.

3723 Leadership Concepts and Principles (3) S Survey of leadership theory, concepts, and research; emphasis on understanding the foundational concepts of modern leadership.

4001 History of Human Resource Education (3) V Events and organizations that contributed to the development of the field; role of the human resource educator.

4003 Independent Reading and Research in Home Economics Education (1-3) Prereq.: consent of director and instructor. May be taken for a max. of 3 sem. hrs. of credit. Students are responsible for registering with a faculty member with whom they will select the area of reading and research. Faculty-directed individual study.

4007 Organization and Administration of Home Economics Occupational Programs (3) Prereq.: HRE 2001 or equivalent. Principles of operating Home Economics Related Occupational (HERO) programs; emphasis on developing student employability in wage earning areas of home economics; includes program standards, requirements and procedures, curriculum, public relations, teaching materials, and evaluation of preparatory (in-school laboratory) and cooperative home economics programs.

4008 Advanced Individual Field Experience in Occupational Home Economics (1-3) Prereq.: consent of instructor. A max. of 3 sem. hrs. of credit may be earned in each occupational area: Pass-fail grading. Advanced individual, supervised, field-based study in selected businesses and industries to learn management strategies, personnel supervision, decision making, and human relations; planning, organizing, and disseminating information.

4011 Cooperative Extension Work (3) V History, objectives, organization, relationships, and teaching processes in cooperative extension.
Courses

4011 Communications in Extension Education (3) F Systems and concepts of principles of communication in the extension educational program.

4025 Principles of Adult Education (3) S Nature and importance of adult education; social and psychological factors affecting adult motivation and learning; techniques for providing adult learning experiences.

4026 Informal Education Programs for Youth (3) S Organization, leadership, and evaluation of informal youth education programs.

4039 Topics in International Development (3) F Current issues in international development and/or human resource development.

4069 Principles of Industrial Hygiene (3) V Principles and practices of industrial hygiene, and human resource development in industry.

4070 Teaching: Construction Industries (3) V Principles and practice of training in the construction industry.

4071 Program Development (4) F,S,Su Comprehensive introduction to the theories, models, and practice of training program evaluation. Development of curriculum materials for organizing and conducting adult learning experiences; emphasis on understanding the community, faculty, and student needs to effectively lead organizations and communities to achieve their vision and goals.

4072 Advanced Leadership Development (1-3) S May be taken for a max. of 12 sem. hrs. of credit. Focus on developing the leadership skills needed to lead organizations and communities to achieve their vision and goals.

4073 Advanced Leadership Development (3) S Prereq.: HRE 2723 and 3723. Focus on developing the leadership skills needed to lead organizations and communities to achieve their vision and goals.

4074 Adult and Nonformal Home Economics Education (1-3) F,S,Su May be taken for a max. of 6 sem. hrs. of credit when topics vary. Group study of selected topics under the direction of a faculty member.

4075 Ethical and Legal Issues in Human Resource Education (V) Ethical and legal issues and problems faced by human resource development professionals practicing in public and private sector organizations.

4076 Principles of Workforce Education (3) V Principles underlying the development of effective extension education programs.

4077 Development of Agriculture in America (3) V Organization and development of agriculture in America from colonial times to the present.


4079 Foundations of Industrial Hygiene (3) V Prereq.: HRE 2001 and BIOL 2180, or equivalent. Principles and strategies involved in establishing and operating a health and safety program for a manufacturing facility; preparation for the Certified Industrial Hygienist (CIH) examination.

4080 Teaching: Manufacturing Industries (3) V An activity-oriented, conceptually based teacher education curriculum, incorporating methods and materials of The World of Manufacturing as developed by the Industrial Arts Curriculum Project.

4081 Teaching Cooperative Education (3) V Organization and administration of cooperative education programs in public secondary education; historical foundations; relevant federal legislation.

4082 Teaching in Human Resource Education Content Areas (3) S Prereq.: HRE 2001, 3101, and 3201. Teaching human resource education in the formal classroom; emphasis on content area, selection of materials, and planning instruction.


4084 Introduction to Information Technology (3) V 2 hrs. lecture; 2 hrs. lab. Introduction to the basic array of information technologies as well as a survey of the global, ethical, political, cultural, social, and environmental issues raised by information technology; building skills in integrating information technologies into a workplace curriculum.

4085 Advanced Instructional Design (3) V Prereq.: HRE 3101 or 3171. Overview of the theories, models, and systems of distance learning; focus on understanding the foundations of distance learning, the design and delivery methodologies, and the role of the instructor and learner.

4086 Advanced Distance Learning Strategies (3) V Prereq.: HRE 2001 or permission of instructor. Overview of the theories and practices surrounding online interaction environments; focus on understanding the community development and sustainability required for successful online learning.

4087 Assessment, Career Development, and Productivity (3) S Assessing present and future needs of the human resource education profession; procedures used to evaluate student preferences, career potential, and occupational placement.

4088 Urban and Nonformal Home Economics Education (3) 2 hrs. lecture; 2 hrs. lab. Working with adults and youth in community agencies and other programs with clientele outside the formal school system.

4089 Advanced Problems in Human Resource Education (1-3) F,S,Su May be taken for a max. of 6 sem. hrs. of credit when topics vary. Group study of selected topics under the direction of a faculty member.

4090 Special Topics in Agricultural Education (1-3) V May be taken for a max. of 6 sem. hrs. of credit when topics vary. Group study of selected topics under the direction of a faculty member.

4091 Special Topics in Business Education (1-3) V May be taken for a max. of 6 sem. hrs. of credit when topics vary. Group study of selected topics under the direction of a faculty member.

4092 Advanced Teaching Techniques in Human Resource Education (3) F,S,Su Principles underlying the human resource teaching/learning process; use of effective human resource teaching methods and strategies.

4093 Systems of Teaching and Learning Styles (3) V Analyzing how individuals perceive and process information; interrelationships with personality, leadership, management, and organizational processes; student learning styles; and the impact of discipline and development of a personal philosophy of discipline.

4094 Teaching in Higher Education (3) F,S Methodology for effective college teaching; student motivation; planning for instruction, delivery, and evaluation.
7213 Pedagogical Advances in Agricultural Education (3) V Development and functions of the comprehensive agricultural teacher education program.

7218 Teacher Education (3) V Development and functions of the comprehensive agricultural teacher education program.

7222 Principles and Practices of Extension Education (3) S Prereq.: HRE 7122 or equivalent. Learning and teaching concepts applied in the execution of an extension educational program.

7255 Improvement of Instruction in Keyboarding, Word Processing, Shorthand, and Clerical Practices (3) V Techniques and strategies related to the teaching of clerical skills.

7256 Improvement of Instruction in General Business, Accounting, and Bookkeeping (3) V Techniques and strategies related to the teaching of general business.

7271 Leading Learning in Human Resource Development (3) S Principles, research, and practices of facilitating learning in human resource development (HRD) including facilitating skills for traditional classroom training as well as informal work-based learning strategies.

7301 Orientation to the World of Work (3) V See ELRC 7301.

7384 Human Resource Education for Special-Needs Students (3) S Regulations, issues, assessment, instruction, and special programs in human resource education for special needs students.

7332 Educational and Occupational Information (3) V Also offered as ELRC 7332. Classification and analysis of educational, occupational, and social information; occupational trends and surveys; use of occupational information by teachers, guidance counselors, and others.

7334 Vocational Counseling (3) S See ELRC 7334.

7392 Advanced Vocational Counseling (3) V See ELRC 7392.

7398 Field Experiences in Vocational Counseling (3) V See ELRC 7398.

7401 Administration of Adult Human Resource Education Programs (3) S Role of adult education as a component of vocational education in contemporary society; program conceptualization, needs assessment, program initiation, development, financing, administration, and evaluation.

7414 Androgyny in Agricultural Education (3) V Principles and practices in conducting the adult agricultural education program.

7571 Performance and Needs Analysis in Human Resources Development (3) F Theory and principles used in the analysis of performance problems in organizations; emphasis on performance theory and use of tools and techniques for analyzing organizational, process, and individual level performance problems.

7573 Strategic Human Resources Development for Global Organizations (3) V The phenomenon of globalization and its impact on the problems, practices, programs, theories used by human resource development to improve performance in work systems.

7575 Managing Change in Organizational Settings (3) S Introduction to the theory, methods, and practice of organization change and development; emphasis on the role of the HRD practitioner as change agent and the interventions used to lead and manage organization change.

7602 Program Evaluation Design (3) S Systematic application of social research procedures for evaluating the conceptualization, design, implementation, and utility of vocational educational programs.

7622 Evaluation Methods (3) F Concepts and principles of evaluation applied to programs in extension education.

7662 Program Improvement in Home Economics Education (3) Principles and procedures for evaluating and improving home economics programs for diverse groups.

7701 Organization and Administration of Workforce Education (3) V Principles of organization, leadership, and administration of development of skills needed for effective workforce education leadership.

7702 Supervision in Human Resource Education (3) Su-E Principles of supervision in workforce teaching at local and state levels.

7703 Supervision of Professional Field Experiences in Human Resource Education (3) V Philosophy, principles, and procedures in supervision of student teaching in human resource education.

7716 Organization, Administration, and Supervision of Agricultural Education (3) V Theory, principles, and practices of organization and supervision of vocational teaching.

7723 Leadership and Organization (3) S Application of relevant principles of organization, dynamics, social organization, and organizational administration to problems of organizing extension education programs.

7725 Leadership Development Strategies in Organizations (3) V Introduction to the major strategies used for developing leaders in organizations; emphasis on leadership theories for leadership development, formal training strategies, development through job experience, feedback, intensive problem-solving, and building programs.

7741 Administration and Supervision of Vocational Trade and Industrial Education (3) V Philosophical, theoretical, and operational considerations in administering and supervising secondary and post-secondary vocational and industrial education programs and staff.

7766 Home Economics in Higher Education (3) Goals and objectives of home economics; program development, roles and responsibilities of faculty.


7803 Independent Study in Human Resource Education (1-3) F,S,Su Prereq. of permission of instructor. May be taken for a max. of 6 sem. hrs. in consultation with the instructor.

7805 Seminar in Human Resource Education (1-6) F,S,Su May be taken for a max. of 6 sem. hrs. credit when topics vary. Selected topics of interest to human resource education.

7809 Practicum for the Human Resource Educator (3-9) F,S,Su Prereq.: Permission of instructor. Practical experience under the guidance of practicing educators in various educational settings.

7812 Technological Advances in Agricultural Education (3) V Scientific developments in agriculture; their impact on programs in agricultural education.

7816 Advanced Agricultural Education Seminar (1) V May be taken for a max. of 4 sem. hrs. required at master's level; minimum of 2 sem. hrs. required at the doctoral level. Current professional educational problems in vocational agriculture.

7822 Advanced Extension Education (3) S Integration of relevant concepts, principles, and research findings in program development, leadership and organization, learning and teaching, and evaluation.

7824 Independent Study in Extension Education (3) May be taken for a max. of 6 hrs. of credit. Permission of instructor. Independent study under the guidance of the graduate faculty.

7826 Seminar in Extension Education (1) V May be taken for a max. of 2 hrs. of credit. Pass-fail grading. Graduate student-faculty exchange of ideas on research and issues.

7848 Special Topics in Industrial Education (1-3) V May be taken for a max. of 6 sem. hrs. Permission of instructor. Independent or group study under the direction of the graduate faculty.

7862 Current Problems in Home Economics Education (3) V Study of social, legislative, and educational problems.

7866 Seminar in Home Economics Education (1) May be taken for a max. of 4 sem. hrs. of credit. Research reporting and topics of current interest.

7871 Research and Theory in Human Resource Development (3) Doctoral seminar. The role of theory in human resource development and research, theory-building methodologies, and key foundational theory and recent developments.

7873 Advanced Theory in Human Resource Development (3) S Doctoral seminar. Contemporary theory, research, and leading issues in the field of human resource development.

7901 Scientific Methods in Human Resource Education (3) V Principles involved in formulating educational programs, hypothesis testing; operational strategies; historical, descriptive, experimental, and research methodologies.

7903 Survey Research Design and Implementation (3) Su Prereq.: HRE 7901 or equivalent. Survey and correlational research in human resource education; emphasis on selection and/or development of appropriate measuring devices.

7905 Advanced Research Design (1) V Prereq.: HRE 7901 or equivalent. Research design; emphasis on research concepts and procedures and their application to extension education.

7909 Application, Interpretation, and Reporting of Research Results (3) V Prereq.: HRE 7901, 7903 or 7905 or equivalent. Selection of appropriate statistical techniques and interpretation of results.

7973 Data Collection and Analysis in Organizations (3) S Introduction to the principles and fundamental methods of collecting, analyzing, and interpreting data in organizations for the purpose of informing actions and decisions related to human resource development.

8009 Thesis Research (1-12 per sem.) S ""/""U"" grading. Permission of instructor.

8906 Research Problems (1-6) Prereq.: HRE 7622 and a basic graduate-level statistics course. May be taken for a max. of 6 sem. hrs. of credit. Permission of instructor. Research problems in programming, teaching, leadership, organization, or evaluation of extension programs.

9009 Dissertation Research (1-12 per sem.) S ""/""U"" grading. Permission of instructor.

INDUSTRIAL ENGINEERING  IE

1002 Industrial Engineering Fundamentals (3) S Design; introduction to computers; description of the profession.

2006 Introduction to the Use of Computers (3) Prereq.: eligibility to take MATH 1533, or equivalent, and credit or registration in IE 1002. 2 hrs. lecture; 3 hrs. lab. Principles of digital programming; application of subscript notation; application of theories to typical engineering programs; OS operation, Microsoft Office, and Groupware.

2301 Principles of Engineering Economy (3) S Planning case studies for decision making, including considerations of rate of return, cost and yield studies, depreciation and tax relationships, increment costs, replacement, and introduction to multivariate analysis.

2302 Engineering Statistics (3) Prereq.: Grade of C or better in MATH 1522 and PHYS 2101. Probability, discrete and continuous distributions, functions of random variables, estimation theory, tests of hypotheses including goodness-of-fit and independence.

2350 Supply Chain Logistics I (3) Prereq.: IE 1002, MATH 2116, and grade of C or better in IE 3102. Introduction to Supply Chains and Production Systems. Optimization and modeling in logistics systems; Fundamentals of production control in supply chains—forecasting, capacity planning, and inventory control.

4362 Advanced Engineering Statistics (3) S Prereq.: Grade of C or better in IE 3102. Linear regression and correlation, curvilinear regression, analysis of variance, and factorial experiments.

4423 Information Systems Engineering (3) Prereq.: IE 2060. 2 hrs. lecture; 3 hrs. lab. Analysis and design of information systems; projects relating comprehensive computer systems to typical industrial and service applications; ethics and professionalism.

4426 Distributed Information Systems Engineering (3) Prereq.: IE 4425 or equivalent. 2 hrs. lecture; 3 hrs. lab. Interfacing programs to databases; analysis of development of client-server applications in industrial and business settings; interfacing databases and industrial applications to the Internet; analysis, design, and implementation of industrial and business networks.

4453 Quality Control & Six Sigma (3) Prereq.: Grade of C or better in IE 3302. Principles and practice of quality assurance and control; theory of statistical sampling and control and related economic analysis; Quality Systems; Six Sigma principles and practice.

4461 Human Factors Engineering (3) Prereq.: senior standing, 2 hrs. lecture; 3 hrs. lab. Human performance in human-machine systems, including information processing, displays, equipment design. Intuitive and interface development. Human performance in industrial and service applications; ethics and professional standards.

4462 Safety Engineering (3) S Occupational safety and health and accident prevention management; design and implementation of safety programs; control of hazardous physical and environmental conditions.

4463 Fundamentals of Industrial Hygiene Engineering (3) Prereq.: senior standing. Basic principles of chemical hazards; air contamination, equipment operation, exposure monitoring, sound and vibration, and thermal stresses; occupational and industrial hygiene and application of theory in the control of occupational health hazards.

4465 Biomechanics for Engineers (3) S See BE 4323.
4466 Human Computer Interaction (3) Prereq.: IE 2060 or equivalent. Approaches to the identification, design, analysis, and development of human-operated information processing systems; applications to practical problems in industry, military, health systems, and education.

4470 Knowledge-Based Systems in Engineering (3) Prereq.: IE 4425 or equivalent computer experience. 2 hrs. lecture; 3 hrs. lab. Principles and techniques of knowledge-based expert systems as applied to engineering problems; expert systems theory; systems building tools; static and dynamic expert systems.

4480 Manufacturing Automation (3) Prereq.: IE 3201 and ME 3533. 2 hrs. lecture; 3 hrs. lab. Application of computer-based assembly techniques to manufacturing automation; programming of numerically controlled machine tools using Compact II and APT; robotics with multidegree of freedom linkages; NC programming using CAD/CAM; computer-automated part programming.

4485 Systems Integration in Manufacturing (3) Prereq.: IE 3202 or equivalent. Principles and application of information technologies to monitoring, control, and integration of manufacturing systems.

4490 Engineering Management (3) Prereq.: IE 3202, and credit or registration in IE 4425. Design, operation, and monitoring of a system to effectively control costs; maintenance organization and systems, preventive maintenance, maintenance planning and scheduling, maintenance work measurement, labor costs, and spare parts information technology.

4516 Plant and Systems Design (3) Prereq.: IE 3201, IE 3520; grade of C or better in IE 3520; CM 2141; and senior standing in College of Engineering. Machine loading, assembly balancing techniques, design of physical-manufacturing systems, integrating materials-handling systems into the plant, design of plan service systems, site analysis, and project issues involving plant design using optimization techniques; ethics and professionalism.

4520 Supply Chain Logistics II (3) Prereq.: Grade of C or better in IE 3520. Supply chain management; supply chain modeling and design; distribution systems; transportation systems; supply chain information technologies.


4540 Reliability Engineering (3) Prereq.: IE 3302. Reliability: design and analysis of reliability models; reliability assessment during pre-production development and testing; and special problems in maintenance, spare parts, and Markov processes.

4559 Industrial Engineering Senior Design Project (3) Prereq.: IE 4425, 4453, 4516, 4520, 4530 and ME 3533. Must be taken during the last semester of the undergraduate program. For December graduates, must be taken in full semester immediately prior to graduation; for spring or summer graduates, must be taken in the spring semester immediately prior to graduation. Students not meeting this requirement will be dropped from the course. Application of previous industrial engineering courses in comprehensive design project; preparation for the FE exam in industrial engineering.

4785 Special Topics in Industrial Engineering (1-3) Prereq.: senior standing. May be taken for a max. of 6 hrs. of credit when topics vary. Topics in industrial engineering not sufficiently covered in other undergraduate courses.

7201 Advanced Engineering Economy (3) Prereq.: IE 3201 or equivalent. Engineering economic analysis, multi-phase project selection, preference ordering theory, and capital equipment pricing theory.

7211 Project Engineering (3) Prereq.: IE 3201 or equivalent. Large-scale engineering construction or development projects from schematic to online condition.

7382 Probability Theory in Engineering (3) Prereq.: IE 4526 or equivalent. Random variables and their functions; transforming u-of random variables; sets of random variables and random sequences; expectation, special distributions, exponential and continuous Markov processes, birth and death processes, and waiting line theory.

7400 Industrial Systems Simulation (3) Prereq.: IE 4500 or equivalent. Applications of simulation models for industrial systems including advanced techniques for random number generation, random variate generation, design and analysis of simulation experiments, and variance reduction techniques.

7425 Advanced Information Systems Engineering (3) Prereq.: IE 4461 or equivalent. Advanced concepts of information systems engineering with emphasis on middleware architectures/technologies for integrating databases; design issues and methodology for developing and implementing distributed information systems; and design and implementation of data-warehouses and online analytical processing (OLAP) systems.

7430 Advanced Quality Control (3) Prereq.: IE 4453 or equivalent. Advanced procedures of statistical quality control, statistical analysis of quality control data, economic aspects of quality assurance, human element in quality control, and relationship of quality control to productivity and to ability of American products to compete in world markets.

7461 Ergonomics in Work Design (3) Prereq.: IE 4461 or equivalent. 2 hrs. lecture; 3 hrs. lab. Introduction to anthropometry, biomechanics, physiological, and psychological issues in work design and their application in work design and task assessment.

7463 Industrial Hygiene Engineering (3) Prereq.: IE 4453 or equivalent. Principles of health and safety as an integral part of the design process. Area of emphasis is currently OSHA and EPA regulations.

7464 Human and Biomedical Physiology (3) Prereq.: IE 4461 or equivalent. Study of worker's physiological responses (cardiovascular, pulmonary, muscular) to work applicable to task design and evaluation, employee selection and placement, and work-rest scheduling.

7465 Occupational Biomechanics (3) Prereq.: IE 4461 or equivalent. 2 hrs. lecture; 3 hrs. lab. Principles of biomechanics applied to work design; applications to work systems such as manual materials handling and tool design.

7466 Human-Computer Interaction (3) Prereq.: IE 4461 or IE 4468 or equivalent. Ergonomics of the use of interactive computer systems; general characteristics and requirements of people-oriented computer systems from the perspective of different disciplines and tasks, e.g., text editing.

7470 Artificial Intelligence Manufacturing Systems (3) Prereq.: IE 4425 or equivalent. Application of artificial intelligence tools and techniques to computer integrated manufacturing systems including maintenance, product design, process design, manufacturing scheduling and control, robotics, and intelligent warehouse systems.

7480 Automation and Computer-Aided Manufacturing (3) Prereq.: IE 3201 and MATH 1352; or equivalent. Automated flow control, machine control, industrial robots, computer-aided manufacturing, process monitoring and control, group technology, flexible manufacturing systems, and material requirements planning.

7485 Advanced Microcomputer Applications (3) Prereq.: IE 4485 or equivalent. 2 hrs. lecture; 3 hrs. lab. Advanced topics in microprocessors/microcomputer control in manufacturing; input/output design; interfacing; hardware and software considerations.

7490 Advanced Maintenance Management (3) Prereq.: IE 3520 and 4490 or equivalent. Statistical and operations research approaches to plant maintenance.

7540 Advanced Reliability Engineering (3) Prereq.: IE 4450 or equivalent. Analysis of reliability, maintainability, and availability of large production facilities; applications to a variety of manufacturing environments.

7541 Linear Programming Algorithms (3) Prereq.: IE 3520 or equivalent. Optimization of linear objective functions subject to linear constraints; vector spaces, convex analysis, polyhedral sets; matrix versions of simplex, revised simplex, bounded variables; duality theory and primal-dual algorithms; parametric and sensitivity analysis; decomposition, and cutting plane algorithms.

7545 Queueing Theory (3) Prereq.: IE 3520 or equivalent. Fundamentals of queuing processes, transient and limiting behavior, measures of effectiveness; birth and death processes, single and multi-server queues, priorities, balkings, batch arrivals, and services; matrix representation of certain queuing systems; applications, statistical inference, design and control of queues.

7561 Programming Methods in Operations Research (3) Prereq.: IE 3520 or equivalent. Aspects of advanced programming methods. Sensitivity analysis, integer programming, and Lagrangian constrained problems; development of goal, zero-one, etc., and multi-objective programming with application to industrial planning and production.

7571 Network Modeling and Optimization (3) Prereq.: IE 3520 or equivalent. Network analysis; shortest path algorithms; minimal cost network flows, transportation and assignment problems, transshipment problems, optional network flows, out-of-kilter algorithm, maximal flow algorithms, single and multiple commodity flows; applications to manufacturing and service industries.

7640 Equipment Failure Analysis and Prevention (3) Prereq.: credit or registration in IE 4540 or equivalent. For purchase planning, multi-stage, multi-criteria, mechanical engineering equipment; failure mechanisms; mechanical failure analysis techniques; Weibull failure analysis techniques; and failure management.

7642 Administration of Engineering and Technical Personnel (3) Prereq.: consent of instructor. Also offered as CBE 7302. Problems encountered by engineering personnel in administering other engineers and/or technical personnel; human relations; engineer as leader, supervisor, and administrator; wage and salary administration.

7645 Management of Technology (3) Cross-listed with MGT 7001. Importance of technology management to state, region, nation, company, industry; management of R&D and product/process development; preparation of business cases; differences between invention, innovation, and role of entrepreneur.

7720, 7721 Industrial Engineering Problems (1-3, 1-3) May be taken for a max. of 6 sem. hrs. of credit when topics vary. Special topic courses or independent study based on student interest in specialized industrial engineering areas such as design and analysis of complex production and supply-chain control, maintenance, quality control, and reliability; ergonomics and human-computer interaction, and information systems.

7761 Production Planning and Control (3) Prereq.: IE 4520 or 5520 or equivalent. Deterministic and probabilistic inventory models, static and dynamic models for production planning, multi-stage, multi-criteria, mechanical production systems; sequencing and scheduling; line balancing and workforce scheduling.

7762 Supply Chain Systems (3) Prereq.: IE 3520 or 4520, or equivalent. Components in supply chain systems; product life-cycle modeling, rotational production and supply, integrated component supply systems, multi-source supplier and buyer systems, just-in-time chain systems, warehousing and distribution systems, supply transportation system, and information technology for supply chain management.

7765 Lean Production Systems (3) Prereq.: IE 3520 or 4520, or equivalent. Principles and components of lean production systems; industrial process mapping, workflow analysis and simulation; market segmentation and market analysis; logistics information and error propagation; reduction of work-in-process, waste reduction, zero inventory and just-in-time production systems; material flow control; process and operational variability reduction; role of buffers and process stabilization.

7768 Sequencing and Scheduling (3) Prereq.: IE 3520 or 4520 or equivalent. Measures of scheduling; deterministic models for single and parallel machines; job shops, flow shops, and open shops; stochastic scheduling models for machines, job shops, flow shops, and open shops; computational complexity and industrial applications.

7771 Design of Manufacturing Systems (3) Prereq.: IE 4520 or 4525 or equivalent. Principles in design of manufacturing systems; multi-phase project selection, preference ordering theory, and capital equipment pricing theory.

8000 Thesis Research (1-12 per sem.) May be taken for a max. of 6 sem. hrs. of credit when topics vary. Special topic courses or independent study based on student interest in specialized industrial engineering areas such as design and analysis of complex production and supply-chain control, maintenance, quality control, and reliability; ergonomics and human-computer interaction, and information systems.
INFORMATION SYSTEMS AND DECISION SCIENCES • ISDS

1100 Introduction to Management Information Systems (3) Prereq.: ISDS 1100. Study of the use and impact of information systems in business, government, and society; implementation of information systems for decision making.

2000 Introduction to Business Statistics (3) Prereq.: MATH 1437. Principles and applications of descriptive statistics, sampling, basic probability theory; probability distributions, normal and binomial; sampling distributions; basic statistical inference including estimation, one- and two-sample hypothesis tests for means, and chi-square tests.

2001 Statistical Models (3) Prereq.: ISDS 2000. Advanced statistical methods and decision models including ANOVA and linear regression analysis; management science models such as utility analysis, linear programming, waiting line models and simulation.

3000 Statistical Methods and Models III (3) Prereq.: ISDS 2000. Independent reading and research in selected topics from matrix algebra.

3070 Independent Reading and Research in Information Systems and Decision Sciences (3-6) Prereq.: ISDS 3100 and consent of instructor. Advanced work in statistical inference; probability, probability distributions, expected value, sampling distributions; applications of sampling distributions to problems of estimation and control.

3075 Internship in Information Systems and Decision Sciences (3) Prereq.: permission of instructor and department chair. Practical experience in the field for 100 hours per semester (3 credits) of learning experience in information systems under the general supervision of an ISDS faculty member and direct supervision of an ISDS faculty member.

3100 Management of Information Resources (3) Prereq.: ISDS 1100. Information as a resource; issues in information resource management; elements of information systems; decision making processes; information systems: controlling information systems; controlling information resources.

3105 Internet Development Tools (3) Prereq.: ISDS 3100. Understanding of the Internet and its structure for use in business; technologies employed to develop Internet applications; development of business applications for the Internet.

3110 Database Processing for Management (3) Prereq.: ISDS 2001. Theoretical and practical study of various database technologies.

3155 Introduction to Operations Management (3) Prereq.: ISDS 2001. Principles and methodologies concerning production and service organizations; production and service systems design; process and capacity design; total quality management; systems for just-in-time and purchasing management; inventory and materials management.

3120 Management of the IT Function (3) Issues in managing the Information Technology (IT) function, including the role of IT in strategy and the impact of emerging technologies.

3200 Advanced Business Programming (3) Prereq.: ISDS 3105 and credit or registration in ISDS 3110. Computer programming methods for business systems emphasizing contemporary programming environments and applications development interfaces.

4000 Introduction to Statistical Theory (3) Prereq.: probability, basic statistical methods and MATH 1522, or consent of instructor. Concepts of probability distribution and statistical inference; developing and applying estimation hypotheses about means, proportions, and variances; chi-square and F tests.

4010 Basic Forecasting Models (3) Prereq.: ISDS 3000 or equivalent. Simple time series modeling techniques for business and economic forecasting; using time series data in regression models; time series models: decomposition, exponential smoothing; use of computer programs for regression and time series modeling and forecasting features.

4011 Sample Survey Methods (3) Prereq.: ISDS 3000 or equivalent. Designing sampling systems; alternative sample designs; problems of bias; techniques of inference from alternative designs; selecting optimal sampling plans; methods and applications of sample surveys.

4020 Operations Research for Managerial Decisions (3) Prereq.: ISDS 2001 or equivalent. Managerial decision making, including linear programming, transportation models, integer programming, project scheduling, and waiting line models; basic understanding and evaluation of business operations; an introduction to Bayesian techniques.

4021 Foundations of Mathematical Programming (3) Prereq.: credit or registration in ISDS 4020. Theoretical foundations of linear programming in single and multiple objectives; classical nature of the simplex method; constrained and unconstrained problems; Kuhn-Tucker conditions and quadratic programming.

4100 Applied Linear Models (3) Prereq.: ISDS 3000 or equivalent. Development of a unified approach to estimation and hypothesis testing in linear statistical models; emphasis on appropriate specification and interpretation of models and statistical hypothesis; use of available computer routines and interpretation of results; unbiased analysis of variance models, linear regression models, and analysis of covariance models in two treatments, paired comparisons, randomized complete block; test of randomness and independence, and measures of correlation.

4105 Bayesian Probability and Statistical Methods (3) Prereq.: ISDS 3000 or equivalent. Assessment of subjective probability distributions; Bayesian estimation and inference; application of Bayesian techniques to business problems.

4110 Business Decision Support and Expert Systems (3) Prereq.: ISDS 3110 or equivalent. Application of expert systems and artificial intelligence techniques for one-sample problems, comparison of two treatments, paired comparisons, randomized complete block; test of randomness and independence, and measures of correlation.

4112 Data Warehousing (3) Prereq.: ISDS 3100 and credit or registration in ISDS 3110. Design and development of management data warehouse systems for management decision making; conceptual design; design; data mining; Web-enabled data warehouse; knowledge management.

4120 Business Data Communications (3) Prereq.: ISDS 3110 or CSC 1350. Telecommunications in business, including both voice and data communication, technical details of hardware, software, network configurations, network management, and security issues.

4123 Computer and Networking Security (3) Prereq.: ISDS 3110. Security management; password and access control; authentication, transmission control protocol and Internet protocol packet content analysis, firewall hardware and software, security policies, key management, encryption, cryptanalytic systems, application security issues, and laws governing security and privacy.

4125 Analysis and Design of Management Information Systems (3) Prereq.: ISDS 3110 or ISDS 3100. Design philosophies and techniques for the creation of information systems for management decision making; conceptual design; and implementation.

4141 Introduction to Data Mining (3) Prereq.: ISDS 3110. Fundamentals of methodology and techniques used in data mining, with particular emphasis on business applications; topics include market basket analysis, memory-based reasoning, cluster detection, link analysis, decision trees and rule induction, neural networks, and genetic algorithms.

4145 Operation of Service and Distribution Systems (3) Prereq.: ISDS 3115. Application of operations management concepts and techniques to service and distribution organizations; service system design and control, including location, layout, capacity expansion, staffing and scheduling; special attention to design of an operations simulation environment and interfaces with other functional areas.

4167 Operations Planning and Control (3) Prereq.: ISDS 3100 or ISDS 3115. Planning, organizing, and controlling the efficient, customer-focused flow and storage of raw materials, products, information in a manufacturing or service organization; aggregate planning, master scheduling, requirements planning, inventory control, and just-in-time systems; customer service; logistics and interfaces with other functional areas; emphasis on concepts, model development, and analysis.

4180 Business Analysis in Practice (3) Prereq.: Senior standing or permission of instructor. Contemporary problems encountered by the business analysis professional; emphasis on case analysis and use of business analysis skills and computer technology to solve business problems.

4200 Business Management (3) Prereq.: ISDS 3115. Credit will not be given for both this course and IE 4433. Principles and practices of statistical quality control in industry; control charts for variables and for attributes; process capability analysis for variables and for attributes; design of experiments; Taguchi methods; and ISO 9000 standards.


4511 Industrial Simulation (3) Prereq.: ISDS 2001. An overview of the application of computer simulation to solve an operations problem in business or government. Advanced application of computer simulation concepts to dynamic systems; alternative approaches to simulation modeling; discrete-event, hybrid discrete/continuous, system dynamics, simulators, and template approach; further development of modeling and analysis skills; advanced analysis concepts including variance-reduction, simulation meta-models and simulation optimization.

4511 Industrial Simulation (3) Prereq.: IE 3510, 2660, credit or registration in IE 4562, or equivalents. See IE 4511.

4503 Statistical Methods for Public Administration (3) Prereq.: college algebra. 2 hrs. lecture; 2 hrs. lab. Open only to students in the MPA program. Also offered as PADM 5010.
Courses

7000 Statistical Theory (3) Prereq.: ISDS 4000 or equivalent. Corequisite: Continuation of ISDS 4000. Theoretical basis for topics in statistical inference including tests of hypotheses, experimental design, estimation, regression, analysis of variance, nonparametric statistics, sequential tests of hypotheses; and complex sample designs.

7009 Simulation of Stochastic Processes (3) Prereq.: Fundamental knowledge of computer programming, statistics, and operational research; and consent of instructor. Simulation models, methodologies, and languages; development of complex models; validation of results; completion of several large-scale projects involving extensive use of digital computer required.

7010 Decision Models for Public Administration (3) Open only to students in the MPA program. See PADM 7101.


7021 Sample Design and Analysis (3) Prereq.: ISDS 4000 or equivalent. Methodology for sampling and survey design; alternative methods for email and internet survey samples; analysis of survey data; evaluation criteria including sample size and randomized response techniques; emphasis on applications with theoretical foundations.

7022 Multivariate Data Analysis (3) Prereq.: BADM 7020 or equivalent. Multivariate methods, including principal components analysis, factor analysis, discriminant analysis, classification procedures.

7024 Advanced Statistical Analysis for Research I (3) Prereq.: ISDS 7020 or equivalent. Methods in calculus, linear algebra, basic statistical methods, and computer programming. Methods of statistical inference; statistical estimation; testing hypotheses about single and multiple means and proportions; simple and multiple linear regression; design of simple random, stratified, and cluster samples; extensive use of statistical computer programs.

7025 Advanced Statistical Analysis for Research II (3) Prereq.: ISDS 7020 or equivalent. Continuation of ISDS 7024. Advanced regression analysis; experimental design and analysis of variance; nonparametric methods; multivariate techniques; extensive use of statistical computer programs.

7027 Advanced Forecasting Models (3) Prereq.: BADM 7020 or equivalent. Advanced topics in forecasting; time-series analysis; emphasis on stochastic parameter models and autocorrelated error structures; univariate and multivariate integrated moving average (ARIMA) models; multivariate models and transfer functions; extensive use of computer programs.

7050 Advanced Business Problems (3) May be taken for a max. of 6 hrs. of credit when topics vary. Special topics in statistics and quantitative methods.

7080 Survey of Information Systems Research (3) Prereq.: BADM 7050 or consent of instructor. Exploration of current research streams in information systems; relationships of IS to other disciplines; historical overview of the field; and current research in information systems.

7081 Critical Analysis of Information Systems Research (3) Prereq.: advanced PhD standing or consent of instructor. Development of skills in theory building, research design, writing research papers, and evaluating research in the field of information systems.

7101 Introduction to Operations Research Methods (1.5) Prereq.: BADM 7020 or equivalent. Topics cover model identification; solution methods; operations research; decision analysis, simulation, risk analysis, linear programming, and integer programming; Excel spreadsheet is used extensively.

7102 Survey of Operations Research: Deterministic Models (3) Prereq.: ISDS 7101. Integer and mixed-integer programming; classical optimization; quadratic programming, separable programming, dynamic programming; applications of more advanced mathematical programming techniques with some theory.

7103 Survey of Operations Research: Stochastic Methods (3) Prereq.: ISDS 7101 or 4021. Extensions of decision theory, game theory, dynamic programming, Markov decision theory, reliability models, and queuing models; probabilistic methods in operations research.

7105 Digital Methods (3) Prereq.: ISDS 7102 and working knowledge of FORTRAN. Numerical problem solving in operations research and statistics; Monte Carlo methods, numerical solution of systems of equations, search techniques and optimization, online analytical processing, multidimensional data modeling, web-enabled data warehousing, data marts, data mining, knowledge management, and knowledge inference.

7106 Multiple Criteria Decision Making (3) Prereq.: ISDS 7101. Theory of the idealized, linear multi-objective programming, goal programming, compromise programming, and model measurement.

7107 Dynamic Programming (3) Prereq.: ISDS 7102. Theory and computational techniques of dynamic programming; decision problems; relationship to classical optimization techniques.


7120 Quality and Productivity Management (3) Contemporary topics in total quality management; quality in software and system design and implementation; problem solving tools; process control; quality deployment and FMEA; team building and quality standards and awards; control charts for variables and for attributes; process capability analysis; acceptance sampling plans; design of experiments; Taguchi methods and ISO 9000 standards.

7210 Process and Planning Control (3) Prereq.: BADM 7030. Integration of operations planning and control with other business functions of an enterprise; enterprise resource planning (ERP); cases and managerial techniques to plan and schedule in industrial service areas; decision problems and appropriate tools; hands-on experience with ERP software; cross-functional case projects.

7211 Process and Planning Control II (1.5) Prereq.: BADM 7210. Cases and management techniques to control business functions and service areas; manufacturing requirements planning, manufacturing resource planning, operations control; overview of computerized packages, enterprise resource management systems, decision problems, and case projects.

7220 Supply Chain Management (3) Prereq.: BADM 7120 or equivalent. Supply chain process analysis and control; critical issues in revolutionizing management of the entire supply chain; system productivity analysis, demand management, inventory management, distribution planning, integration of processes; emphasis on case study, spreadsheets, and software applications; network design, warehousing location, outsourcing, global supply chain, and information, EDI and DSS technologies in supply chain management; case study and SCM software.

7230 Project Management (3) Prereq.: BADM 7120 or equivalent. Topics of effectively managing projects including setting goals and objectives, project planning, evaluation and review; incentives and qualitative analysis, and project accounting; extensive use of cases involving hands-on computer analysis with state-of-the-art project management software.

7272 Operations Strategy (3) Prereq.: BADM 7120 or equivalent. Perspectives and strategies for integrating operations strategy into an overall business strategy; issues in selection of the capabilities, characteristics, and configuration of facilities; process/technologies; aggregate capacity; vertical integration; service requirements; organizational structure and jobs; extensive use of case analyses drawn from service and manufacturing industries.

7275 Advanced Operations Management (3) Prereq.: BADM 7120. May be taken for a max. of 9 hrs. of credit when topics vary. Topics such as material requirements planning, inventory control, scheduling, facilities location and layout, quality control, job design, industrial design, network analysis; emphasis on application of techniques.

7501 Information Systems (3) Prereq.: ISDS 1100 or equivalent. Contemporary topics in information systems; survey of information system analysis and design; introduction to business data communication; database management systems and software systems; enterprise-wide systems and information systems control.

7505 Information Technology and Entrepreneurship (3) Prereq.: BADM M 7050 or equivalent. Information economy, globalization, information technology-based business opportunities, technological entrepreneurship, entrepreneurial process, entrepreneurial thinking, entrepreneurship, creating, growth, and influencing change; knowledge management, technological entrepreneurship.

7510 Database Management (3) Prereq.: BADM 7505. Analysis, design, implementation, and databases based on the relational database model; data modeling using entity-relationship (E-R) diagramming; logical and physical database design; SQL; hardware/software architecture considerations; data distribution administration; emerging database technologies and advanced database applications.

7511 Advanced Database Management (3) Prereq.: BADM 7050 or equivalent. Data intensive applications, online analytical processing, multidimensional data modeling, web-enabled data warehousing, data marts, data mining, knowledge management, and knowledge inference.

7520 Network Information Systems (3) Prereq.: BADM 7050. Broad overview of network technologies including protocols, network operating systems, and network management; LAN; WAN design; Internet technology; network security.

7522 Internet Systems Development (3) Prereq.: ISDS 7530. In-depth look at Internet technologies, server-side programming, web/database connectivity, integration of Web and other business applications, and Web development methods; e-commerce, knowledge management, cross-project coordination, technology and time management; construct Internet based systems and manage Internet based systems development.

7530 Information Systems Design (3) Prereq.: BADM 7050; ISDS 7101. Both courses may be taken concurrently. Analysis and design of information system; systems development methodology; topics include requirements determination; feasibility determination; project management; evaluation of a software development strategy and application design; modeling using ER diagrams, and DFDs; systems implementation.

7535 Information Technology Management (3) Prereq.: BADM 7050. Management of information technology (IT) resources; planning and management of IT strategy, applications; hardware/software integration, information resources, and IT professionals; organization and governance of the IT function; IT policies and standards, measurement of IT; investments and returns, and deployment of new information technologies.

7540 Electronic Commerce (3) Prereq.: BADM 7050. Use of information technology and the Internet in creating new forms of business organization; creating virtual marketplaces; disintermediation/reintermediation; and virtual organization.

7543 Electronic Commerce II (1.5) Prereq.: ISDS 7540. Continuation of ISDS 7540. Advanced management issues, organizing principles and technologies; working in electronic communities; newsgroups, virtual communities, extranet and intranet.

7545 Collaborative Computing (1.5) Prereq.: BADM 7050. Foundation of collaborative computing; issues of motivation, synchronicity, anonymity, group size, group proximity, and group tasks.

7550 Enterprise Systems (3) Prereq.: BADM 7050. Study of the broad area of Integrated Enterprise-wide Systems; emphasis on features and capabilities of enterprise systems and their related technologies, the methodologies used to implement these systems in organizations, and the implications of their deployment in organizations.

7553 Business and Systems Change (3) Prereq.: ISDS 7530. Foundation of critical issues in systems design and implementation, reorganization concepts and information systems change including business process reengineering, project and change management, and information systems design and management; emphasis on the systems perspective of business, and the change that these enabling emerging and disruptive technologies and systems permit that have the greatest impact on business and industries.

7555 Auditing Enterprise Systems (1.5) Prereq.: ISDS 7530 and ACCT 7231. Principles of auditing enterprise-wide information systems in business; audit plans; controls and security issues.

7560 Social and Organizational Issues in MIS (3) Prereq.: BADM 7050. Impact of electronic communities on organizations; understanding and managing the sign systems on business; ethical considerations.

7565 Global Information Technology Management (3) Prereq.: BADM 7050. National IT policies; IT and national culture; IT management in multinational companies; IT diffusion in developed versus developing countries; IT and national development; global electronic communities; global telecommunication; and competitive advantage through global IT management.

7900 Contemporary Issues in Statistics and Management Science (3) Prereq.: advanced PhD study and consent of instructor. Philosophical foundations of science and their implications for contemporary management science.

7910 Contemporary Issues in Production/Operations Management (3) Prereq.: BADM 7050 or equivalent. May be taken for a max. of 9 hrs. of credit when topics vary. Philosophical foundations and contemporary issues in production/operations management.
8900 Pre-dissertation Research (1-9)
8000 Thesis Research (1-12 per sem.)
Contemporary research and critical issues in information systems.

8000 Thesis Research (1-12 per sem.)
May be taken for a max. of 6 hrs. of credit when topics vary.
Contemporary research and critical issues in information systems.

8900 Pre-dissertation Research (1-9)
May be taken for a max. of 6 hrs. of credit. Pass-fail grading.

9000 Dissertation Research (1-12 per sem.)
May be repeated for a max. of 6 hrs. of credit when topics vary.

INTERIOR DESIGN • ID

General education courses are marked with stars (★).

★1051 Introduction to Interior Design (3)
Contemporary practice of interior design as a profession; responsibilities of the interior designer.

1711 Basic Design Foundation (3) V Prereq.: controlled admission to program in interior design at first year entry level or permission of department. 6 hrs. studio. Credit will not be given for this course and ART 101T. Basic design problems with an emphasis on two-dimensional principles and elements; foundation for the graphic exploration of spatial ideas; an immersion in the graphic language of drawing.

1780 Interior Design Technical Drawing (3) F,S,Su-V Prereq.: controlled admission to program in interior design at first year entry level or permission of department. 1 hr. lecture; 4 hrs. studio. Introduction to the graphic tools, techniques, and conventions designers use to communicate architectural ideas; an immersion in the graphic language of drawing.

2722 Interior Design Awareness (3) V Not open to interior design majors. Discipline of interior design; principles presented in historical and philosophical contexts; analysis of the use of spatial elements.

2750 Interior Design Studio I (4) F Prereq.: admission to professional program in interior design or permission of department. Concurrent enrollment in ID 2781. 8 hrs. studio. Basic design problems in the built environment; emphasis on design process, form and principles of spatial organization.

2751 Interior Design Studio II (4) S Prereq.: ID 2750 or equivalent. 8 hrs. studio. Exploration and analysis of design decisions related to interior space.

2760 Color and Design (3) S Prereq.: ID 2774 or equivalent. Sophomores standing in major; nonmajors by consent of instructor only. 1 hr. lecture; 4 hrs. studio. Nature, theory, and art of color and light; applied to two- and three-dimensional basic design projects.

2774 Interior Construction and Systems (3) F Prereq.: admission to professional program or permission of instructor. Building systems and construction methods; code requirements for interiors.

2781 Interior Design Graphics (3) F Prereq.: admission to professional program or permission of instructor. 1 hr. lecture; 4 hrs. studio. Advanced applications in computer drafting and three-dimensional modeling for spatial designers.

4720 Seminar in Interior Design (3) F Prereq.: ID 3752 or equivalent. Research, discussions, and presentations related to contemporary issues in interior design.

4754 Interior Design Studio V (4) F Prereq.: ID 3753 or equivalent. 8 hrs. studio. Development of constructive solutions to complex interior design problems.

4755 Interior Design Studio VI (4) S Prereq.: ID 4754 or equivalent. 8 hrs. studio. Concurrent enrollment in ID 4756. Design synthesis in a comprehensive capstone project.

4756 Independent Study Project (3) S Prereq.: ID 4720. Concurrent enrollment in ID 4754/56. 6 hrs. studio. Execution of a project selected by the advanced student with guidance from one or two faculty members.

4758 Advanced Studies in Interior Design (1-6) F,S,Su-V Prereq.: consent of instructor. Advanced studio work in a predetermined area of specialization at upper level status.

4761 Professional Practice Capstone Project (3) S Prereq.: senior standing in major; nonmajors by consent of instructor. Entry into the profession; interior design business practices; ethics and project management.

INTERNATIONAL STUDIES • INTL

2000 Contemporary Global Issues (3) Survey of current world issues from an interdisciplinary perspective.

3001 Gateway to International Studies (3)
Prereq.: selective admission into the professional program in interior design at the sophomore year or equivalent. 8 hrs. studio. Building systems and code requirements for interiors.

3002 Intermediate Italian (3) F,S,Su-V Prereq.: ITAL 1002. Supplementary work in language laboratory. Basic lexicon and structure of Italian; emphasis on communicative language use.

3003 Advanced Oral Communication (3) Prereq.: ITAL 2102. Enhancement of oral communication skills through debating and contemporary issues.

3006 Advanced Grammar and Composition (3) Prereq.: ITAL 2155. Intensive study of advanced Italian grammar, sentence structure, syntax, and composition.

3071 Survey of Italian Literature (3) Prereq.: ITAL 2155. Development of Italian literature from the beginnings to the Renaissance.

3072 Survey of Italian Literature (3) Prereq.: ITAL 2155. Continuation of ITAL 3071. Principal authors and literary movements from the Renaissance to the present.

3080 Advanced Oral Communication (3) Prereq.: ITAL 2102. Enhancement of oral communication skills through debating and contemporary issues.

3081 Advanced Oral Communication (3) Prereq.: ITAL 2102. Enhancement of oral communication skills through debating and contemporary issues.

4041 Translation (3) Prereq.: ITAL 3060 or equivalent. Study of translation methodology between Italian and English; emphasis on the different semantic, morphological, and syntactical contexts of the two languages.

4051 Dante (3) Dante, with emphasis on the Inferno.

4052 The Renaissance (3) Literary origins and productions of the Italian Renaissance; writings of Petrarch, Boccaccio, Lorenzo de Medici, Poliziano, Sammazaro, and Ariosto.

4053 Modern Italian Literature (3) Prereq.: 3000-level Italian course or equivalent. Selected works of modern Italian writers and literary critics of the 19th and 20th centuries.

4080 International Studies (3) Prereq.: 3000-level Italian course or equivalent. May be taken for a max. of 6 hrs. of credit when topics vary. Study of various aspects of Italian culture and literature from different periods.
4915 Independent Work (1-3) F,S,Su

4915 Independent Work (1-3) F,S,Su

Courses marked with an asterisk (*)

Native speakers of Japanese will not receive credit for

- *1001 Beginning Japanese (5)
- *1002 Beginning Japanese (5)

3801 Traditional East Asian Literature (3)

Basic lexicon

For elementary grades,

1151 Racquetball
1152 Tai Chi I
1154 Martial Arts
1157 Acrobatic Swimming
1159 Chinese Kung Fu
1140 Field Sports (1) 3 hrs. lab. For kinesiology majors or minors.
1410 Field Sports (1) 3 hrs. lab. For kinesiology majors or minors.
1411 Gymnastics (1) 1 hr. lab. For kinesiology majors or minors.
1412 Tennis (1) 1 hr. lab. For kinesiology majors or minors.
1427 Physical Activity I: Volleyball and Basketball (1) For kinesiology majors or minors. 3 hrs. lab. Identification, analysis, and practice of skills and techniques fundamental to volleyball and basketball; rules, strategies, safety.
1428 Physical Activity II: Soccer and Football (1) For kinesiology majors or minors. 3 hrs. lab. Identification, analysis, and practice of skills and techniques fundamental to soccer and football; rules, strategies, safety.
1429 Physical Activity III: Softball and Track and Field (1) For kinesiology majors or minors. 3 hrs. lab. Identification, analysis, and practice of skills and techniques fundamental to softball and track and field; rules, strategies, safety.
1430 Physical Activity IV: Tennis and Badminton (1) For kinesiology majors or minors. 3 hrs. lab. Identification, analysis, and practice of skills and techniques fundamental to tennis and badminton; rules, strategies, safety.
1431 Badminton (1) 1 hr. lab. For kinesiology majors or minors.
1432 Racquetball (1) 1 hr. lab. For kinesiology majors or minors.
1438 Aerobic and Strength Activities (2) 1 hr. lecture; 2 hrs. lab. For kinesiology majors. 3 hrs. lab. Identification, analysis, and practice of skills, techniques and fundamental concepts associated with lifetime activities.
1439 Aerobic and Strength Activities (2) 1 hr. lecture; 2 hrs. lab. For kinesiology majors. Identification, analysis, and practice of skills, techniques and fundamental concepts associated with lifetime activities.
1440 Aerobic and Strength Activities (2) 1 hr. lecture; 2 hrs. lab. For kinesiology majors. Major concepts of aerobic and strength training including safety, technique, age appropriate activities, and training principles.
1499 Specialized course in the initial on-field and clinical evaluation of orthopedic injuries and conditions of the lower extremities and the spine, including emergency care procedures and signs/symptoms/treatment of various injuries/conditions.
2006 Orthopedic Injury Evaluation Techniques II (3) Prereq.: BIOL 1202, 1209; KIN 2503, 2535; or permission of instructor. For students in the professional phase of the Athletic Training major area of concentration. Specialized course in the initial on-field and clinical evaluation of orthopedic injuries and conditions of the lower extremities and the spine, including emergency care procedures and signs/symptoms/treatment of various injuries/conditions.
2506 Methods and Materials in Physical Education for the Elementary School (4) 2 hrs. lecture; 4 hrs. lab. For elementary teachers. Progressively graded programs of activities for elementary school children. Specialized course in the initial on-field and clinical evaluation of orthopedic injuries and conditions of the lower extremities and the spine, including emergency care procedures and signs/symptoms/treatment of various injuries/conditions.
3500 Human Anatomy Laboratory (1) Prereq.: KIN 2500 or consent of Lab. Co-requisite: KIN 2501. Laboratory study of human body. Interactive software of the human body; gross anatomy with emphasis on muscle, bone, nerve, and blood vessels.

3501 Advanced Athletic Training (3) Prereq.: KIN 2503. 2 hrs. lecture; 2 hrs. lab. Advanced topics in athletic training with special emphasis on care protocols including spine boarding, crutch fitting; and different types of exercise on the functions of the human body.

3505 Practicum in Athletic Training (1) Prereq.: KIN 2503. 2 hrs. clinical/practicum. May be taken for a max. of 6 sem. hrs. Concurrent enrollment in KIN 2506.

3507 The Olympic Games: Ancient and Modern (3) Prereq.: KIN 1600. Credit will not be given for both course and KIN 2540. Open to advanced undergraduate grading. Practical application of exercise testing, exercise prescription, and leadership.


3513 Introduction to Motor Learning (3) Prereq.: KIN 3514 or equivalent. Movement skills of individuals with severe intellectual, behavioral, physical, and sensory disabilities.

3515 The Physiological Basis of Activity (3) Prereq.: KIN 2500 or consent of instructor. Theory and practice of fitness concentration in the area of physical activity and lifestyle issues and their interaction with physical activity.

3516 Curriculum Construction in Physical Education (3) Prereq.: KIN 3515 or consent of instructor. Observation and practice of skills, techniques, and protocols of patient care within local clinics, hospitals, school nurse facilities, development disability centers, and private practice.

3517 The Scientific Basis for Exercise (3) Prereq.: KIN 3513. 2 hrs. lecture; 2 hrs. lab. Historical development of chronic disease risk factors; contraindications and valid uses of exercise prescription.


3540 Mild/Moderate Impairment and Physical Activity (3) Prereq.: EDCI 2700 and KIN 2540. Substantial observations in schools required. Focus on individuals who exhibit mild/moderate developmental disabilities including intellectual disabilities; learning disabilities; behavioral disabilities; biological disabilities; mental retardation/moderate physical, sensory, and health disabilities.

3541 Severe Disabilities and Physical Activity (3) Prereq.: EDIC 2700 and KIN 2540. Substantial observations in schools required. Focus on individuals who have severe intellectual, behavioral, physical, and sensory disabilities.

3545 Individuals with Disabilities in Physical Activity Programs (3) Prereq.: EDIC 2700. Credit will not be given for both course and KIN 2540. Open to advanced undergraduate grading. Practical application of exercise testing, exercise prescription, and leadership.

4501 Community Health Issues (3) Community health issues and implications of tobacco, alcohol, drugs, venereal disease and other communicable diseases; other community health problems.

4502 Community Safety Education (3) Covers all grade levels in the school health program; community programs; home, traffic, and recreational safety; emphasis on organization and administration of these programs.

4505 Practicum in Sport Management (3) Prereq.: KIN 1600 and senior or graduate standing. Promotion; theories and research related to health behavior change; analysis of effective interventions designed to promote health behavior change.

4517 Psychological and Behavioral Perspectives of Health and Physical Activity (3) Prereq.: KIN 3514. Psychological and behavioral perspectives of health and physical activity.


4525 Human Anatomy and Functional Impairment (3) Prereq.: KIN 2500, 3540, or consent of instructor. Analytical regulation of systems and the mechanisms and effects of impairment.

4538 Practicum in Applied Fitness (6) Prereq.: KIN 3534. 12 hrs. field experience. Focus on customers with severe intellectual, behavioral, physical, and sensory disabilities.

4541 Quantitative Analysis of Human Movement (3) Prereq.: KIN 3542 or equivalent. Statistical analysis of kinetic, kinematic, and electromyographic data acquisition and analysis in the study of human movement as it relates to performance motor.

4542 Measurement Theory and practice in the administration of physical programs in academic settings.


4550 Reflective Teaching in Health and Physical Education (3) Prereq.: KIN 3515. Prereq.: consent of instructor. Critical issues and pedagogical practices of the reflective teacher in health and physical education.

4565 Habituating and Addictive Drugs in Our Culture (3) Prereq.: KIN 1600 and senior or graduate standing. Prevention; theories and research related to health behavior change; analysis of effective interventions designed to promote health behavior change.

4570 Community Health Issues (3) Community health issues and implications of tobacco, alcohol, drugs, venereal disease and other communicable diseases; other community health problems.

4572 Community Safety Education (3) Covers all grade levels in the school health program; community programs; home, traffic, and recreational safety; emphasis on organization and administration of these programs.

4575 Practicum in Sport Management (3) Prereq.: KIN 1600 and senior or graduate standing. Promotion; theories and research related to health behavior change; analysis of effective interventions designed to promote health behavior change.

4580 African Americans in Sport (3) African American experiences in sport, including a survey of the history of Africans Americans in sport and the African American culture in general; introduction to the historical, sociological, economic, psychological, anatomical, and physiological aspects of sport unique to African Americans.

4585 Independent Study (1-3) May be taken for a max. of 6 sem. hrs. of credit. Open to advanced undergraduate or graduate students. Reading, research, and/or field work on selected topics.

4590 Sport in Management (3,6) Prereq.: KIN 3542 or equivalent. Analysis of management techniques in a sport or sport-related setting; students work in a professional capacity for 10-30 hrs. per week during the semester under the guidance of the on-site supervisor.

4595 Practicum in Human Movement Science (3) Prereq.: enrollment in the College of Education; senior standing; KIN 3500, 3513, 3514. 6 hrs. lab. Pass/fail grading. May be taken for a max. of 6 sem. hrs. of credit.

4601 Community Health Issues (3) Community health issues and implications of tobacco, alcohol, drugs, venereal disease and other communicable diseases; other community health problems.

4602 Community Safety Education (3) Covers all grade levels in the school health program; community programs; home, traffic, and recreational safety; emphasis on organization and administration of these programs.

4605 Habituating and Addictive Drugs in Our Culture (3) Prereq.: KIN 1600 and senior or graduate standing. Prevention; theories and research related to health behavior change; analysis of effective interventions designed to promote health behavior change.

4610 Community Health Issues (3) Community health issues and implications of tobacco, alcohol, drugs, venereal disease and other communicable diseases; other community health problems.


4620 Community Safety Education (3) Covers all grade levels in the school health program; community programs; home, traffic, and recreational safety; emphasis on organization and administration of these programs.

4625 Human Anatomy and Functional Impairment (3) Prereq.: KIN 2500, 3540, or consent of instructor. Analytical regulation of systems and the mechanisms and effects of impairment.

4635 Practicum in Applied Fitness (6) Prereq.: KIN 3534. 12 hrs. field experience. Focus on customers with severe intellectual, behavioral, physical, and sensory disabilities.

4641 Quantitative Analysis of Human Movement (3) Prereq.: KIN 3542 or equivalent. Statistical analysis of kinetic, kinematic, and electromyographic data acquisition and analysis in the study of human movement as it relates to performance motor.

4642 Measurement Theory and practice in the administration of physical programs in academic settings.


4650 Reflective Teaching in Health and Physical Education (3) Prereq.: KIN 3515. Prereq.: consent of instructor. Critical issues and pedagogical practices of the reflective teacher in health and physical education.

4660 The School Health Program (3) Problems involved in promoting health of school children; prevention of and protection against infectious diseases; physical inspection and examination; health instruction; provocation of a wholesome environment.

4665 Habituating and Addictive Drugs in Our Culture (3) Prereq.: KIN 1600 and senior or graduate standing. Prevention; theories and research related to health behavior change; analysis of effective interventions designed to promote health behavior change.

4680 African Americans in Sport (3) African American experiences in sport, including a survey of the history of Africans Americans in sport and the African American culture in general; introduction to the historical, sociological, economic, psychological, anatomical, and physiological aspects of sport unique to African Americans.

4900 Independent Study (1-3) May be taken for a max. of 6 sem. hrs. of credit. Open to advanced undergraduate or graduate students. Reading, research, and/or field work on selected topics.

4950 Practicum in Sport Management (3,6) Prereq.: A minimum of 21 sem. hrs. from the sport management MS program, a letter of agreement from prospective on-site supervisor, and consent of faculty advisor. Practical application of management techniques in a sport or sport-related setting; students work in a professional capacity for 10-30 hrs. per week during the semester under the guidance of the on-site supervisor.

4951 Advanced Research Methods (3) Analysis of multivariate research methods and statistical analysis used in kinesiology.

4952 Curriculum Construction in Physical Education (3) Prereq.: KIN 3516. Theory and practice in the administration of physical programs in academic settings.

4955 Dimensions of Aging (3) Focus on physical, cognitive, and emotional aspects of biological aging; role of physical activity and lifestyle issues and their interaction with chronological aging and functional ability.

4956 Tests and Measurements in Kinesiology (3) Measurement theory applied to testing in educational, fitness, and other kinesiology settings.
7505 Problems in Kinesiology (3) May be taken for a maximum of 9 sem. hrs. credit; vary. Individual study.
7507 Historical and Philosophical Foundations of Kinesiology (3)
7508 Analysis of Human Movement (3) Mechanisms involved in the production of human movement and the techniques available for scientific analysis of such movement.
7510 Motor Learning (3) Cognitive and motor processes influencing the learning of motor skills; emphasis on associated changes in learning, attention, augmented feedback, transfer of learning, and practice conditions, with implications for a variety of skill interests. Preparation and utilization in sport and exercise.
7511 Administrative Problems in Kinesiology (3) Organization and management theory and techniques for administration of programs in educational and fitness settings.
7512 Motor Control (3) Prereq. consent of instructor. Neurophysiological and behavioral issues in control of human movement; emphasis on contrast between ecological and constructionist approaches.
7513 Seminar in Physical Education Career Preparation (3) Issues and trends in physical education; emphasis on undergraduate and graduate professional preparation.
7514 Pedagogy in Physical Education (3) Prereq. KIN 7502 and admission to the doctoral program. Theory and research related to systematic instruction in physical education.
7515 Theories of Achievement Motivation in Physical Activity (3) Theories of achievement motivation as they apply to a variety of activity settings involving motor skill acquisition, sport, exercise behavior, and evaluation.
7517 Advanced Topics in Motor Control (3) Prereq. KIN 7521 or consent of instructor. May be repeated for a max. of 6 sem. hrs. when topics vary. Selected topics linking advanced motor control topics across disciplines, medicine and research.
7520 Motor Development (3) 2 hrs. lecture; 2 hrs. lab. Psychomotor development of children; implications for skill learning; analyzing and planning motor development research; motor development in special children; research on young children and assessment; and perceptual-motor development.
7521 Laboratory Techniques in Motor Behavior (3) Prereq.: KIN 7530 or equivalent and consent of instructor. 2 hrs. lecture; 2 hrs. lab. Techniques and equipment used in motor behavior and biomechanics labs; data acquisition and processing techniques; hardware and software associated with computerized data acquisition and processing; timing equipment; force measuring instrumentation; motion analysis equipment; electromyography.
7522 Physical Education for Preschool and Elementary School Children (3) A successful curricular development program for children at the preschool and elementary school level; philosophy, objectives, trends, teaching methods, and materials necessary for program development.
7525 Children and Sport (3) Open to graduate students from seminar in Physical Education Career Preparation; understanding of the present structure of youth sports; research in child development, training, injuries, social psychology, skill acquisition, and coaching behavior; implications for children in sport.
7527 Seminar: Developmental Factors in Children's Motor-Activity Learning (3) Prereq.: KIN 7510 and 7520; or equivalent. For doctoral students only. Developmental learning theory and literature; effects of developmental factors on children's motor performance and learning.
7528 Sport Psychology (3) Problems of several areas of social psychology related to sport; research methodology and theories.
7530 Exercise Physiology (3) 2 hrs. lecture; 2 hrs. lab. Physical, chemical, and environmental factors influencing physical performance; bioenergetics, cardiovascular and respiratory systems; exercise research relevant to conditioning and physiological responses to exercise.
7531 Structural and Functional Characteristics of the Developing Child (3) Prereq.: KIN 7530, 2 hrs. lab. Structural changes of growth of prepubertal and pubertal children related to function in physical activity.
7533 Exercise in Health and Disease (3) Prereq.: KIN 7530. 1 hr. seminar; 4 hrs. lab. Theory and practice in evaluating fitness, prescribing exercise, and planning and supervising group programs for adults.
7534 Exercise in Health and Disease (3) PreCORE: valid uses of exercise in mediatizing risk factors.
7535 Neuromuscular Aspects of Exercise (3) Prereq.: KIN 7540. Effect cell structure and function; neuromuscular integration and neural function in exercise.
7536 Cardiovascular and Respiratory Function in Exercise (3) Prereq.: KIN 7530. 2 hrs. lecture; 2 hrs. lab. Mechanics of cardiovascular and respiratory function related to exercise and training.
7537 Exercise and Environment (3) Prereq.: KIN 7530. 2 hrs. lecture; 2 hrs. lab. Effects of environmental conditions and the environment on the types of exercise.
7538 Practicum in Cardiac Rehabilitation (6) Prereq.: KIN 7530, 7533, 7534, 7531. Pass-fail grading. Minimum on-site requirement. Important in the clinical development of exercise specialist, exercise leader, or graded exercise technician certification. Involvement in the practical application of exercise testing, exercise prescription and exercise leadership for cardiac patients.
7539 Laboratory Techniques in Exercise Physiology (3) Prereq.: KIN 7530, 2 hrs. lecture; 2 hrs. lab. Exercise physiology and college chemistry recommended. Laboratory techniques in exercise physiology; principles of mechanical measurement and assay procedures for quantification of dynamic changes in blood chemistry during exercise.
7540 Motor Abilities of Individuals with Disabilities (3) Prereq.: KIN 7508 or 7540 or equivalent. Structure of gross and fine motor abilities of individuals with disabilities; assessment of movement skills and physical fitness for children with disabilities.
7541 Motor Activity Programming for Individuals with Disabilities (3) Prereq.: KIN 7540. Motor activity programs developed from the study of research studies compared to those of an intuitive basic; planning for inclusive settings; implications of federal and state regulations.
7542 Program Approaches for Adapted Physical Activity (3) Prereq.: KIN 7541. Open only to doctoral students. Survey of approaches and strategies for promoting physical activity and healthy lifestyles for individuals with disabilities.
7550 Advanced Exercise Physiology (3) Prereq.: KIN 7530, 2 hrs. lecture; 2 hrs. lab; college chemistry, mathematics, physics recommended. Quantitative approach to both systematic and cellular control during exercise.
7551 Exercise Electrocardiography: Principles and Practice (3) Prereq.: KIN 7530 or consent of instructor. Physiological basis, practical considerations and applications, and rhythm identification of resting and exercising electrocardiograms.
7560 Fall Practicum in Health and Physical Education (5) Prereq.: KIN 7530, 7538, 7533, 7534, 7537, 7531. Pass-fail grading. First teaching practicum in local schools.
7561 Spring Practicum in Health and Physical Education (5) Prereq.: KIN 7530 or consent of instructor. 1 hr. lecture; 8 hrs. lab. Pass-fail grading. Second teaching practicum in local schools.
7575 The Teacher-Researcher in Health and Physical Education (3) Prereq.: physical education cohort membership or consent of instructor. Teacher-researcher literature; its application to teaching health and physical education.
7580 Research Project in Health and Physical Education (3) Prereq.: physical education cohort membership or completion of KIN 7560 and 7561 or consent of instructor. Independent study in research, development, completion, and presentation of a research problem in teaching health and physical education that grows out of critical thinking and experience.
7590 Exercise in Health and Disease (3) Prereq.: KIN 7530. 1 hr. seminar; 4 hrs. lab. Theory and practice in evaluating fitness, prescribing exercise, and planning and supervising group programs for adults.
7591 Exercise in Health and Disease (3) PreCORE: valid uses of exercise in mediatizing risk factors.
8900 Independent Research (1-9) May be taken for a maximum of 9 sem. hrs. credit; grades vary. Pass-fail grading.
9000 Dissertation Research (1-12 per sem.) "S"/"U" grading.

LANDSCAPE ARCHITECTURE • LA

General education courses are marked with stars (*).
1101 Landscape Representation I (3) hrs. studio. Freshmen and mechanical representation and observational skills used in design conceptualization; emphasis on the development of a vocabulary, basic skills, and techniques of landscape architecture representation.
1102 Landscape Representation II (3) Prereq.: LA 1101. 6 hrs. studio. Developing skills in computer-aided visualization and illustration of landscapes; introduction to digital imaging, drafting, and photo manipulation.
1201 Introduction to Landscape Architecture (3) Introduction to the profession of landscape architecture for non-majors; overview of professional concerns and responsibilities; awareness of natural and planned landscapes, as well as, the importance of using land in an efficient and attractive manner.
1202 World Landscape Architecture (3) Exploration of contemporary landscape design from around the world, including historic landscapes and gardens; urban plazas, and pedestrian areas; parks and infrastructure.
1203 Views of the American Landscape (3) Concepts, patterns, and themes that shape human attitudes and activities concerning the American landscape; natural and man-made landscapes and built environments; environmental and conservation ethics.
1204 Cities of the World (3) Exploration of the physical, social, and environmental factors which contribute to the development of cities from historical to contemporary perspective.
1285 Landscapes for Recreation and Tourism (3) Development and use of landscapes for recreation and tourism; interrelationships of cultural and natural influences.
2001 Landscape Design I (6) Prereq.: LA 1102. Consent of school director. 12 hrs. studio. Introduction to two-and three-dimensional design of landscape elements, composition, and dynamic change; application to simple design.
2002 Landscape Design II: Site Design (6) Prereq.: LA 2001 and 12 hrs. studio. Development of landscape design processes as applied to small-scale projects; introduction of earth structures, construction methods, and plant material.
2101 Landscape Representation III (3) Prereq.: LA 1101 and 2102. 8 hrs. studio. Advanced representation techniques developing skills of visualization and representation using freehand, mechanical, and digital imaging in design projects.
2103 Landscape History (3) Development of earliest landscape traditions; relationship of humans to landscape in major cultural areas of the ancient world; development of landscapes in Western Europe and America from the 15th to 19th centuries.
2301 Landscape Technology I: Land Design (3) Prereq.: MATH 102 and LA 2101 and LA 2102 or equivalent; consent of instructor. 2 hrs. lecture; 2 hrs. studio. Introduction to basic surveying for landscape architects; surveying systems and land legal descriptions; introduction to landscape architectural construction systems and the relationship among farmsteads, plants, and structures, topographic mapping conventions, grading design, drainage and water management, roadway design and alignment.
2301 Landscape Ecology (3) Prereq.: GEOG 2051 and RNR 1001 or equivalent. Class includes field trips. Application of ecological principles and relationships to the selection, design, and placement of plant materials, with an emphasis on conservation ethics and legal regulations leading to sustainability of the landscape.
3001 Landscape Design III: Site Planning and Design (6) Prereq.: LA 2002 and 2101 and 2201 or equivalent. 12 hrs. studio. Required field trip. Students are responsible for following travel guidelines associated with the course.
3014 Landscape Design IV: Community Design (6) Prereq.: LA 2104 and Landscape Planning and Design at the community and neighborhood scale; emphasis on relationships of uses, transportation infrastructure, green infrastructure, and a mix of housing and commercial types.
3102 Landscape History II (3) Prereq.: LA 2101. Major landscape movements in the 20th centuries; theory and concepts of contemporary practice of landscape architecture.
Courses

2001 Introduction to Information Technologies (3) Prereq.: CSC 7480, or completion of CSC 7480.

2002 Information Literacy and Information Science (3) Prereq.: major or permission of department.

2003 Information Technologies (3) Prereq.: major or permission of department.

2004 Principles of Management for Librarians and Information Specialists (3) Prereq.: major or permission of department.

2005 Principles of Collection Management (3) Basic principles of collection development and management, including community and user needs analysis, selection strategies, and evaluation.

2006 Principles of Management for Librarians and Information Specialists (3) Prereq.: major or permission of department.

2007 Introduction to Information Systems (3) Prereq.: major or permission of department.

2008 Information Technologies (3) Prereq.: major or permission of department.

2009 Principles of Management for Librarians and Information Specialists (3) Prereq.: major or permission of department.

2010 Principles of Library and Information Science (3) Prereq.: major or permission of department.

2011 Information Needs Analysis (3) Prereq.: major or permission of department.

2012 Bibliographic Organization and Resource Development (3) Prereq.: major or permission of department.

2013 Evaluation of Information Systems (3) Prereq.: major or permission of department.

2014 Media and Services for Children (3) Developmentally appropriate library and information services for children, ages birth to eleven; emphasis on literacy and use of media in schools and libraries.

2015 Media and Services for Young Adults (3) Developmentally appropriate library and information services for young adults, ages 15 to 18; emphasis on literacy and use of media in schools and libraries.

2016 Media and Services for Young Adolescents (3) Developmentally appropriate library and information services for young adolescents, ages 11 to 14; emphasis on literature and its value in the lives of pubescent youths.

2017 Advanced Topics in Collection Management (3) Prereq.: LIS 7003 or 7012 or consent of instructor. May be taken for 2, 3, or 4 credits; credit when topics vary. Advanced study in collection management; emphasis on formats and special conditions, such as serials, audio-visual materials, rare and out-of-print materials, foreign book trade, or alternative literatures or procedures, such as evaluation or acquisitions.

2018 Use of Media in Libraries (3) Examination of media as translated into a variety of library settings and as related to various library patron groups; problems and issues in library use of media and hardware.

2019 Resources for the Humanities (3) Information resources in major areas of the humanities.

2020 Resources for the Social Sciences (3) Information resources in major areas of the social sciences.

2021 Resources for Science and Technology (3) Information resources in major areas of pure and applied sciences.

2022 Sources of Government Information (3) Government publications and products of government activity and as sources of information.

2023 Business Information Resources (3) Information resources in major areas of business and economics.

2024 Social Sciences (3) Philosophy and objectives of library media centers and information services in schools; emphasis on the roles and responsibilities of the library media specialist.

2025 Information Retrieval Systems (3) Indexing and retrieval of information in business, government, and other organizations; principles of administration; technical processing; reference services; special methods, routines, and records.

2026 Health Sciences Information Centers (3) Administration, organization, function, and services of health sciences information centers; development and reference emphasis on major print and electronic information resources.

2027 Public Libraries (3) Role of the public library in past and present; its relationship to the social and political communities.

2028 Introduction to Libraries and Information Services (3) Value and role of leisure reading in public libraries; interview techniques, support processes, and bibliographic resources for providing services to adults and older adolescent readers.

2029 Principles of Archives Management (3) Identification, collection, arrangement, description, preservation, and use of the full range of historical documents in both institutional and private repositories.

2030 Human Computer Interaction (3) Study of interactions between humans and information systems, leading to more effective system design and evaluation: human cognition, user interface system design approaches, evaluation methods.

2031 Digital Libraries (3) Prereq.: LIS 7008 or consent of instructor. Core topics and methods for digital library creation and support; theoretical and practical aspects of digital library creation, using a variety of formats and approaches.

2032 Management of Information Systems (3) Management of the selection, acquisition, and implementation of computer systems within the context of library and information science agencies.

2033 Networks for Information Centers (3) Prereq.: LIS 7008 or permission of instructor. Standards, policy, and technical issues related to networked services; impact on information transfer and organizations.

2034 Information Technology and Public Policy (3) Examines the impact of information technology and public policies on economic, social and political systems; focuses on major public policies related to information technologies within the United States and selected countries.

2035 Preservation Management of Physical Records (3) Study of preservation as a management function, highlighting causes of deterioration of print and non-print collections, as well as policies and practices that ensure their maximum usable life.

2036 Management of Knowledge-Based Assets in Organizations (3) Core topics and uses of knowledge-based assets in organizations; systems for managing knowledge-based assets will be considered in the context of institutions’ overall information ecology; examination of the role of librarians and information professionals in organizing and providing knowledge-based assets.

2037 Oral History (3) Prereq.: LIS 7101, 7102, and 7400, and permission of instructor. Study of oral history as a formal institution within society.

2038 Information Literacy Instruction (3) Library as a formal institution within society.

2039 The Illustrator as Storyteller (3) Study of effectiveness of illustrators in telling stories from children's literature; evaluation of artistic media in review sources; survey of works of noted children's books illustrators.

2040 Information Literacy Instruction (3) Theories, techniques, strategies, and current practice for teaching the effective and efficient use of academic, school, public, and special library resources.

2041 Research in Library and Information Science (3) Prereq.: LIS 7035 or permission of instructor. Research methodology and information retrieval phenomena; definition of research problems, selection of inquiry tools, and data collection; emphasis on evaluation of research.

2042 Field Experience in Library and Information Sciences (3) Prereq.: completion of 24 hrs. of LIS courses, and permission of instructor. Preparation for professional experience begins semester prior to registration: 120 hrs. per semester at field site. Experience in administration and management of special libraries.

2043 Field Experience in Special Libraries and Information Centers (3) Prereq.: completion of 24 hrs. of LIS courses, including LIS 7403, and permission of instructor. Preparation for professional experience begins semester prior to registration: 120 hrs. per semester at field site. Experience in administration and management of special libraries.

2044 Field Experience in Library and Information Sciences (3) Prereq.: completion of 24 hrs. of LIS courses, including LIS 7403, and permission of instructor. Preparation for professional experience begins semester prior to registration: 120 hrs. per semester at field site. Experience in administration and management of special libraries.

2045 Field Experience in Library and Information Sciences (3) Prereq.: completion of 24 hrs. of LIS courses, including LIS 7403, and permission of instructor. Preparation for professional experience begins semester prior to registration: 120 hrs. per semester at field site. Experience in administration and management of special libraries.

2046 Field Experience in Library and Information Sciences (3) Prereq.: completion of 24 hrs. of LIS courses, including LIS 7403, and permission of instructor. Preparation for professional experience begins semester prior to registration: 120 hrs. per semester at field site. Experience in administration and management of special libraries.

2047 Field Experience in Library and Information Sciences (3) Prereq.: completion of 24 hrs. of LIS courses, including LIS 7403, and permission of instructor. Preparation for professional experience begins semester prior to registration: 120 hrs. per semester at field site. Experience in administration and management of special libraries.

2048 Field Experience in Library and Information Sciences (3) Prereq.: completion of 24 hrs. of LIS courses, including LIS 7403, and permission of instructor. Preparation for professional experience begins semester prior to registration: 120 hrs. per semester at field site. Experience in administration and management of special libraries.
registration. 120 hrs. per semester at field site. Experience in administration and management of health sciences libraries.

7909 MLIS Directed Independent Study (1-3) May be taken for a max. of 6 sem. hrs. credit.

7910 Special Topics in Archival Science (1-3) Prereq.: major or permission of instructor. May be taken for a max. of 18 sem. hrs. of credit when topics vary.

7911 Special Topics in Information Science (1-3) May be taken for a max. of 18 sem. hrs. of credit when topics vary.

7912 Special Topics in Library Science (1-3) May be taken for a max. of 12 sem. hrs. of credit when topics vary.

7913 Field Experience in Archives (3) Prereq.: completion of 24 hrs. of LIS courses including LIS 7603, and permission of instructor. Preparation for course begins semester prior to registration. 120 hrs. per semester at field site. Experience in administration and management of archives.

7914 CLIS Directed Independent Study (1-3) Prereq.: MLIS or equivalent. May be taken for a max. of 12 sem. hrs. credit.

8000 Thesis Research (1-9 per semester) "S"/"U" grading.

8000 Thesis Research (1-12 per sem.) "S"/"U" grading. 9000 Dissertation Research (1-12 per sem.) "S"/"U" grading.

LOUISIANA STATE UNIVERSITY • LSU

1001 Freshman Seminar (1) Open to freshmen only. Integration into the university, including orientation to the University's policies and resources, its history, and traditions; development of essential academic skills, personal growth/self-awareness, and career exploration; instill a sense of community on campus and beyond.

MANAGEMENT • MGT

3000 Petroleum Land Management Practice (1) V Open only to petroleum land management majors. Required of petroleum land management majors; waived only by consent of instructor. A minimum of 6 weeks of full-time employment by a firm participating in the program.

3001 Petroleum Land Management (3) V Practical and evidentiary aspects of petroleum land management; principles, and techniques derived from a synthesis of legal and geographical sciences; legal effects of various procedures of boundary locations for petroleum properties; petroleum land practices concerning utilization, a real association, and environmental impacts of drilling activity; use of topographic and historical maps, map compilations, historical cartography, air photos, archival records, and field techniques; some focus on coastal Louisiana and the Gulf South.

3111 Entrepreneurship (3) S Prereq.: senior standing. Principles of entrepreneurship, feasibility studies; financial and location analysis; management; marketing; management; venture capitalism; legal considerations.

3200 Principles of Management (3) Management functions, including planning, organizing, staffing, human resource management, leading/interpersonal influence, and controlling in both domestic and international spheres.

3203 Independent Study: Advanced Management Topics (1-6) Prereq.: consent of instructor. May be taken for a max. of 6 sem. hrs. of credit. Independent research under direction of faculty.

3211 Business and Society (3) Prereq.: senior standing. Social roles of organizations whose primary function is the accomplishment of current issues; historical development of business-society relationships.

3280 Management Internship (3) Prereq.: junior or senior standing. May be taken for a max. of 6 sem. hrs. of credit. Students, supervised by a management faculty member and an approved business executive, will follow a predetermined schedule of activities while working for a business firm. Hands-on experience in the fields of management, human resource management, organizational behavior, small management, entrepreneurship, and administrative practices.

3320 Human Resource Management (3) Management functions, including planning, recruitment, selection, development, maintenance, and reward of employees; relationships with environment and employees associated.

3500 Introduction to Labor Relations (3) F S Management's response to organized labor in the workplace; emphasis on labor relations development; government regulation of labor-management relations; union structure, political activity, collective bargaining, and control of work from the employer's perspective.

3512 Public Sector Labor Relations (3) S Prereq.: MGT 3200. Labor-management relations in government employment; variations in labor regulations in federal, state, and local government; role of third-party neutrals in public sector bargaining.

3513 Labor-Management Conflict and Cooperation (3) F In-depth examination of issues important to workplace conflict resolution; topics include, but are not limited to, negotiation strategies and tactics, alternative dispute resolution procedures, employee-management cooperation, and/or collective bargaining.

3830 Strategically Managing Organizations (3) Prereq.: FIN 3715, MGT 3200, and MGT 3401. May be taken only during the final semester of course work. Analyzing strategic situations, and building on these analyses to ensure the success of for-profit and non-profit organizations.

4113 Small Business Management (3) F Prereq.: senior standing. A multidisciplinary approach to small business; business start-ups, accounting, finance, marketing, management, promotion, layout, retail management, location analysis, emphasis on small business.

4114 Franchising Management (3) S Prereq.: senior standing. Understanding the franchising process; becoming a franchisor or franchisee, franchising start-up, venture capital, finance, legal compliance, disclosure documents, franchise agreements, franchise territories, franchiser-franchisee relationships, anti-trust laws, and international franchising.

4322 Employee Selection and Placement (3) Prereq.: IDS 7000, or equivalent and MGT 3320. Staffing requirements, recruitment strategies, development and validation of employee classification and placement of employees; problems associated with person-job matching; socialization of new employees.

4323 Compensation Administration (3) Prereq.: MGT 3320. Quantitative and non-quantitative methods of job evaluation; wage level, wage structure, incentive plans; issues of compensation in international operations.

4420 Multinational Management (3) Prereq.: MGT 3200 or equivalent. Management concepts and philosophical bases for international management; environmental dynamics, multinational business organizations, cultural constraints, organizational structures and processes, and conceptual systems of international operations.

4523 Legal Issues in Human Resource Management (3) S Prereq.: MGT 3320. Legal issues surrounding significant laws and court rulings influencing companies' employment practices; topics include: anti-discrimination statutes, affirmative action, commonly committed workplace torts, occupational safety and health laws, workers' compensation, and wrongful termination.

4620 Human Behavior in Organizations (3) Prereq.: MGT 3200. Behavioral sciences applied to understanding human dynamics in organizations; focus on individual, interpersonal, group, and intergroup behavior; impact of human behavior on organizational effectiveness.

4701 Management of Innovation (3) V The competitive environment; innovative process and invention evaluation; anatomy of successful innovation; management of creative creativity; patenting innovation; social/cultural, organizational, and governmental influence on innovation.

4702 Managing Technology Transfer (3) V Models of technological transfer; mechanisms and barriers to technological transfer; technological transfer and industrial innovation; domestic and international aspects of technology transfer.

7001 Management of Technology (3) See IE 7645. 7111 Entrepreneurship Management (3) F Investment, analysis, and development of entrepreneurial feasibility studies and business plans.

7202 Business and Society (3) V Social aspects of business in a broad societal context; changes occurring in business and resulting modifications of the relationship of business to society; roles of business versus business and society.

7203 Development of Management Thought (3) F-O Origin and growth of managerial concepts; contributions of leaders associated with major schools of management thought, including: scientific management, management process, empirical, human behavior, social system, decision theory, and quantitative methods.

7212 Seminar in Contemporary Management Topics (3) V Prereq.: consent of instructor. May be taken for a max. of 3 sem. hrs. of credit when topics vary.

7301 Seminar in Human Resources (3) S Role of human resource managers; their relationships with employees, the external environment, and top management.

7302 Reward Systems in Organizations (3) V Theories of motivation, reward, performance and behavior; their application to major issues regarding human resources allocation, development and utilization.

7401 International Business Management (3) F Theories and management of 20th century multinational enterprise: development of environmental, operational, strategic, and decision making perspectives.

7402 Comparative and Cross-Cultural Management (3) V Organizing, operating, and managing in other cultures and countries; multicultural environments and cross-cultural issues concerning multinational corporations; technological, economic, political, and societal issues; their influence on multinational management.

7500 Labor-Mediation and Arbitration (3) F Primarily for master's level students. An examination of union-employer interactions in all phases of the industrial relations process including union certification elections, contract negotiation, and grievance administration; emphasis on application of course concepts throughout the completion of experiential learning projects.

7600 Organizational Behavior (3) F-E Behavior of people within organizations; the environment within which organization function; components of the behavioral unit; processes, interactions, and outputs of organizational behavior.

7620 Strategic Management of Health Care Organizations (3) Cross-listed with PADM 7620.

7708 Organization Theory (3) S-O Macro aspects of organizations; processes by which organizations are formed, structures used in their elaboration; internal
Courses

7800 Current Issues in Strategic Management (3) S
Prereq.: MGT 7800 or equivalent
7811 Research Issues in Strategic Management (3) F-E
7800 Current Issues in Strategic Management (3)

9800 Seminar in Advanced Business Problems (3)
Prereq.: BADM 7100 or equivalent.
7800 Seminar in Advanced Business Problems (3) May be taken for a max. of 6 hrs. of credit when topics vary. Directed work in advanced topics.

MARKETING • MKT
2000 Marketing and Society (3) Prereq. for open to students in the E J. Ourso College of Business. Marketing aspects of contemporary social issues; emphasis on methods for dealing with societal issues and their impact on marketing activities. May be repeated for a max. of 6 hrs. of credit when topics vary. Directed work in advanced topics.

3401 Principles of Marketing (3) Prereq.: ACCT 2000 or 2001, and either ECON 2050 or ECON 2060 and 2010. Lecture-discussion, case analysis, marketing-simulation game; the field of marketing; marketing environment, functions, and institutional structure at a macro level; marketing strategy and policies at a micro level; problems of cost and productivity; view points of society, consumer, and marketing manager.

3410 Marketing Management (3) Application of marketing concepts to sports and leisure activities; emphasis on planning and strategy development.

3411 Consumer Analysis and Behavior (3) Prereq.: MKT 3401 and ISDS 2000. Formulation of marketing policies; theories, concepts, and methodology involved in applying research in marketing activities. Credit not allowed with MKT 2401.

3412 Marketing Communication: Promotion (3) Prereq.: MKT 3401. Nature and contributions of personal selling, sales promotion, advertising, public relations, direct marketing, and personal selling in the firm’s programs of demand stimulation; concepts related to integration and organization of promotional effort to facilitate communication between buyers and sellers; marketing communications; public relations; and marketing research. Credit not allowed with MKT 2412.

3422 Buyer-Seller Communication (3) Prereq.: MKT 3401. Communication theory and sales principles needed for successful sales career; buyer behavior and sales tactics; sales strategies; communication in buyer-seller relationships.

3431 Retailing Management (3) Prereq.: MKT 3411. Store organization, operation, and management; retail method of inventory; problems connected with retail buying and selling.

3433 Distribution Channels, Structure, and Management (3) Prereq.: MKT 3401. Distribution channels, structures, and processes; the channel as an economic and behavioral system; relationship between channel members; marketing manager’s viewpoint; vertical marketing systems including franchises; channel design; communication information systems; management by different channel members; evaluation of channel performance.

3441 Business Marketing (3) Prereq.: MKT 3401. Strategies developed by manufacturers to compete for markets; differences between industrial and final consumer market activities; market segmentation and purchasing with regard to selection of sources of supply and development of purchasing policies; strategic overview of marketing; how companies reach their objectives and how they are confined to industrial companies.

5500 Marketing Tool Fundamentals (3) Prereq.: credit or registration in MKT 3401 and permission of department. Coverage of current and emerging computer-based and other tools used by marketing practitioners.

4414 Marketing Research Field Project (3) Prereq.: MKT 4410 and permission of instructor. Advanced marketing research projects and theory.

4243 Sales Management (3) Prereq.: Principles of Marketing, Principles of Sales Management, and marketing strategy formulation, including market and competitor analysis, plus resource allocation; emphasis on issues involved in marketing strategy formulation and implementation.

4477 Independent Study: Advanced Marketing Problems (1-6) Prereq.: BADM 7100 or permission of instructor. May be repeated for a max. of 6 sem. hrs. credit. Pass-fail grading. On-the-job experience in approved marketing positions.

4488 Advanced Topics in Retailing Management (3) Prereq.: MKT 4440 or permission of instructor. Study of the concepts, principles, and practices concerning the development and implementation of a strategic plan for use in electronic commerce. Credit not allowed with MKT 2488 or MKT 4488 for credit.

4489 Services Marketing (3) Prereq.: MKT 3420. Developing, promoting, and managing the service; quality of customer encounters through service automation and/or employee selection and training; place of service in the sales mix; market segmentation; consumer perceptions of service; service channels; and marketing research techniques. Credit not allowed with MKT 2489.

4501 Marketing Research (3) Prereq.: MKT 3413, senior standing or consent of instructor. Analytical principles used in development of strategies for solving marketing problems; market policies; area of product, price, channels, and promotion integrated in development of the firm’s total marketing effort.

4577 Independent Study: Advanced Marketing Problems (1-6) Prereq.: for undergraduate students in the E J. Ourso College of Business with a gpa of 3.00 or above. May be repeated for credit. Pass-fail grading. Independent research under direction of a faculty member.

4648 Advanced Topics in Retailing Management (3) Prereq.: MKT 3441. Application of retailing theory and management techniques in areas of strategic planning and its interfaces with consumer behavior and market area analysis, locational strategies and site selection; merchandising policies and inventory operations; store management, product distribution, and departmental layout.

4900 Services Marketing (3) Prereq.: MKT 3420. Developing, promoting, and managing the service; quality of customer encounters through service automation and/or employee selection and training; place of service in the sales mix; market segmentation; consumer perceptions of service; service channels; and marketing research techniques.

4457 Independent Study: Advanced Marketing Problems (1-6) Prereq.: BADM 7100 or permission of instructor and ISDS 7024 or equivalent. Open only to doctoral students. Treatment of the theory, conceptualization, and measurement of constructs used in marketing research; emphasis on the development and refinement of marketing construct measures.

57 Advanced Marketing Research Techniques (3) Prereq.: BADM 7100. Advanced designs and techniques applied to marketing research; theory and assumptions of analytical methods; marketing applications; use of computer programs; marketing strategy; interpretations of empirical results.

77 International Seminar in Consumer Behavior (3) Prereq.: MKT 4451 or BADM 7100. Open only to doctoral students. Theoretical, conceptual, and methodological issues in the study of consumer behavior; synthesis of theory, consumer research and marketing research; validity and implications in marketing and consumer research; experimental and quasi-experimental design; pluralism in marketing and consumer research.

8000 Thesis Research (1-12 per sem.) "S"/"U" grading.
8000 Dissertation Research (1-12 per sem.) "S"/"U" grading.

MASS COMMUNICATION • MC


General education courses are marked with stars (*).
1111 Mass Media Practices (3) Prereq.: consent of the department; concurrent registration in MC 4211. Keyboarding proficiency of at least 35 words per minute; 1 hr. lecture; 3 hrs. lab. Open to LSU students only; 2 hrs. lab. Pass-fail grading. May be taken for a max. of 6 hrs. of credit; only or permission of the instructor.

4111 Mass Media Practices (3) Prereq.: consent of the department; concurrent registration in MC 4211. Keyboarding proficiency of at least 35 words per minute; 1 hr. lecture; 3 hrs. lab. Open to LSU students only; 2 hrs. lab. Pass-fail grading. May be taken for a max. of 6 hrs. of credit; only or permission of the instructor.

4112 HONORS: Mass Media Practices (3) Same as MC 4111, with special honors emphasis for qualified students. Consult school before registering.

4121 Mass Media Principles (3) Prereq.: consent of the School of Communication; concurrent registration in MC 4211, or permission of the department. An intensive course in professional practice that goes beyond present advanced course offerings. A research component is required. Pass-fail grading.

4122 HONORS: Mass Media Principles (3) Same as MC 4211, with special honors emphasis for qualified students.

4999 Independent Study (3) Prereq.: gpa of at least 3.00 and consent of instructor and the department. Master's students with projects requiring a graduate research component is required. Pass-fail grading.

7971 Independent Research: Mass Communication (3) Prereq.: consent of instructor and the department. An honors course, MC 4212, is also available. An intensive course that provides an overview of the role of the mass media in the Western world. Topics include the role of the mass media in the development of modern society; the economic performance of the mass media; the nature and utility of theoretical understanding of mass communication. May be counted toward undergraduate or graduate degree credit for Communication majors.

7981 Seminar in Communication Policy (3) Prereq.: MC 4211, or permission of the instructor. Principles and theories underlying the First Amendment jurisprudence as it relates to the press and speech; an examination of significant cases and legal issues through original research projects.

7982 Seminar in Communication Policy (3) The influence of public affairs and policy issues on media performance; original research concerning communication policy; implemented through legislative and administrative decision making.

7991 Special Topics in Mass Communication (3) Prereq.: consent of instructor and the department. An honors course offered as CMST 4971. May be taken for a max. of 6 hrs. of credit when topics vary. Analysis and discussion of a selected topic that goes beyond present advanced course offerings. A research component is required. Pass-fail grading.

7999 Independent Study (3) Prereq.: gpa of at least 3.00 and consent of instructor. Approval of written proposal required by the instructor before the student begins work. May be repeated for a max. of 12 hrs. of credit. For advanced students who wish to pursue research on special problems, exclusive of thesis or dissertation, for which there is no organized course.

8000 Thesis Research (1-12 per sem.) "S" or "U" grading.

8001 Professional Internship (3) Prereq.: skills and professional courses as specified in Manship Policy Statement 804; contractual agreement with outside for entrepreneurship in media enterprises, especially new and emerging media systems.

8002 Professional Project (1-6) A research component is required. Pass-fail grading. A project, approved by the student and the department, in an area of research applicable to communication or professional practice in a professional public affairs context.
Courses

3030 Principles of Advertising (3) Fundamentals of advertising theory and practice; social and economic role of advertising; standardization of advertising in marketing and communication.

3031 Advertising Creative Strategy (3) PreReq.: MC 2010. Lab required. Focus on creative aspects of advertising, and methods of magazine and newspaper advertising.


3033 Advertising Design (3) PreReq.: MC 2010, 2015, 2020, and 3031. 2 hrs. lecture; 2 hrs. lab. Advertising design techniques for print and electronic media, using computerized desktop publishing procedures; development of layouts and storyboards; emphasis on creative approaches to advertising problems.

3042 Advertising Media Sales (3) 2 hrs. lecture; 2 hrs. lab. Analysis of various media types and vehicles to deliver advertising messages, with emphasis on audience measurement techniques, concepts, and services.

3043 Direct Response Advertising and Promotion (3) PreReq.: MC 2010 and 3042. Lab of direct response advertising strategies and tactics that advertising agencies and other organizations use to build and maintain relationships with their customers and others.

3044 Advertising Media Analysis and Planning (3) PreReq.: MC 2010 and 3041. 1 hr. lecture; 1 hr. lab. Techniques for choosing the appropriate media for an advertising campaign.

4031 Public Relations Reporting (3) PreReq.: MC 2010 and 3101. 2 hrs. lecture; 2 hrs. lab. Laboratory production of radio, television, and public relations reports.

4032 Advertising Media Sales (3) PreReq.: MC 2010. 1 hr. lecture; 3 hrs. lab. Advanced techniques for selling advertising space and time.

4041 Sports Writing and Production (3) PreReq.: MC 2010 and 3101, or MC 3102 or 2702. 2 hrs. lecture; 2 hrs. lab. Techniques of newspaper writing and production for both print and electronic media.

4042 Mass Media, Sports, and Society (3) News coverage of the political, economic, and cultural roles of sports institutions and the social roles of professional athletes.

4045 Advertising Campaigns (3) PreReq.: MC 2020, 3031, 4040. 2 hrs. lecture; 2 hrs. lab. Team developments of advertising campaigns on a competitive basis (simulated advertising agency operations); emphasis on research, marketing, and advertising problems; budgetary planning, media strategy, and creative design.

7282 Sports Writing and Processes (3) Role of advertising in communication, marketing, and society; analysis of various advertising processes.

7284 Issues in Media, Society, and Culture (3) Exploration of socioeconomic, legal, ethical and cultural issues related to advertising as an institution.

JOURNALISM

3001 Business Journalism (3) Writing for and editing house magazines, trade journals, and miscellaneous industrial publications; business news reporting for the daily newspapers.

3002 Feature Writing (3) PreReq.: MC 2010 and 3101 or permission of department. 1 hr. lecture; 3 hrs. lab. Developing and writing feature stories, vignettes, and other human-interest material.

3065 Photojournalism (3) PreReq.: "C" or better in MC 2010 and 3064. 2 hrs. lab. Photographic principles for communication media.

3101 Print Newspapering and Editing (3) PreReq.: MC 2010. 2 hrs. lecture; 2 hrs. lab. Basic skills of reporting and news writing and primary editing process for accuracy, proper grammar, and consistency of style.

3102 Broadcast Newspapering and Producing (3) PreReq.: MC 2010. 1 hr. lecture; 2 hrs. lab. Development of skills to report, write, and produce a weekly television newscast and public affairs show.

3103 Advanced Print Newspapering (3) PreReq.: MC 3101. 2 hrs. lecture; 2 hrs. lab. Specific application of newspapering techniques; covering courts, law enforcement agencies, government, business; using polls and other statistical methods; relational databases.

3104 Advanced Broadcast Newspapering (3) PreReq.: MC 3102. 1 hr. lecture; 2 hrs. lab. Review of qualitative evaluation of advanced broadcast reporting and presentation skills; newspapering focus on depth, context, and presentation of information.

3151 Advanced Reporting (3) F,S,SP PreReq.: "C" or better in MC 2010, 3101, and 3102. May be repeated for credit. Individual work under the direction of an instructor.

3152 Long-Format Video Production (3) PreReq.: MC 2010, 3101, and 3102 or permission of instructor. 2 hrs. lecture; 2 hrs. lab. Use of advanced video equipment and techniques for producing news, feature and public affairs television programs.

3153 Advanced Seminar in Political Communication (3) PreReq.: MC 3101, 3102 and either 3103 or 3104 or permission of instructor. 1 hr. lecture; 3 hrs. lab. Technques of newspaper editing and production; laboratory production of print and electronic media; production of laboratory newspaper; techniques of producing all aspects of a television news program, including writing, editing, nonlinear video editing, producing a newscast and on-set news performance.

7011 News Workers and Their Organizations (3) The role of news workers and their organizations in the selection and processing of news; examination of the influence of public affairs research on communicators and their organizations.

POLITICAL COMMUNICATION

3505 Media and Policy Processes (3) PreReq.: majors and minors only. Impact of the media on American politics through their interactions with political actors and organizations; techniques of political communication; application of research techniques to political communication campaigns.

3506 Media, Politics, and the Public (3) Interaction among media, political institutions, and the public; mass communication theory and applications.

4515 Case Studies in Media and Political Campaigns (3) Examination of political campaigns involving American media; the media's role in political campaigns; developing media messages for political campaigns.

4520 Advanced Seminar in Political Communication (3) Assessment and development of media strategies for a particular actor, political issue, or political viewpoint; topics vary from semester to semester; students will complete a project as a strategic political communication that will integrate knowledge derived from previous course work in this area.

4900 Propaganda and Mass Communication (3) Theory, development, and impact of propaganda as a controversial mass communication strategy for influencing public opinion.

7004 The News and Media Governance (3) News media influence on political actors, processes, and outcomes in American politics; public policy towards the news and its strategic political communication; influence of political actors and public officials on the framing and structure of news.

7036 Seminar in Media and Public Affairs Theory (3) Advanced studies in the application of mass communication theory to public affairs and political public issues, problems, and issues.

PUBLIC RELATIONS

3000 Principles of Public Relations (3) Mass communication techniques applied to principles and practices of public relations; emphasis on development of advanced broadcast reporting and presentation skills; emphasis on the use of research techniques to develop effective public relations campaigns.

4001 Public Relations Writing (3) PreReq.: MC 2010, 3101, and 4900. 2 hrs. lecture; 2 hrs. lab. Developing and writing news releases, speeches, audio-visual scripts, feature stories, and other public relations materials; emphasis on the use of research techniques to develop effective public relations campaigns.


4005 Public Relations Campaigns (3) PreReq.: MC 3100, 4001, and 4004. 2 hrs. lecture; 2 hrs. lab. Developing and implementing public relations communication campaigns; hands-on experience in designing, producing, and testing print and audio-visual materials for campaigns; emphasis on the use of research techniques to develop effective public relations campaigns.

3006 Strategies and Tactics (3) Formal and informal models, tasks, and techniques used to formulate and implement communication activities of public relations and to function ethically in social systems.

7007 Public Relations Administration (3) Principles of public relations management and application of project and management strategies; techniques of campaign setting, planning, organizing, staffing, leading, and controlling.

7008 Public Relations Programming and Production (3) PreReq.: MC 4111 or equivalent writing proficiency. 2 hrs. lecture; 2 hrs. lab. Writing public relations messages for print and broadcast; program proposals; practice in writing, graphic design, and layout of messages.

7009 Public Affairs Affairs (3) Application of advertising theory and process to public affairs campaigns; emphasis on strategy development of public affairs advertising; development of communication strategies for public interest groups.

7210 Public Communication Administration (3) Principles of public affairs, issues management, and political communication; application of research techniques in communication campaigns, strategies of campaign settings; planning, organizing, staffing, leading, and controlling communication campaigns in corporate and governmental settings.

MATHEMATICS • MATH

General education courses are marked with stars (★). No student may receive more than nine semester hours of credit in mathematics courses numbered below 1530, with the exception of students who are pursuing the elementary education degree and following the 12-hour sequence specified in that curriculum. No student who has already received credit for a mathematics course numbered below 1530 or above may be registered in a mathematics course numbered below 1550, unless given special permission by the Department of Mathematics.

0092 Preparation for College Mathematics II (3) PreReq.: MATH 0992 or permission of department. 3 hrs. lecture. For students not prepared to take MATH 1009, 1015, or 1021. Not for degree credit; 3 sem. hrs. will be added to the degree program of any student taking this course. No student who has received credit for a mathematics course numbered 1000 or above may take this course.

1009 Mathematics for Prospective Elementary School Teachers I (3) PreReq.: MATH 0992 or placement by department. Offered by correspondence only. Logic, counting numbers, integers, rational numbers, real numbers; emphasis on field properties; set nomenclature and some number theory; units of measurement.

1010 Mathematics for Prospective Elementary School Teachers II (3) PreReq.: MATH 1009. Offered by correspondence only. Continuation of MATH 1009. Measurement, informal geometry, systems of equations, introduction to probability and statistics.

1015 Basic Mathematics and Applications (3) PreReq.: MATH 0992 or placement by department. This course does not serve as a prerequisite for calculus. Credit will not be given for both this course and MATH 1011, 1021, or 1022. Offered by correspondence only. Development of mathematical skills of graphing, formulas for geometric measurement, systems of linear equations and inequalities, review of geometrical equations, applied to exponential growth and decay, triangle trigonometry and its application to geometry and measurements.
<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Prerequisites</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1021</td>
<td>College Algebra (3)</td>
<td>F,Su MATH 0092 or placement by department.</td>
<td>Credit will not be given for both this course and MATH 1015 or 1023. Quadratic equations, systems of linear equations, inequalities, functions, graphs, exponential and logarithmic functions, complex numbers, theory of equations.</td>
</tr>
<tr>
<td>1022</td>
<td>Plane Trigonometry (3)</td>
<td>F,Su MATH 1021 or placement by department.</td>
<td>Credit will not be given for both this course and MATH 1015 or 1023. 3 hrs. lecture; 1 hr. lab. Trigonometric functions and identities, inverse trigonometric functions, graphs, solving triangles and equations, complex numbers, polar coordinates.</td>
</tr>
<tr>
<td>1023</td>
<td>College Algebra and Trigonometry (5)</td>
<td>F,Su MATH 1021 or placement by department or grade of &quot;A&quot; in MATH 0092.</td>
<td>Credit will not be given for both this course and MATH 1015, 1021, or 1022. For qualified students, a replacement for MATH 1021 and 1022 as preparation for calculus.</td>
</tr>
<tr>
<td>1025</td>
<td>Mathematics of Commerce (3)</td>
<td>F,S MATH 1015 or 1021.</td>
<td>Credit will be given for only one of the following: MATH 1025, 1029, 1035, 1435. Interest, discount, annuities, depreciation, and insurance.</td>
</tr>
<tr>
<td>1029</td>
<td>Introduction to Contemporary Mathematics (3)</td>
<td>F,Su MATH 0092 or placement by department.</td>
<td>Credit will be given for only one of the following: MATH 1029, 1035, 1435. Mathematical approaches to contemporary problems, handling of data, and optimization using basic concepts from algebra, geometry, and discrete mathematics.</td>
</tr>
<tr>
<td>1100</td>
<td>The Nature of Mathematics (3)</td>
<td>F,Su Not for science, engineering, or mathematics majors.</td>
<td>Credit will be given for only one of the following: MATH 1100, 1101, 1102. Logic; the algebra of sets, logic, and networks; probability and statistics.</td>
</tr>
<tr>
<td>1101</td>
<td>HONORS: The Nature of Mathematics (3)</td>
<td>V MATH 1021 or consent of department.</td>
<td>Credit will be given for only one of the following: MATH 1100, 1101, 1102. Logic; the algebra of sets, logic, and networks; probability and statistics; game theory; infinities; famous impossibilities and unsolved problems.</td>
</tr>
<tr>
<td>1201</td>
<td>Number Sense and Open-Ended Problem Solving (3)</td>
<td>F,S MATH 1201.</td>
<td>Credit will be given for only one of the following: MATH 1201, 1202, 1203, 1204. cardinality and integers; decimal representation and the number line; exploratory data analysis; number sense; open-ended problem solving strategies; written communication of mathematics.</td>
</tr>
<tr>
<td>1202</td>
<td>Geometry, Reasoning, and Measurement (3)</td>
<td>F,S,MATH 1201.</td>
<td>Credit will be given for only one of the following: MATH 1201, 1202, 1203, 1204. Synthetic and coordinate geometry in two and three dimensions; spatial visualization and counting procedures; symmetry and tilings; history of geometry; written communication of mathematics.</td>
</tr>
<tr>
<td>1431</td>
<td>Calculus with Business and Economic Applications (3)</td>
<td>F,Su MATH 1021 or equivalent.</td>
<td>Credit will be given for only one of the following: MATH 1431, 1441, 1550. Differential and integral calculus of algebraic, logarithmic, and exponential functions; applications to business and economics, such as maximum-minimum problems, marginal analysis, and exponential growth models.</td>
</tr>
<tr>
<td>1435</td>
<td>Mathematics for Business Analysis (3)</td>
<td>F,S MATH 1431 or equivalent.</td>
<td>Credit will be given for only one of the following: MATH 1431, 1441, 1550. Sets and counting; probability, including conditional probability, discrete and continuous random variables, variance, and normal distributions; matrices and echelon method for solving systems of equations; functions of several variables and partial derivatives.</td>
</tr>
<tr>
<td>1441</td>
<td>Calculus with Application to Technology (3)</td>
<td>F,S MATH 1021 and 1022, or consent of department.</td>
<td>Credit will be given for only one of the following: MATH 1431, 1441, 1550. Differential and integration of algebraic and trigonometric functions; application to technology.</td>
</tr>
<tr>
<td>1550</td>
<td>Analytic Geometry and Calculus I (5)</td>
<td>F,S Su MATH 1022 or consent of department.</td>
<td>Credit will be given for only one of the following: MATH 1431, 1441, 1550. Analytic geometry, limits, derivatives, integrals.</td>
</tr>
</tbody>
</table>
Courses

★ 1551 HONORS: Analytic Geometry and Calculus I (5) Prereq.: MATH 1201, with special honors emphasis for qualified students.
★ 1552 Analytic Geometry and Calculus II (4) F,S Prereq.: MATH 1551, 1551H, or MATH 2057, with special honors emphasis for qualified students.
★ 1553 HONORS: Analytic Geometry and Calculus II (4) F,S Prereq.: MATH 1552 with special honors emphasis for qualified students.

1635 Further Calculus for Quantitative Analysis (5) Prereq.: MATH 1552. Credit will not be given for this course and either MATH 1552 or 2057. Selected topics in single-variable calculus, including related rates, Riemann sums, elementary differentiation, and properties of exponential, logarithmic, and trigonometric functions.

2020 Solving Discrete Problems (3) F Prereq.: MATH 1555. Introduction to discrete mathematics, discrete probability, graph theory, and number theory.

2025 Integral Transforms and Their Applications (3) F Prereq.: MATH 1552. Introduction to mathematical proofs and structures using selected topics from analysis; series of functions, Fourier series, Fourier integrals, and introduction to wavelets; applications in differential equations and signal processing.

2030 Discrete Dynamical Systems (3) S Prereq.: MATH 1552 or permission of instructor. Dynamical systems with discrete time, difference equations, invertibility, fixed points, bifurcation, chaotic dynamics, the map of the interval.

2040 Fundamentals of Mathematics (3) Prereq.: MATH 1550. Introduction to techniques of mathematical proofs; sets, logic, relations and functions, induction, cardinality, and properties of real numbers.

2057 Multidimensional Calculus (3) F,S Prereq.: MATH 1552. An honors course; MATH 2058 is also available. Three-dimensional analytic geometry, partial derivatives, multiple integrals.

2058 HONORS: Multidimensional Calculus (3) F Same as MATH 2057. With special honors emphasis for qualified students.

2060 Technology Lab (1) F,S Prereq.: Credit or concurrent enrollment in MATH 2057. Students are encouraged to enroll in MATH 2057 and 2060 concurrently. Use of computers for investigating, solving, and documenting mathematical problems; numerical, symbolic, and graphical manipulation of mathematical concepts discussed in MATH 1550, 1552, and 2057.

2085 Linear Algebra (3) F,S Prereq.: MATH 1552, 1553 or equivalent. An honors course; MATH 2086 is also available. Topics include vector spaces, linear transformations, matrices, determinants, linear independence, bases, systems of equations, eigenvalues, eigenvectors, eigenvalue, and diagonalization problems.

2086 HONORS: Linear Algebra (3) Same as MATH 2085, with special honors emphasis for qualified students.

2090 Elementary Differential Equations and Linear Algebra (4) F,S Prereq.: MATH 1552. Credit will be given for one of the following: MATH 2065, 2070, 2090. Ordinary differential equations, Laplace transforms, linear algebra, and applications stresses both theory and computational approaches.

2085 Linear Algebra (3) F,S Prereq.: MATH 1552, 1635 or 2040, or equivalent. An honors course; MATH 2086 is also available. Topics include vector spaces, linear transformations, matrices, determinants, linear independence, bases, systems of equations, eigenvalues, eigenvectors, eigenvalue, and diagonalization problems.

2086 HONORS: Linear Algebra (3) Same as MATH 2085, with special honors emphasis for qualified students.

2090 Elementary Differential Equations and Linear Algebra (4) F,S Prereq.: MATH 1552. Credit will be given for one of the following: MATH 2065, 2070, 2090. Ordinary differential equations, Laplace transforms, linear algebra, and applications stresses both theory and computational approaches.

2085 Linear Algebra (3) F,S Prereq.: MATH 1552, 1635 or 2040, or equivalent. An honors course; MATH 2086 is also available. Topics include vector spaces, linear transformations, matrices, determinants, linear independence, bases, systems of equations, eigenvalues, eigenvectors, eigenvalue, and diagonalization problems.

2090 Elementary Differential Equations and Linear Algebra (4) F,S Prereq.: MATH 1552. Credit will be given for one of the following: MATH 2065, 2070, 2090. Ordinary differential equations, Laplace transforms, linear algebra, and applications stresses both theory and computational approaches.

2085 Linear Algebra (3) F,S Prereq.: MATH 1552, 1635 or 2040, or equivalent. An honors course; MATH 2086 is also available. Topics include vector spaces, linear transformations, matrices, determinants, linear independence, bases, systems of equations, eigenvalues, eigenvectors, eigenvalue, and diagonalization problems.

2090 Elementary Differential Equations and Linear Algebra (4) F,S Prereq.: MATH 1552. Credit will be given for one of the following: MATH 2065, 2070, 2090. Ordinary differential equations, Laplace transforms, linear algebra, and applications stresses both theory and computational approaches.

2085 Linear Algebra (3) F,S Prereq.: MATH 1552, 1635 or 2040, or equivalent. An honors course; MATH 2086 is also available. Topics include vector spaces, linear transformations, matrices, determinants, linear independence, bases, systems of equations, eigenvalues, eigenvectors, eigenvalue, and diagonalization problems.

2090 Elementary Differential Equations and Linear Algebra (4) F,S Prereq.: MATH 1552. Credit will be given for one of the following: MATH 2065, 2070, 2090. Ordinary differential equations, Laplace transforms, linear algebra, and applications stresses both theory and computational approaches.

2085 Linear Algebra (3) F,S Prereq.: MATH 1552, 1635 or 2040, or equivalent. An honors course; MATH 2086 is also available. Topics include vector spaces, linear transformations, matrices, determinants, linear independence, bases, systems of equations, eigenvalues, eigenvectors, eigenvalue, and diagonalization problems.

2090 Elementary Differential Equations and Linear Algebra (4) F,S Prereq.: MATH 1552. Credit will be given for one of the following: MATH 2065, 2070, 2090. Ordinary differential equations, Laplace transforms, linear algebra, and applications stresses both theory and computational approaches.

2085 Linear Algebra (3) F,S Prereq.: MATH 1552, 1635 or 2040, or equivalent. An honors course; MATH 2086 is also available. Topics include vector spaces, linear transformations, matrices, determinants, linear independence, bases, systems of equations, eigenvalues, eigenvectors, eigenvalue, and diagonalization problems.

2090 Elementary Differential Equations and Linear Algebra (4) F,S Prereq.: MATH 1552. Credit will be given for one of the following: MATH 2065, 2070, 2090. Ordinary differential equations, Laplace transforms, linear algebra, and applications stresses both theory and computational approaches.

2085 Linear Algebra (3) F,S Prereq.: MATH 1552, 1635 or 2040, or equivalent. An honors course; MATH 2086 is also available. Topics include vector spaces, linear transformations, matrices, determinants, linear independence, bases, systems of equations, eigenvalues, eigenvectors, eigenvalue, and diagonalization problems.

2090 Elementary Differential Equations and Linear Algebra (4) F,S Prereq.: MATH 1552. Credit will be given for one of the following: MATH 2065, 2070, 2090. Ordinary differential equations, Laplace transforms, linear algebra, and applications stresses both theory and computational approaches.

2085 Linear Algebra (3) F,S Prereq.: MATH 1552, 1635 or 2040, or equivalent. An honors course; MATH 2086 is also available. Topics include vector spaces, linear transformations, matrices, determinants, linear independence, bases, systems of equations, eigenvalues, eigenvectors, eigenvalue, and diagonalization problems.

2090 Elementary Differential Equations and Linear Algebra (4) F,S Prereq.: MATH 1552. Credit will be given for one of the following: MATH 2065, 2070, 2090. Ordinary differential equations, Laplace transforms, linear algebra, and applications stresses both theory and computational approaches.

2085 Linear Algebra (3) F,S Prereq.: MATH 1552, 1635 or 2040, or equivalent. An honors course; MATH 2086 is also available. Topics include vector spaces, linear transformations, matrices, determinants, linear independence, bases, systems of equations, eigenvalues, eigenvectors, eigenvalue, and diagonalization problems.

2090 Elementary Differential Equations and Linear Algebra (4) F,S Prereq.: MATH 1552. Credit will be given for one of the following: MATH 2065, 2070, 2090. Ordinary differential equations, Laplace transforms, linear algebra, and applications stresses both theory and computational approaches.

2085 Linear Algebra (3) F,S Prereq.: MATH 1552, 1635 or 2040, or equivalent. An honors course; MATH 2086 is also available. Topics include vector spaces, linear transformations, matrices, determinants, linear independence, bases, systems of equations, eigenvalues, eigenvectors, eigenvalue, and diagonalization problems.
examples of important codes and decoding schemes, bounds on the weight enumerator polynomial, perfect codes, and other topics.

4700 History of Mathematics (3) V Prereq.: MATH 2040, 2057, and 2085; students entering the course should have a firm sense of what constitutes a proof. This course will have substantial mathematical content; topics such as the development of arithmetic, Euclid to Archimedes; algebra and number theory from Diophantus to the present; the calculus of Newton and Leibniz; the renewed emphasis on axiomatic foundations in the 19th and 20th centuries; interactions of mathematics with the natural sciences; biographies of significant mathematicians.

4998 Senior Seminar for Mathematics Majors (3) S Prereq.: the student should be within two semesters of completion of requirements for a mathematics major; for undergraduate credit only; under guidance of professor teaching the course, student will undertake several independent reading projects and write expository papers; oral presentations will follow preparation of written papers.

4999 Selected Readings in Mathematics (1-3) Prereq.: consent of department. May be taken for a max. of 9 sem. hrs. credit.

6300 Topics in Mathematics for Secondary Teachers (1-3) V Prereq.: 6 sem. hrs. of credit when topics vary. May be taken by secondary school mathematics.

6301 Implementing the NCTM Standards I (3) May be taken for a max. of 9 sem. hrs. of credit when topics vary. Enrollment is restricted to participants in the teacher-training and grant-supported programs. Topics for mathematics teachers (K-5) to be selected from those in the Principles and Standards of School Mathematics of the National Council of Teachers of Mathematics.

6302 Implementing the NCTM Standards II (3) May be taken for a max. of 9 sem. hrs. of credit when topics vary. Enrollment is restricted to participants in the teacher-training and grant-supported programs. Topics for mathematics teachers (6-8) to be selected from those in the Principles and Standards of School Mathematics of the National Council of Teachers of Mathematics.

7001 Communicating Mathematics I (1) F Prereq.: consent of department. May be repeated for credit with consent of department. Advanced topics such as linear algebra, applications, expository writing, and the use of technology in the mathematics classroom.

7200 Geometric and Abstract Algebra (3) Prereq.: MATH 2085 or equivalent. Linear algebra, rings, finite fields, groups, multilinear algebra, other topics. 7210, 7211, 7212, 7213, 7214 offered F Preq: MATH 7200 or equivalent. Groups: Sylow Theorems, finitely generated abelian groups; rings and modules; modules over principal ideal domains; modules, fields, algebraic geometry, transcendental, normal, separable field extensions; Galois theory, valuation theory, Noetherian and Dedekind domains, topics from commutative algebra.

7280 Seminar in Commutative Algebra (1-3) V Prereq.: consent of department. May be repeated for credit with consent of department. Topics on commutative algebra, homological algebra, algebraic curves, or algebraic geometry.

7370 Lie Groups and Representation Theory (3) V Preq.: MATH 7312, 7200, and 7510 or equivalent. Lie groups, Lie algebras, subgroups, homomorphisms, the exponential map. Also topics in finite and infinite dimensional representation theory.

7375 Topics in Algebraic Geometry (3) V Preq.: MATH 7311 or equivalent. Fourier series; Fourier transform; windowed Fourier transform or short-time Fourier transform; the continuous wavelet transform; wavelet transform, multiresolution analysis; construction of wavelets.

7380 Seminar in Functional Analysis (1-3) V Preq.: consent of department. May be repeated for credit with consent of department. Advanced topics such as harmonic analysis, partial differential equations, Lie group representation theory, several complex variables, or probability theory.

7400 Combinatorial Theory (3) S Preq.: MATH 7200 or equivalent. Problems of existence and enumeration in the study of arrangements of elements into sets; combinations and permutations; other topics such as generating functions, inclusion-exclusion, Polya's theorem, graphs and digraphs, combinatorial designs, incidence matrices, partially ordered sets, matroids, finite geometries, Latin squares, difference sets, matching theory.

7490 Seminar in Combinatorics, Graph Theory, and Discrete Structures (1-3) S Preq.: consent of department. May be repeated for credit with consent of department. Advanced topics such as combinatorics, graph theory, and discrete structures.

7510 Topology I (3) Preq.: MATH 2057 or equivalent. Basic notions of general topology, with emphasis on Euclidean and metric spaces, continuous and differentiable functions, inverse function theorem and its consequences.

7512 Topology II (3) Preq.: MATH 7510. Theory of the fundamental group and covering spaces; covering spaces; the Seifert-Van Kampen theorem; universal covering space; classification of covering spaces; selected areas from algebraic or geometric topology.

7520 Algebraic Topology (3) S Preq.: MATH 7200 and 7310; or equivalent. Basic concepts of homology, cohomology, and homotopy theory.

7550 Differential Geometry and Topology (3) V Preq.: consent of department. May be repeated for credit with consent of department. Topics such as differential geometry, topology, and algebraic topology.

7559 Seminar in Geometry and Topology (1-3) Preq.: consent of department. May be repeated for credit with consent of department. Advanced topics such as geometric analysis of Riemannian geometry, topology of manifolds, and current research.

7701 Real Analysis I (3) Preq.: MATH 4032 or equivalent. Axiom of choice, Lebesgue measure and integration, convergence theorems, bounded variation and absolute continuity, differentiation, Minkowski-Holder inequalities, Riesz-Fischer theorem.

7712 Real Analysis II (3) Preq.: MATH 7311 or equivalent. Ascoli theorem, Stone-Weierstrass theorem, Hahn-Banach theorem, bounded linear functionals, Hilbert spaces, weak topologies, general measure and integration, Riesz representation theorem, other related topics.

7320 Ordinary Differential Equations (3) S Preq.: MATH 2085 and 4031; or equivalent. Existence and uniqueness theorems, approximation methods, linear equations, linear operators, stability theory; other topics such as boundary value problems.

7325 Numerical Analysis and Applications (3) S Preq.: MATH 7200 or equivalent. Finite difference methods; finite element methods; iterative methods; methods of parallel computing; applications to the sciences and engineering.

7330 Functional Analysis (3) V Preq.: MATH 7312 or equivalent. Banach spaces and their generalizations; Baire categories; closed graphs; closed linear operators; and Hahn-Banach theorems; duality in Banach spaces, weak topologies; other topics such as commutative Banach algebras, spectral theory, distributions, and Fourier transforms.

7350 Complex Analysis (3) V Preq.: MATH 7311 or equivalent. Theory of holomorphic functions of one complex variable; path integrals, power series, singularities, mapping properties, normal families, other topics.

7360 Probability Theory (3) F Preq.: MATH 7311 or equivalent. Probability spaces, random variables and expectations, independence, convergence concepts, laws of large numbers, convergence of series, law of iterated logarithm, characteristic functions, central limit theorem, limit theorems.

MECHANICAL ENGINEERING • ME

2212 Introduction to Mechanical Engineering Design (2) Prereq.: ENGL 1001, CM 1020 or 1030, PHYS 2101, MATH 1552, or equivalent. 1 hr. lecture, 1 hr. lab. Art and science of Mechanical Engineering design; reverse engineering; design methodologies; product realization; professional ethics; business forecasting; project costing; use of CAD/CAM systems; professional development in mechanical design.

2334 Thermodynamics (4) Preq.: Grade of "C" or better in MECHE 1202, MATH 1552, PHYS 2101; credit or registration in ME/CSC 2533. Thermodynamic systems and control valves; thermodynamic properties of simple substances, work and heat; 1st and 2nd law; power and refrigeration cycles; ideal gas mixtures, water-vapor mixtures and psychrometric chart analysis.

2533 Introduction to Engineering Computation (3) 2 hrs. lecture; 3 hrs. lab. See CSC 2533.

2723 Materials of Engineering for Mechanical Engineers (3) Prereq.: CHEM 1202 and credit or registration in PHYS 2102. Credit will not be given for both this course and ME 2733. Classification and study of engineering materials, their structure, properties, and behavior; typical metals and alloys, plastics and rubber, and ceramic materials; phase equilibria and manipulation of properties and behavior by adjustment of composition and processing variables; responses of engineering materials to stress and environmental variables; emphasis on design and quality assurance; common applications such as fractures and heat treatment processes.

2733 Materials of Engineering (3) Prereq.: CHEM 1201 and credit or registration in PHYS 2102. Not open to Mechanical Engineering majors. May be taken for both ME 2723 and ME 2733. Classification and study of engineering materials, their structure, properties, and behavior; typical metals and alloys, plastics and rubber, and ceramic materials; phase equilibria and manipulation of properties and behavior by adjustment of composition and processing variables; responses of engineering materials to stress and environmental variables.

3133 Dynamics (3) S,Su Preq.: Grade of "C" or better in CE 2458 and MATH 1552. 2 hrs. lecture; 2 hrs. recitation. Vectors and kinematics of particles and rigid bodies; force, mass, acceleration; impulse and momentum; work and energy.

3143 System Dynamics and Modeling (3) Preq.: CSC/M/E 2533, ME 3133, grade of "C" or better in MATH 2090, and credit or registration in ME 3814. Bond graph and lumped-parameter techniques for deriving dynamic equations of physical systems; time and frequency domain analyses, numerical simulation of mechanical systems.

3249, 3250 Engineering Practice (1-1,3-1) Su Preq.: consent of instructor. Pass-fail grading. A minimum of 6 weeks of full-time employment by an industry participant in the summer program. See 2458, 2533. Selected engineering projects in an industrial environment.

3333 Thermodynamics (3) Preq.: PHYS 2101 and MATH 1552, or equivalent. May be taken for Mechanical Engineering majors. Basic laws of thermodynamics, availability, perfect gases and pure substances, fluid flow, and basic heat transfer.

3660 Instrumentation and Measurement (3) EE 3950, ME 3143; and proficiency in English as required by the College of Engineering. 2 hrs. lecture; 3 hrs. lab. Basic science and technology of instrumentation and measurement systems; fundamental measurement theory; statistical error estimation; error propagation; instrumentation specifications; analog and digital instrumentation fundamentals; data acquisition and analysis; extensive technical report writing.

3663 Manufacturing Processes & Methods (3) Preq.: CM 1020 or 1030, and ME 2723 or 2733. 2 hrs. lecture; 3 hrs. lab. Modern manufacturing processes integrated into total manufacturing strategy. CAD/CAM systems, manufacturing operations; metal casting, forming, removal; welding processes and machinery; fine measurement, inspection, and quality assurance.

3701 Materials of Engineering Laboratory (1) Preq.: Enrichment in English as required by the College of Engineering; ME 2723 or 2733; and credit or registration in CE 3400. Analysis of mechanical and other properties of engineering materials required for material selection;
4533 Engineering Use of Electronic Computers (3) Prereq.: ME 2334 or equivalent. Standard and general programming languages with some problems in digital mechanics. Also offered as HNRS 4831. An introduction to fluid dynamics from a multi-disciplinary perspective, emphasizing theoretical principles of fluid flow and their applications to a range of physical scales and disciplines.

4823 Interdisciplinary Fluid Dynamics: Computational Methods (Prereq.) Principles of fluid dynamics, numerical methods, and computational techniques; state estimation; stability theory; control and stability of distributed parameter systems.

7732 Materials Characterization Using Electron Beam Methods (Prereq.) ME 2333. 2 hrs. lecture; 3 hrs. lab. Theory and principles of electron optics, electron microscopy, and spectroscopy; preparation and manipulation, and characterization of materials by electron beams.
7733 Flow and Fracture in Solids (3) S Prereq.: CE 4440 or equivalent. Plastic deformation of single crystals and polycrystalline aggregates; theories of ductile and brittle fracture; internal fatigue; fatigue; creep and stress rupture; restoration of strength of metals.


7753 Thermodynamics of Solid Materials (3) Prereq.: ME 2733 or equivalent. Focus on Thermodynamics. Review of first and second laws of thermodynamics; material property relationships; chemical equilibrium in reactions; entropy; phase diagrams; equilibrium and reaction kinetics; non-equilibrium thermodynamics.

7763 Advanced Corrosion Science and Engineering (3) S Prereq.: ME 4763 or equivalent. Advanced topics in corrosion science and engineering. Topics may include corrosion mechanisms, prevention techniques, and environmental concerns.

7813 Computation of Boundary Layer Flows and Heat Transfer (3) Prereq.: ME 3834 and 4433 or equivalent. Techniques for solving heat transfer problems involving boundary layers.

7833 Inviscid Fluid Flow (3) S Prereq.: ME 7683 or equivalent. Potential flow theory and gas dynamics; multi-dimensional compressible flow; computational gas dynamics.

7843 Viscous Fluid Flow (3) S Prereq.: ME 7683 or equivalent. Navier-Stokes equations; Stokes and Oseen approximations for low Reynolds number flows; incompressible laminar boundary layer theory; transition; turbulent boundary layers, compressibility effects, and numerical methods.

7853 Advanced Boundary Layer Theory (3) S Prereq.: ME 7843 or equivalent. Non-Newtonian and turbulent fluid mechanics.

7863 Fluid Dynamics (3) F Prereq.: credit or registration in MATH 4036 or equivalent. Fluid dynamics as continuum mechanics; complex variables in two dimensions and superposition in three dimensions; viscous flow and Navier-Stokes equations; compressible flow, including waves, shocks, and linearized aerodynamics.

7901 Seminar (1) All graduate students are expected to attend this course every semester; only 1 hr. of credit in this course is allowed toward degree. Pass/fail grading.

7903 Independent Study in Mechanical Engineering (3) May be taken for a max. of 6 hrs. of credit. Directed independent study for graduate students.

7933, 7943 Mechanical Engineering Problems (3,3) May be taken for a max. of 6 hrs. of credit when topics vary. Consent of department. Mechanical engineering treatment of various areas of interest.

8000 Thesis Research (1-12 per sem.) "S"/"U" grading

9000 Dissertation Research (1-12 per sem.) "S"/"U" grading

MEDICAL PHYSICS • MDPD

General education courses marked with stars (★).

★ 2051 Radiation Science for Medical Applications (3) F,S Prereq.: Matter and energy, structure of the atom and nucleus, radioactivity; types of radiation, radiation interactions; dose and biological effects; radiation detection and safety: background radiation; detection of radiation in medicine, cancer therapy, and imaging.

4101 Tracer Methodology for Biological Sciences (3) F,S 2 hrs. lecture; 3 hrs. lab. Specialized for students in the biological sciences. Methods of quantitative evaluation of radioactive compounds, detectors, and their usage in radioactive tracer studies, and use of radioactive tracers in medical sciences.

4111 Introduction to Medical Imaging (3) F,S Prereq.: PHYS 1520 or equivalent. Physics and engineering aspects of medical imaging systems: X-ray imaging, computed tomography, magnetic resonance imaging, ultrasonic imaging, and molecular nuclear medicine; clinical applications, expectations, and limitations of the modalities.

3313 Radiation Protection and Exposure Evaluation (3) F Prereq.: PHYS 2203 or equivalent. Control and evaluation of radiation exposure, including external and internal dosimetry, techniques of dose reduction, and consequences of radiation exposure.

3323 Medical Physics and Health Physics Laboratory (1) F Prereq.: credit or registration in MEDP 4331. 1 hr. lab. Radiation safety; applications of nuclear medicine: health physics and medical physics exercises in radiation surveys; inspections; exposure incident investigation.

3511 Radiation Detection and Instrumentation (2) F,S Prereq.: PHYS 2201 or equivalent credit in MEDP 4331 or consent of instructor. Principles of radiation detection; construction, operation, and application of radiation detection systems; selection, calibration, and electronic matching of systems to counting problems; sophisticated detectors and electronics for use in various radiation fields.

4991 Special Problems in Medical Physics and Health Physics (1-4) Prereq.: thorough knowledge of mathematics, science, and engineering related to the topic of problem. May be taken for a max. of 12 sem. hrs. of credit when topics vary. Theoretical or experimental problems involving the application of medical physics and health physics technology.

4995 Seminar (1) F,S Elective seminar especially for undergraduate majors in physics and astronomy with a concentration in medical physics. Course may be repeated for a max. of 6 sem. hrs. of credit when topics vary.

49910 Advanced Tracer Methodology for Biological Sciences (3) F,S Prereq.: MEDP 4101. 2 hrs. lecture/demonstration; 3 hrs. lab. Qualitative and quantitative aspects of tracer applications in modern biological research; combining tracer techniques with other analytical methods.

7111 Advanced Medical Imaging Physics (3) F,S Prereq.: consent of instructor. Topics related to advanced research and clinical imaging physics; theory of image formation; quantitative analysis of imaging systems by Fourier methods and QC acceptance testing; radon transform and theory of image reconstruction; tracer methodology for quantitative imaging; topical subjects of current clinical and research interest.

7211 Radiobiology (3) S Prereq.: MEDP 4331 or consent of instructor: 2 hrs. lecture; 1 hr. lab. Effects of complex cellular radiation on molecular, and organ systems levels: biological organization; study of x-rays, gamma rays, and neutrons; effects on living systems; effects of different types of radiobiology.

7210 Clinical Principles of Radiation Therapy (3) S Prereq.: MEDP 4331, 4331, CSC 2262 or equivalent. Principles of radiation therapy and the use of radiotherapy techniques.

7260 Clinical Cancer Therapy Rotation (3) F,S Prereq.: MEDP 4331, 7121. Clinical rounds under the direct supervision of the medical and clinical physics staff on a daily basis. Performance of dosimetry and treatment planning activities for external beam radiation and brachytherapy cancer treatment modalities under medical and physics staff supervision.

7270 Advanced Radiation Therapy Physics (3) S Prereq.: MEDP 7121. 2 hrs. lecture; 3 hrs. lab. Physical aspects of the treatment of malignant diseases; instruments and their limitations; calibrations; radiation therapy techniques.

7280 Advanced Clinical Cancer Therapy Rotation (2) S,Su Prereq.: consent of instructor, MEDP 7260. May be taken for a max. of 4 sem. hrs. credit. Clinical rounds under the supervision of the medical and clinical physics staff on a daily basis of isotopic and radiation source techniques for diagnosis and treatment of malignant diseases.

7331 Radiation Therapy Physics (3) F Prereq.: MEDP 4101 or equivalent. Methods for measuring radiation fields and absorbed radiation doses by ion collection devices, photographic methods, solid-state systems, and calorimetric methods, as applied to isotope and machine sources.

7350 Radiation Shielding (2) F,S Prereq.: credit or registration in PHYS 7557. Design and application of analysis of shields, collimators, and compensators in clinical and industrial settings; calculation of source terms, geometric transmission, and attenuation of photon beams; shielding calculations for x-ray, neutron, and charged particle attenuation in shielding and other media; computerization of dose and beam equivalency in applications with medical physics and nuclear facilities.

7537 Radiation Interactions and Transport (3) F,S Prereq.: PHYS 2203 or equivalent. Radiation and attenuation and energy deposition, the Bolzmann equation, elementary analytical solutions; deterministic computational methods including spherical harmonics and discrete ordinates techniques; continuous slowing down and Fokker-Planck approximate techniques.

7583 Monte Carlo Simulation of Radiation Transport (3) S Prereq.: MEDP 7537 or consent of instructor, CSC 2262 or equivalent experience in computer programming. Also offered as PHYS 7583. Radiation transport simulation by the Monte Carlo method; phase-space tracking; dose response estimators, biasing methods, integral form of the Boltzmann equation; condensed-history method for charged particles; neutron, photon, and electron transport calculations for shielding and medical physics applications.

7891 Advanced Projects in Medical Physics and Health Physics (1-3) Prereq.: MEDP 4101 or 4331, and consent of instructor. Theoretical or experimental projects involving the application of medical physics or health physics technology.

7902 Advanced Topics in Medical Physics and Health Physics (1-3) Prereq.: consent of instructor. May be taken for a max. of 12 sem. hrs. of credit when topics vary. Advanced treatment of a specific area of medical physics or health physics technology of current interest.

7991 Seminar (1) F,S Required for degree candidates in medical physics and health physics. Only 1 sem. hr. of credit may be counted toward degree.

7999 Report Investigation (1-6) Prereq.: MEDP 4101 or 4331 and consent of instructor. May be repeated for credit. Detailed analysis of a technical problem or a comprehensive design project.

8000 Thesis Research (1-12 per sem.) "S"/"U" grading

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Nonimmigrant aliens require approval from their governments prior to enrollment in these courses.

1010 Rifle and Pistol Marksmanship (1) 1 hr. lecture; 3 hrs. lab. Restricted to freshmen and sophomores or permission of instructor. Rifle and pistol safety; breathing technique; shooting fundamentals; safety inspection; and aiming; standard firing positions; practical application on indoor firing range.

1011 First Year Basic Army (1) F,S Prereq.: MILS 1011 or 1012 or permission of instructor. 1 hr. lecture; 1.5 hrs. lab. Role of the U.S. Army, National Guard, and Reserves; warfighting doctrine; the Army's writing style; military briefings; leadership dynamics; drill and ceremonies; other military qualifications level I skills.

1012 First Year Basic Army II (1) F,S Prereq.: MILS 1011 or permission of instructor. 1 hr. lecture; 1.5 hrs. lab. Amplification of leadership dynamics concepts presented in MILS 1011; basic first aid; physical fitness; other military qualification level I skills.

1015 Army Physical Fitness Training (1) 3 hrs. lab. Open to all EEU students. May be taken for a max. of 9 sem. hrs. of credit. Development of strength, stamina, agility, coordination, and flexibility through a combined program of group and individual exercise.

2167 Second Year Basic Army I (2) F,S Prereq.: MILS 1011 and 1012 or permission of instructor; 2 hrs. lecture; 1.5 hrs. lab. Map symbols and reference systems; land navigation; small unit tactics; written and oral communication; other military qualification level I skills.

2168 Second Year Basic Army II (2) F,S Prereq.: MILS 1011 and 1012 or permission of instructor; 2 hrs. lecture; 1.5 hrs. lab. Planning, organizing, and managing the activities of small organizations; time management; tactics; handling of personnel; history; leadership; other military qualification level I skills.

3001 Small Unit Leadership (3) F,S Prereq.: MILS 2161 and 2162 or equivalent. 2 hrs. lecture; 6 hrs. lab. Practical leadership development through repeated application at small unit (squad and platoon) level; includes tactical concept and procedures, leadership development, advanced land navigation, oral and written communication, team building, and physical fitness.
Courses

Secondary Applied Music Courses

These courses are for students whose declared major or minor is the specific instrument designated by the course number.

3130 Primary Voice (2-3)
3131 Primary Piano (2-3)
3132 Primary Harpsichord (2-3)
3133 Primary Organ (2-3)
3134 Primary Harp (2-3)
3135 Primary Violin (2-3)
3136 Primary Viola (2-3)
3137 Primary Cello (2-3)
3138 Primary String Bass (2-3)
3139 Primary Flute (2-3)
3140 Primary Oboe (2-3)
3141 Primary Clarinet (2-3)
3142 Primary Saxophone (2-3)
3143 Primary Bassoon (2-3)
3144 Primary Trumpet (2-3)
3145 Primary French Horn (2-3)
3146 Primary Euphonium (2-3)
3147 Primary Trombone (2-3)
3148 Primary Tuba (2-3)
3149 Primary Percussion (2-3)
3151 Primary Composition (2-3)
3152 Primary Guitar (2-3)
3153 Primary Electroacoustic Composition (2-3)
3154 Primary Jazz (2-3)

Graduate Applied Music Courses

7030 Graduate Voice (2-6)
7031 Graduate Piano (2-6)
7032 Graduate Harpsichord (2-6)
7033 Graduate Organ (2-6)
7034 Graduate Harp (2-6)
7035 Graduate Violin (2-6)
7036 Graduate Viola (2-6)
7037 Graduate Cello (2-6)
7038 Graduate String Bass (2-6)
7039 Graduate Flute (2-6)
7040 Graduate Oboe (2-6)
7041 Graduate Clarinet (2-6)
7042 Graduate Saxophone (2-6)
7043 Graduate Bassoon (2-6)
7044 Graduate Trumpet (2-6)
7045 Graduate French Horn (2-6)
7046 Graduate Euphonium (2-6)
7047 Graduate Trombone (2-6)
7048 Graduate Tuba (2-6)
7049 Graduate Percussion (2-6)
7051 Graduate Composition (2-6)
7052 Graduate Guitar (2-6)
7053 Graduate Electroacoustic Composition (2-6)
7054 Graduate Jazz Study (2-6)
7055 Graduate Collaborative Keyboard (2-6)

ENSEMBLE COURSES

Admission to ensemble courses is by audition only, with the exception of 4210, 4223, and 4253. These courses are open to all students, including freshmen and sophomores. Courses marked with an asterisk (*) satisfy the requirement to participate in a major ensemble each semester.

4220 Piano Ensemble (1) May be repeated for a max. of 2 sem. hrs. for degree credit.
4221 Vocal Chamber Music (1)
4222 Woodwind Chamber Music (1)
4223 Brass Chamber Music (1)
4224 String (or Piano and Strings) Chamber Music (1)
4225 Collegium Musicum (1)
4226 Percussion Ensemble (1)
4227 Marimba Ensemble (1)
4228 Contemporary Music Ensemble (1)
4229 Harp Ensemble (1)
4230 Gospel Choir (1)
4231 Swing Choir (1)
*4232 Men's Chorus (1)
*4233 Women's Chorus (1)
*4234 University Chorus (0-1)
*4235 Chamber Choir (1)
*4236 A Cappella Choir (1)
4240 Opera Chorus (1)
*4250 Tiger Marching Band (1)
*4251 Wind Ensemble (0-1)
*4252 Symphonic Band (0-1)
4253 Jazz Band (1)
*4254 Symphonic Winds (0-1)
4255 Chamber Jazz (1)
4260 Philharmonia (1)
*4261 Symphony Orchestra (0-1)

GENERAL COURSES

General education courses are marked with stars (★).

1001, 1002 Voice Class (2,2) Open to nonmusic majors with consent of instructor. Group instruction in voice production.
1010 In Concert (1) 2 hr. lab. May be taken for a max. of 3 hrs. of credit. An elective course open to all University students; designed to develop proper audience etiquette and to expose students to a wide variety of music performances.
1018 Diction for Singers I (1) F; 1 hr. lecture; 1 hr. lab. Phonetics and phonemes used in singing indifferent languages; includes the phonetic alphabet and English diction.
1019 Diction for Singers II (1) Required of all vocal music education and voice performance majors. Entry-level course covering pronunciation of German and French for singing; utilizing the International Phonetic Alphabet; pronunciation concepts will be supported by recitation and performance of representative song repertoire.
1820 Performance Craft for Singers (1) Preparatory for MUS 4249. May be taken for a max. of 2 hrs. of credit. Required of all voice performance majors. Workshop exploring performing artistry for the singer through individual coaching and class exercises such as movement, dance, and improvisation; stage terms, stage deportment, and stage etiquette; performance anxiety.
1108, 1109 Piano Class (2,2) MUS 1108 or consent of instructor is prerequisite for 1109. Open only to nonmusic majors. Instruction for the beginner and lower intermediate student.
1130, 1131, 1132, 1133 Group Piano I, II, III, IV (1 each) Open only to music majors. Required of all non-keyboard music majors who do not meet proficiency requirements. Functional use of the piano.
1700 Recital Hour (0) May be repeated. Pass-fail grading. Weekly student recital and music seminar.
1731, 1732 Introduction to Music Study I, II (4,4) 3 hrs. lecture; 2 hrs. lab. Grade of “C” or better in 1731 required for registration in 1732. Fundamental elements of music from historical, cultural, and theoretical perspectives; development of skills in reading, notating, and listening to music; cultivation of studying and writing skills.
1733 HONORS: Introduction to Music Study II (4) Same as MUS 1732, with special honors emphasis for qualified students.
★ 1751 Music Appreciation (3) Primarily for nonmusic majors. Credit will not be given for this course and MUS 1751. The art of music, with emphasis on listening skills, a non-technical approach to understanding vocabulary and materials of music; correlation of musical literature with other disciplines in the humanities.
★ 1755 HONORS: Music Appreciation (3) Primarily for qualified students not majoring in music. Credit will not be given for this course and MUS 1751 or 1752. Study of the musical art emphasizing the development of critical listening skills and a non-technical, but thorough musical vocabulary; additional emphasis placed on the historical correlation of both vernacular and art music to corresponding developments in the other fine arts disciplines.
1799 Rudiments of Music (3) Not open to music majors. The grammar of music, including basic notation and elementary construction leading to a study of tonal harmony.

1800 Technology in Music Education (2) Music majors only. Introduction to the uses of technology in school music programs; includes discussion of the role and application of technology in K-12 school music settings.

2000 History of Jazz (3) Open to nonmusic majors. Survey of the development of jazz styles.

2018 Diction for Singers III (1) Required of all voice performance majors. Advanced study of phonetics and pronunciation for German and French songs; utilizing the International Phonetic Alphabet; pronunciation concepts supported by recitation and performance of representative song repertoire.

2019 Diction for Singers IV (1) 1 hr. lecture; 1 hr. lab. The phonetic alphabet and French diction.

2053 Survey of Music History I (3) Prereq.: Grade of "C" or better in MUS 1732 or 1733. Music of Western Civilization to ca. 1750.

2054 Survey of Music History II (3) Prereq.: Grade of "C" or better in MUS 1732 or 1733. Music of Western Civilization from ca. 1750 to the present.

2170 Music of Education and the Elementary School I (3) Music fundamentals, materials, methods, and skills involved in teaching general music in the elementary school.

2175 Beginning Folk Guitar (3) Beginning level performance class; emphasis on literature and techniques used in the performance of folk music; basic music theory analysis.

3000 Instrumental and Vocal Techniques I (2) Open to nonmusic majors. The use of reed making and finishing.

3020 American Musical Theatre (3) See THTR 3020. Introduction to the uses of technology in school music programs; includes discussion of the role and application of technology in K-12 school music settings.

3037 Theory Survey (2) Admission by placement examination. Not for credit.

3041 Vocal Technique (1) Admittance by audition. Not for credit.

3260 Preparatory Study for Graduates (1) Copy of selected works and creative application of techniques, procedures, and formal schemes studied.

3261 Music Technology I (2) Prereq.: Grade of "C" or better in MUS 3732 and 3733. Advanced tonal harmony; continued form and genre study; post-tonal harmony; basic scoring and score reading; continued mastery of relevant musicianship skills.

3745 Introduction to Computer Music I (3) Prereq.: Grade of "C" or better in MUS 3731 and 3732. Introduction to techniques in digital music, including systems of digital audio, sound design, music synthesis, signal processing, and sound art composition.

3749 Choral Literature and Conducting I (2) 1 hr. lecture; 2 hrs. lab. Elements of conducting choral groups.

3750 Choral Literature and Conducting II (2) Prereq.: MUS 3749 or equivalent; 1 hr. lecture; 2 hrs. lab. Continuation of MUS 3750.

3757, 3758 Organ Literature, History, and Design (3,3) MUS 3757 is prerequisite for 3758. Evolution and development of the organ and its literature; development of keyboard (organ) forms, techniques, and idiomatic styles; organ mechanism and action; tonal design; problem solutions.

3771 Instrumental Conducting I (2) Elements of conducting instrumental groups.

3772 Instrumental Conducting II (2) Prereq.: MUS 3771 or equivalent. 1 hr. lecture; 2 hrs. lab. Continuation of MUS 3771.

3997 Directed Studies in Music (1-3) Prereq.: consent of departmental faculty concerned and dean of the School of Music. May be taken for a max. of 6 sem. hrs. of credit. MUS 3997 cannot be used in a required course in any School of Music curriculum.

4000 Music Workshops (1-3) 1 or 2 hrs. of credit may be repeated for credit when topic changes each semester in advance.

4005 Fundamentals of Musical Theatre Singing: Technique and Repertoire (1) Prereq. permission of instructor. May be repeated for a max. of 2 hrs. of credit. Fundamentals of musical theatre style singing and repertoire; emphasis on vocal and stage performance of literature appropriate to the singer.

4020 Introduction to the Alexander Technique (1) 1 hr. lab. Employing the basic principles of the Alexander Technique; students will begin the process of psycho-physical re-education through experimental movement exercises and hands-on work with the instructor.

4030 Meditation for Performers (1) 1 hr. lab. Not for graduate credit. Pass/fail grading may be elected.

4120 Reed Making for Double Reed Majors (1) 1 hr. lab. Recommended for all oboe and bassoon majors. May be taken for a max. of 2 hrs. credit towards any degree. Principles of double-reed making with development of individual skill and application of reeds and reed technique.

4124 String Literature (2) Prereq.: MUS 3732 or consent of instructor. Complex forms and counterpoint; nature and generation of sound; computation of intervals and scales within various systems of tuning and temperament.

4126 Woodwind Literature (2) Prereq.: 12 sem. hrs. of applied wind instrument study or consent of instructor. Fundamentals of woodwind literature.

4128 Brass Literature and Pedagogy (2) Prereq.: MUS 3732 or consent of instructor. Principles of double-reed making with development of individual skill and application of reeds and reed technique.

4351 Song Literature I (2) The art song repertoire from the classical songs of Haydn and Mozart to the Romantic period.

4352 Song Literature II (2) The art song repertoire from the French mélodie to contemporary English and American songs.

4500 Musical Theatre Production (1-3) Also offered as THTR 4500. Admission by audition. May be taken for a max. of 4 sem. hrs. of credit towards any degree. Techniques of musical theatre production, including all production aspects, preparation aspects, preparation and performance of musical scenes and complete shows.

4700, 4702 Organ Practicum (2,2) Prereq.: consent of instructor. MUS 4700 is prerequisite for 4702. Techniques of service playing; techniques and materials of organ pedagogy.

4701 The Scientific Bases of Music (2) Musical acoustics, nature and generation of sound; computation of intervals and scales within various systems of tuning and temperament.

4710 Advanced Aural Skills (3) Prereq.: A grade of "C" or better in MUS 3731. Concentrated work in sight singing with a special emphasis upon skills needed for professional activity in performance, conducting and composition.

4712 Advanced Form and Analysis (3) Prereq.: A grade of "C" or better in MUS 3732. Complex forms and harmonic techniques of the 19th century to the present.

4718 Styles and Practices of Beethoven and the Roman- tics (3) Prereq.: A grade of "C" or better in MUS 3731. Tonality, harmony, and form, in music of the Romantic period; analysis of selected literature and creative writing in the Romantic style.

4719 Styles and Practices of the Late Romantics and Transition to the Modern Era (3) Prereq.: A grade of "C" or better in MUS 3731. Tonality, harmony, and form, in music of the Romantic period; analysis of selected literature and creative writing in Ultra-Chromatic and Impressionistic style.

4720 Post-Tonal Styles and Practices (3) Prereq.: A grade of "C" or better in MUS 3732. Study of principal currents of musical composition in the modern era; analysis of selected works and creative application of techniques, procedures, and formal schemes studied.

4721 Modal Counterpoint (3) Prereq.: Grade of "C" or better in MUS 3732 or equivalent. Writing and analysis of contrapuntal music with modal basis.

4723 Tonal Counterpoint (3) Prereq.: Grade of "C" or better in MUS 3732 or equivalent. Writing of counterpoint in two or three parts to a given cantus firmus; imitation in contrapuntal forms such as the invention and the fugue.

4730 Elementary Orchestration (2) Prereq.: Grade of "C" or better in MUS 2732. Traditional scoring practices.

4731 Intermediate Orchestration (2) Prereq.: MUS 2730. Orchestration for full orchestra including extraordinary instruments; avant-garde orchestral practice.

4735 Jazz Arranging (2) Prereq.: MUS 3732 or consent of instructor. Jazz arranging styles and techniques, from Dixieland to modern jazz.

4740 Business of Music (2) Surveys of contracts, legalities, economics, and production planning as they relate to performers, teachers, and composers of music in the fields of recording, concerts, publishing, broadcasting, motion pictures, and musical theater; copyright, performance rights societies, unions, and guilds.
4745 Computer Music (3) May be taken for a max. of 6 hrs. toward topics vary. Digital sound design, sound synthesis, and signal processing; electroacoustic music composition using computers and computer music techniques.

4746 Seminar in Computer Music and Digital Media (3) Prereq.: MUS 4745 or consent of instructor. May be taken for a max. of 6 hrs. of credit when topics vary. Focus on study of works in computer music and digital media such as computer music programming, sound diffusion techniques, interactive computer music and digital media systems, internet applications, analysis of computer music.

4747 Music, Technology, and Society (3) History and critical study of the impact of electronics and recording technologies on the form and performance of music, and its subsequent impact on the role of music in society.

4749 Seminar in Music History (3) Prereq.: Grade of "C" or better in MUS 2035 and 2034 or permission of instructor. May be taken for a max. of 6 sem. hrs. credit when topics vary.

4750 Music of the Middle Ages and the Renaissance (3) Prereq.: Grade of "C" or better in MUS 2035 and 2034 or consent of instructor. The history of music from ca. 800 to 1600.

4751 Folk and Traditional Music: Music History and Literature (2) Background and history of folk and traditional music; emphasis on Anglo-American folk songs.

4757 Piano Literature I (3) A survey of the keyboard repertoire from the late renaissance through Haydn and Mozart.

4758 Piano Literature II (3) A survey of piano literature from Beethoven to the present.

4761 Comprehensive Repair of Band and Orchestral Instruments (1,1) Prereq.: MUS 2308 or equivalent. 2 hrs. lab. For students with experience in instrumental music and a practical knowledge of the problems in instrumental upkeep.

4763, 4764 Piano Methods and Materials (3,3) Materials and techniques for the piano teacher.

4766 Marching Band Techniques (3) Charting techniques for marching band; emphasis on contemporary drill design; practical projects in charting drill.

4767 Piano Design, Construction, and the Theory of Tuning and Temperament (2) 1 hr. lecture; 2 hrs. lab. Open only to music majors. Piano and harpsichord design, construction, regulation, voicing, and tunings; knowledge important to pianists; laboratory experience in regulation, tuning, and voicing.

4769, 4770 Supervised Studio Instruction (2,2) Program tailored to needs of each student by the major applied teacher who supervised the student's studio teaching program.

4772 Harp Technology and Maintenance (2) Required of all harp majors. Individual projects and study of harp history, materials, and construction and regulation.

4773 Orchestral Repertoire for Harp (1) Required of all harp majors. May be taken for a max. of 8 hrs. of credit. Independent study of major orchestral excerpts; includes audition preparation.

4774 Harp Pedagogy (2) Required of all harp majors. Independent studies in materials and methods for the harp teacher.

4791 Introduction to Opera (3) Open to majors and nonmajors. History, production, and performance of opera from 1600 to the present.

4796 Senior Project in Music Theory (2) A written project on an approved topic in music theory. Required of all theory emphasis students in the composition curriculum.

4797 Senior Recital (1-3) May be taken for a max. of 3 sem. hrs. of credit in applied music faculty. May be repeated for credits. Max. amount of credit applicable toward a degree is 6 sem. hrs.

4901 Basic Techniques of Audio Recording (3) Basic properties of sound and sound forms of sound energy; analysis of complete audio systems for recording and sound reinforcement and individual system components; aspects of recording; concert recording; emphasis on micro- phone placement techniques; professional music production techniques, including editing and tape duplication.

7011 Keyboard Skills for Pianists (1) Techniques of accompanying, including chord reading, score reading, transposition, and harmonization.

7018 Advanced German Diction for Singers (1) 1 hr. lecture; 1 hr. lab. The rules of pronunciation utilizing the International Phonetic Alphabet; coaching in the Lied and operatic literature including spoken dialogue.

7019 Advanced French Diction for Singers (1) 1 hr. lecture; 1 hr. lab. The rules of pronunciation utilizing the International Phonetic Alphabet; coaching in the French art song and operatic literature.

7020 Advanced Diction for Singers (1) 1 hr. lecture; 1 hr. lab. The rules of pronunciation utilizing the International Phonetic Alphabet; coaching in operatic and song literature according to the research expected.

7124 Seminar in String Literature (2) Methods, solos, and chamber music for strings.

7126, 7127 Seminar in Woodwind Literature I, II (2,2) Methods, solos, and ensemble literature for woodwinds.

7128 Seminar in Brass Literature (3) Methods, solos, and ensemble literature for brass instruments.

7130 Seminar in Percussion Literature (2) Methods, solos, and ensemble literature for percussion instruments.

7160 Survey of Jazz Styles (3) In-depth investigation of the American Jazz idiom from the perspective of historical jazz periods and specific artists.

7170 Advanced Vocal Pedagogy (2) Fundamentals of anatomy, physiology, articulation; emphasis on vocal registers, breath management, and articulation; pedagogical philosophies used to train the classical singing voice in the Western tradition of art song and opera.

7172 Stringed Instrument Pedagogy (2) Methods and materials for instruction in string instruments.

7173 Woodwind Instrument Pedagogy (2) May be taken for a max. of 2 hrs. of credit for the DMA or PhD Independent studies in the methods and materials for instruction in woodwind instruments.

7174 Brass Instrument Pedagogy (2) Methods and materials for instruction in brass instruments.

7175 Percussion Instrument Pedagogy (2) Methods and materials for instruction in percussion instruments.

7176 Jazz Pedagogy (3) Pedagogical issues in jazz idiom including effective jazz ensemble directing, selection of appropriate repertoire, improvisational performance practices, effective jazz practice habits, and concepts designed to foster creativity.

7217 Music Technology III (3) Prereq.: MUS 2415, 4216 or equivalent. Production of technological products for music education; theoretical foundations and research; implementation and evaluation of products in an educational setting.

7221 Solo Literature for the Voice (3) Prereq.: MUS 4351 and 4352; or equivalent. Solo vocal literature in German and French; emphasis on styles of performance.

7222 Solo Literature for the Voice (3) Prereq.: MUS 4351 and 4352; or equivalent. Vocal literature by English, American, Italian, Scandinavian, Eastern European, Russian, Spanish, and Latin American composers; emphasis on style and period.

7270 Historical Perspectives of Voice (3) Development of vocal technique and pedagogical thought from the late 17th century to the present; definition of the bel canto style; historical schools of vocal training; examination of historic writings by Tosi, Mancini, Garcia, Marchesi, Venard, and other individuals of primary historical importance.

7271 Principles of Voice Production (3) Prereq.: COMD 4250 and 4353. Anatomy and physiology of the respiratory, phonatory, and articulatory systems used in the production of voice; anatomy of the vocal system; phonation; control of fundamental frequency and loudness; study of life-span changes of the voice and aging of the human voice.

7272 Comparative Vocal Pedagogy (2) Prereq.: MUS 7170 or equivalent. Techniques for teaching collegiate level applied voice; studio structure and management.

7500 Advanced Teaching Techniques (1-2) Prereq.: MUS 4769 and 4770; or equivalent. May be repeated for credit. A total of 3 sem. hrs. is applicable to the MM degree. Supervised teaching internship of instrumental and/or vocal instruction in groups and/or solo settings.

7501 Piano Pedagogy and Literature I (2) Prereq.: MUS 4763 and 4764; or equivalent. Piano methods and literature at the intermediate levels.

7502 Piano Pedagogy and Literature II (2) Prereq.: MUS 4763 and 4764; or equivalent. Piano methods and literature at the intermediate and advanced levels.

7521 Instrumental Accompanying (2) May be repeated for a max. of 4 sem. hrs. credit. Techniques and techniques of accompanying for instrumental genres.

7522 Vocal Accompanying (2) May be repeated for a max. of 4 sem. hrs. credit. Repertoire and techniques of accompanying for vocal genres.

7570 College Teaching in Music (3) History of music in higher education; current issues, problems, and techniques of college teaching in music; development of effective college-level teaching skills.

7600 Sources of Music Study & Research (3) Focuses on finding, evaluating, using, and citing materials in print, online, and recorded source for music research.

7700 Survey of Analytical Techniques (3) Prereq.: MUS 3703 and 3704 or passing of the Music Theory Diagnostic Examination. Survey of analytical tools and concepts for common practice and post-tonal practice.

7701 Pedagogy of Music Theory (3) Prereq.: MUS 3703 and 3704 or successful passing of the Music Theory Diagnostic Examination. Techniques for teaching undergraduate music theory and aural skills courses; comparisons of principal philosophies and textbooks.

7703 Contemporary Musical Practices (3) 6 sem. hrs. applicable to the MM degree when topics vary. Additional sem. hrs. applicable to the DMA degree when topics vary. Compositional trends in contemporary music; discussion of books on composition; analysis of major compositions.

7704 Studies in Schenkerian Analysis (3) Prereq.: MUS 3703 and 3704 or successful passing of the Music Theory Diagnostic Examination. May be taken for a max. of 6 hrs. of credit when topics vary. Analytical study of specific composers, works, or styles.

7712 Advanced Modal Counterpoint (3) Prereq.: MUS 3703 and 3704 or successful passing of the Music Theory Diagnostic Examination. Writing exercises and composing works in two, three, and more voices in the style of Palestrina, Lassus, Victoria, and their contemporaries; analysis of representative compositions; survey of theoretical treatises of the time.

7714 Advanced Tonal Counterpoint (3) Prereq.: MUS 3703 and 3704 or successful passing of the Music Theory Diagnostic Examination. Writing exercises and composing works in three, four, and more voices in the style of J. S. Bach and his contemporaries; survey of representative compositions; survey of contemporary theoretical treatises.

7721 Survey of Choral Literature I (3) A survey of choral literature beginning with the Gregorian Chant and ending with the Baroque period of music, with emphasis on preparation for performance.

7722 Survey of Choral Literature II (3) A survey of choral literature beginning with the Classical period and ending with contemporary music for chorus, with emphasis on preparation for performance.

7723 Survey of Wind Literature I (2) A survey of chamber wind literature (6 to 20 performers) from the late Renaissance to the present.

7724 Survey of Wind Literature II (2) A survey of orchestral works, large wind ensemble, and large wind band literature (more than 20 performers) from the French Revolution to the present.

7725 Survey of Symphonic Literature I (2) A survey of orchestral works beginning with the Baroque period and ending with 20th century music for orchestra, with emphasis on preparation for performance.

7726 Survey of Symphonic Literature II (2) A survey of orchestral works beginning with the Baroque period and ending with 20th century music for orchestra, with emphasis on preparation for performance.

7731 History of Music Theory (3) Prereq.: MUS 3703, 3704, and 3710 or successful passing of the Music Theory Diagnostic Examinations. History of technical writings on music, ca. 500-1600; acoustics,
notes, and scales, intervals, tuning systems, modes, counterpoint, mensuration, musicological perspectives, speculative theory.

7742 History of Music Theory II (3) Prereq.: MUS 3703, 3704, and 3706 or successful passing of the Music History and Music History Diagnostic Examinations. Music theory from ca. 1600 to 1890: development of species counterpoint and figured bass theory, the rise of harmonic theory, and the historical context of 19th-century expansions of harmonic theory and formal analysis.

7745 Advanced Computer Music (3) Prereq.: MUS 4745, or consent of instructor. Advanced techniques in digital sound synthesis and composition; analysis/synthesis techniques, granular synthesis, physical modeling, interactive computer music performance, and composition using computers; survey of representative music from the genre.

7746 Graduate Seminar in Computer Music and Digital Media (3) Prereq.: MUS 7475 or consent of instructor. May be taken for a max. of 6 hrs. of credit when topics vary. Focused study of various topics in computer music such as development of new computer music systems, interactive computer music, multimedia composition, alternative human-computer interfaces for music, sound installations, and advanced analysis of computer music.

7747 History of Electroacoustic Music (3) The history of electroacoustic music; developments in technology, aesthetics, and usage. Emphasis on survey and analysis of representative music from the genre.

7749, 7750 Special Studies in Piano Literature (1,3) Each course may be taken for a max. of 6 hrs. of credit when topics vary. Total amount of credit applicable to MM degree limited by student's advisory committee. Works of certain composers for the keyboard, such as selected concertos.

7751 Ancient and Medieval Music (3) Prereq.: MUS 3710 or successful passing of the Music History Diagnostic Examination. History of music from ancient Greeks and Hebrews through the 14th century.

7752 Music of the Renaissance (3) Prereq.: MUS 3710 or successful passing of the Music History Diagnostic Exam. Styles of symphonic music, with emphasis on score analysis and performance practices.

7753 Music in the Baroque Era (3) Prereq.: MUS 3710 or successful passing of the Music History Diagnostic Examination.

7754 Music in the Classical Era (3) Prereq.: MUS 3710 or successful passing of the Music History Diagnostic Examination.

7755 Music in the Romantic Era (3) Prereq.: MUS 3710 or successful passing of the Music History Diagnostic Examination.

7756 Music in the Modern Era (3) Prereq.: MUS 3710 or successful passing of the Music History Diagnostic Examination.

7757 American Music (3) Prereq.: MUS 3710 or successful passing of the Music History Diagnostic Examination. Styles of symphonic music, with emphasis on score analysis and performance practices.

7758, 7759 Repertoire (3,3) Prereq.: MUS 4737, 4758 or equiv. Each course may be taken twice; once for the MM and once for the DMA or Ph.D. Independent study of the techniques required to conduct all styles of symphonic music, with emphasis on score analysis and performance practices.

7774, 7776 Advanced Orchestral Conducting (3,3) Prereq.: MUS 4744 or consent of instructor. May be taken once for the MM, and once for the DMA or Ph.D. Independent study of the techniques required to conduct all styles of symphonic music, with emphasis on score analysis and performance practices.

7777, 7778 Advanced Keyboard Literature I, II (3,3) Prereq.: MUS 4737, 4758 or equiv. Each course may be taken twice; once for the MM and once for the DMA. Genres and styles from earliest examples of keyboard literature through the most recent trends.

7797 Master’s Project (1-4) Pass/fail grading. Completion of a 45-minute oral presentation and short supporting paper on a pedagogical topic.

7798 Master’s Recital (1-3) Prereq.: MUS 4747 or equiv. Each course may be taken once for a max. of 3 sem. hrs. of credit.

7799 Advanced Coaching in Applied Music (2) May be repeated for credit. Max. amount of credit applicable to a degree is 4 sem. hrs.

7800 Introduction to Research in Music (3) Required of all doctoral students; recommended for master’s students who will write theses. Development of music research skills including knowledge of research resources and materials; use of library facilities; practice in a clear and logical writing style; and use of wide variety of methodologies and modes of inquiry.

7801 Psychology of Music (3) Physical and psychological bases of musical phenomena including physical properties of sound production, transmission, reception, and perception; affective, physiological, and cognitive responses to musical stimuli; and learning theories as related to musical development, ability, and preference.

7901 Composition (1-8) Individual instruction for graduate composition. Participation in the Composer's Forum is considered part of the course work and is, therefore, required. May be repeated for credit.

7902, 7903 Seminar in Music History (2,2-3) Prereq.: MUS 4737 or successful passing of the Music History Diagnostic Examination. Each course may be taken 3 times for credit when topics vary. Only 6 sem. hrs. applicable to the MM degree; only 12 additional sem. hrs. applicable to the Ph.D.; maximum for MM and Ph.D combined is 18 sem. hrs.

7905, 7906 Seminar in Music Education (2-6,2-6) Each course may be taken 3 times for credit when topics vary. Only 6 sem. hrs. applicable to the MMED degree; only 12 additional sem. hrs. applicable to the Ph.D.; maximum for MMED and Ph.D combined is 18 sem. hrs.

7921 Seminar in Music Theory (3) Prereq.: MUS 3703 and 3704 or successful passing of the Music Theory Diagnostic Examination. Each course may be taken once for the MM or twice for the DMA, maximum for MM and DMA combined is 18 sem. hrs.

7922, 7929 Seminar in Choral Repertoire (3) Each course may be taken once for the MM degree; only 6 additional sem. hrs. applicable to the DMA; maximum for MM and DMA combined is 18 sem. hrs.

7997 Individual Projects in Music (1-6) Prereq.: consent of departmental faculty concerned and dean of the School of Music. May be repeated for credit as follows: for master’s degree, 1 sem. hrs.; for doctoral degree, 6 sem. hrs.; beyond the master’s or a total of 9 sem. hrs. if both master’s and doctoral totals included.

7998 Special Topics in Music (2-3) May be taken for a max. of 9 hrs. of credit when topics vary. Advancement in individual subject areas of music.

8000 Thesis Research (1-12 per sem.) "S"/"U" grading.

8000 Dissertation Research (1-12 per sem.) "S"/"U" grading.

9001 Doctoral Solo Recital (1-3) May be repeated twice (max. of 6 sem. hrs. of credit). Students specializing in organ may repeat four times (max. of 12 sem. hrs. of credit).

9002 Second Doctoral Solo Recital (1-3) Does not fulfill final project requirement for DMA (MUS 9101).

9005 Concerto with Orchestra (1-2)

9006 Major Solo Part in an Oratorio or Cantata (1-4)

9007 Doctor of Musical Arts Role in Opera (1-3) May not be taken concurrently with MUS 4241. May be repeated for credit.

9008 Doctor of Musical Arts Chamber Music Recital (2) May be repeated for credit.

9009 Research and Monograph (1-12) S/U grading. For DMA candidates in performance only. May be repeated until monograph is completed.


9021 Seminar in Music Theory (3) For doctoral candidates only. May be taken for a max. of 6 hrs. of credit.

9750, 9759 Repertoire (3,3) Each course may be taken for a max. of 9 hrs. of credit; however, amount of credit applicable to a degree is determined by student's advisory committee.

9901 Doctoral Seminar in Musical Composition (1-3) May be repeated for credit. Max. amount of credit applicable to a degree is 12 sem. hrs. Participation in the Composer's Forum is part of course work and is, therefore, required. May be repeated for credit.

9925 to 9937 (Series) Seminar in Literature and Style in Performance (3 each) Historical developments of the various performance areas with concentration on their literature, important pedagogical principles, and stylistic problems related to each medium. To be used as follows: 9925, 9926 Voice

9929, 9930 Organ

9931, 9932 Strings

9935, 9936 Brass

9937 Percussion

MUSIC EDUCATION • MUED

1000 Foundations of Music Education (3) Credit will not be given for both this course and EDCI 1000. 2 hrs. lecture; 1 hr. lab. Course is for music majors only. Field observations in music at the elementary and secondary levels; historical and philosophical foundations, introduction to instructional strategies, professional organizations, legal aspects, and national standards of music education.

1709 Orientation to Music Education (1) Course may be repeated for a max. of 2 sem. hrs. of credit. An overview of the music education profession; orientation to collegiate music study; and initial field experiences in the schools.

2045 Teaching Music in Diverse Settings (3) Prereq.: MUED 1000. Credit will not be given for both this course and EDCI 2045. Site-based teaching practice. 2 hrs. lecture; 2 hrs. teaching practice. Field observations in music teaching and learning; management of music teaching and learning; preparation and management of music lessons; and field experiences in the schools.

3170 Principles of Teaching Elementary School Music (3) Prereq.: MUED 1000 and MUED 2045. Materials, methods, and current trends in music teaching at the elementary level; curriculum development.


3630 Student Teaching in Music (12) Prereq.: see “Requirements for Student Teaching” in the School of Music section of this catalog. 1 hr. lecture; 30 hrs. lab. Pass/fail grading.

NUCLEAR SCIENCE • NS

General education courses are marked with stars (*)

3411 Fundamentals of Nuclear Radiation Science (3) F.S. Prereq.: one sem. of MATH 1021 or equivalent and one sem. of chemistry or physics; 2 hrs. lecture; 3 hrs. lab. Nuclear structure, transmutation processes, energy interactions of radiation with matter; radiation detection and measurement.

4140 Radiolodides (3) F Prereq.: NS 4101 or equivalent. 2 hrs. lecture; 3 hrs. lab. Also offered as ENVS 4141. Radio tracer studies, tracer radiations, and radiation effects in both natural and laboratory-contained communities of organisms.

4352 Environmental Radiological Evaluation and Remediation (3) S Prereq.: NS 4111 or permission of instructor. Methods of surveying and sampling to determine radiological concentrations; federal and state regulations.
governing remediation criteria; models and computer codes used to estimate dose; remediation planning and implementation.

4535 Environmental Radiological Evaluation and Remediation Laboratory (3) S Prereq.: credit for or concurrent enrollment in NS 4522; Laboratory supplement to NS 4522. Sampling and analytical techniques used to measure radiocnides in the environment.

4572 History and Design (3) F S Prereq.: two semesters of physics and an introductory course in computer programming. Characteristics of radioactive materials, neutron interactions, the fusion process; static criticality, time-dependent behavior of cores, and design of nuclear power reactors.

4566 Nuclear Reactor Systems (3) F S Prereq.: NS 4522 or equivalent. Elementary concepts of reactor systems and nuclear fuels, isotopes, separation, mechanical and thermal design, selection of materials, and environmental impact of nuclear facilities.

4570 Nuclear Facility Safety (3) S Prereq.: PHYS 2102 or equivalent. Safety analysis of facilities that utilize radiation sources including hospitals and industrial sites; accident analysis and design criteria, use of dose and dose commitments; and engineered safeguards.

7115 N-15 Stable Tracer Methodology for Biological Sciences (1) F Prereq.: consent of instructor. 1 hr. lecture.

7520 Nuclear Reactor Materials (3) S Principles governing structure and properties of materials used in nuclear reactors; radiation effects, problems in selection, fabrication, and usage.

7525 Nuclear Engineering Laboratory (2) S Prereq.: credit or registration in NS 7527. 6 hrs. lab. Operation of nuclear counting and spectroscopy systems; measurements of neutron behavior in multiplying and non-multiplying media; design of experiments using data from nuclear physics measurements.

7527, 7528 Reactor Engineering (3,3) F,S S Prereq.: NS 7527. Major hydrologic and elemental cycles on the planet, global change and processes, energy balance, including problems associated with climate, population, and resources.

4001 Special Topics in Oceanography and Coastal Sciences (1-6) F,S,Su. By consent of instructor. 3 hrs. of physics. 1 hr. lecture; 6 hrs. lab and field work. 1 hr. lecture.

4005 Introduction to Waves and Beaches (3) S Prereq.: NS 7527. Introduction to the physical and geophysical processes that shape the coastal zone; various coastal environment types; and coastal processes and human interaction with these environments.

4090 Marine and Environmental Microbiology (3) F-O Prereq.: BIOL 2051 or equivalent. Structure and function of microorganisms; the role these microbes play in cycling organic and inorganic compounds; interactions of pathogenic bacteria and their transmission in the marine environment; microbial activity in biogeochemical cycles extreme environments and organic pollutants; indicator species; pathogenic bacteria and their transmission in the environment and mitigation of these effects.

4095 Inland Hydrology (4) S Prereq.: introductory science course. Four weeks at Louisiana Universities Marine Consortium coastal laboratory. Physical, chemical, biological, and geological processes in the oceans and coastal environments; their interactions; interrelationships of man and the marine environment.

3103 Global Environmental Cycles (3) S Prereq.: CHEM 1201 and MATH 1550, credit or registration in BIOL 1201. Major hydrologic and elemental cycles on the planet, global change and processes, energy balance, including problems associated with climate, population, and resources.

4052 Phyiology (4) S Prereq.: BIOL 1202 and 1209. 2 hrs. lecture; 2 hrs. lab. See BIOL 4052.

4900 Marine and Environmental Microbiology (3) F Prereq.: BIOL 2101 or equivalent. Also offered as BIOL 4049. Characteristic biology of estuaries, open ocean, and terrestrial microorganisms and the role these microbes play in cycling organic and inorganic compounds; microbial activity in biogeochemical cycles extreme environments and organic pollutants; pathogen species and the role these bacteria and their transmission in public health and mitigation.

4965 Marine Field Ecology (4) S Prereq.: general biology, invertebrate or vertebrate zoology, introductory chemistry, physics, and consent of instructor. Five weeks at Louisiana Universities Marine Consortium coastal laboratory. Relationships of marine and estuarine organisms to environmental factors; interactions of biological, ecological processes of energy and materials flow; field studies of ecosystems and landscapes of coastal Louisiana.

4126 Chemical Oceanography (3) S Prereq.: GEOL 4081. Oceanographic chemistry and biogeochemistry of the upper water column, oceanic mass balance, and sedimentation processes.

4166 Deltaic Processes and Products (3) S Prereq.: consent of instructor. River delta formation and associated sedimentary processes with special emphasis on the Mississippi River delta and adjoining shelf-edge and slope regions; comparisons of the Mississippi delta with other modern deltas.

4165 Environmental Chemistry of Wetlands (3) F Prereq.: CHEM 2060 or equivalent. Transformations of pollutants and toxic substances that affect the solubility, bioavailability, fixation, and degradation of organic and inorganic substances in wetlands; emphasis on the physical and physicochemical properties of wetlands that enhance these degradation and fixation.

4167 Wetland Delineation and Functional Assessment (3) F Prereq.: one semester course in soil, biology or ecology or consent of instructor. 2 hrs. lecture; 3 hrs. lab. Delineation of jurisdictional wetlands covering wetland soil classification, soil taxonomy, hydrology, hydrophytic plant communities, wetland hydrology; use and interpretation of federal and state wetland delineation procedures; field measurement of critical hydrologic and functional features; functional assessment methodologies in wetland evaluation and mitigation.

4168 Physical Oceanography (3) S Prereq.: CE 2200 and graduate standing or consent of instructor. Physics of the ocean; with emphasis on dynamical problems; physical properties of sea water, major ocean basins, and their connections, flow dynamics in the earth's rotating coordinate system, water waves, general circulation.

4210 Geological Oceanography (3) F Prereq.: two semester introductory courses in geology in deltaic processes of marine geology; sediments and sedimentation in the marine environment from the near shore zone to the abyssal plain; geophysical factors; water level changes; coastal processes and their interaction with man's impact on Louisi-ana's coastal plant communities.

4327 Estuarine Ecology (4) F Prereq.: graduate standing or consent of instructor. Preparation of field trips; synthesis and presentation of data collected on field trips to coastal areas. Ecological processes in estuaries, shallow coastal waters, and associated coastal environments; training and field use of equipment required for estuarine research.

4410 Ecosystem Modeling and Analysis (3) F Prereq.: BIOL 1552 and knowledge of a programming language. Mathematical description and analysis of ecological systems; emphasis on systems approach using computer models for quantifying and understanding the interdependence and dynamics in ecosystems; linear flow models, dynamic nonlinear models, optimization models, stochastic methods, and complex adaptive systems. Model validation, sensitivity analysis, and parameter optimization.

4465 Coastal Zone Management (1-4) S-O Also offered as LAW 5803. Nonlaw students encouraged to participate. Written and oral presentations required; special projects relating to the primary field of interest permitted.

Resources allocation and environmental quality issues in coastal and estuarine zones of the U.S.; analyzing alternative solutions to topical coastal zone issues; preparing legal devices for meeting the issues; such as legislation, regulation, and coastal planning provision. 4 hrs. of physics. 1 hr. lecture; 6 hrs. lab and field work. 3 hrs. of physics. 1 hr. lecture; 6 hrs. lab and field work. Theory and application of acoustics in the study and assessment of living marine resources.

OCEANOGRAPHY AND COASTAL SCIENCES • OCS

General education courses are marked with stars (☆).☆

★ 1005 Introduction to Oceanography (3) An honors course. 3 hrs. of physics. 1 hr. lecture; 6 hrs. lab. Does not satisfy major field requirement unless student in natural science curricula. Also offered as BIOL 298 at Southern University.

★ 1405 Introduction to Oceanography (3) An honors course. 3 hrs. of physics. 1 hr. lecture; 6 hrs. lab. Does not satisfy major field requirement unless student in natural science curricula. Also offered as BIOL 298 at Southern University.
4550 Biological Oceanography (3) S-O Prereq.: two-semester course in marine science above the 2000 level, or graduate student status in science department.
Participation in oceanographic cruise is generally required. Biological oceanography of open oceans, continental shelves, and large river deltas.

4560 Wetland Loss, Restoration, and Management (3) Prereq.: two-course sequence in science above the 2000 level. Participation in local wetlands and management agencies is required. Coastal wetland loss, restoration, and management; wetland values, use, and potential impacts.

4666 Coastal Field Geology (4) Su only.
Potential management issues.

4550 Biological Oceanography (3) S-O

7001 Advanced Topics in Marine Sciences (1-6) V May be taken for a max. of 9 hrs. sem. hrs. when topics vary.

7101 The Concepts of the Ecosystem (3) S-O Prereq.: one-semester course in microbiology and consent of instructor. Structure, function, diversity, and succession of ecosystems viewed as a whole and as applied to major biomes.

720 Marine Microbial Ecology (3) S-O Prereq.: one-semester course in microbiology and consent of instructor. Also offered as BIOL 7022. Microbial ecosystems and population dynamics; responses of marine microorganisms to physicochemical factors and environmental alterations; microbial interactions; nutrient regeneration processes; nutritional requirements and micro-geometries; modeling and systems analysis in marine microbial ecology.

7284 Numerical Modeling of Ocean Circulation (3) V Prereq.: OCS 4170 and ME 4563 or equivalent. Numerical modeling of ocean dynamics; application of atmospheric and ocean circulation schemes; review of state-of-art models.

7101 Toxicology of Aquatic Environments (3) See ENVS 7121.

7102 Concepts in Marine Ecosystems (3) Prereq.: ENVS 7100 and 7120. Systems viewed as a whole and as applied to major biomes. Structure, function, diversity, and succession of ecosystems viewed as a whole and as applied to major biomes. Population dynamics; response of marine microorganisms to physicochemical factors and environmental alterations; microbial interactions; nutrient regeneration processes; nutritional requirements and micro-geometries; modeling and systems analysis in marine microbial ecology.

7284 Numerical Modeling of Ocean Circulation (3) V Prereq.: OCS 4170 and ME 4563 or equivalent. Numerical modeling of ocean dynamics; application of atmospheric and ocean circulation schemes; review of state-of-art models.

7101 Toxicology of Aquatic Environments (3) See ENVS 7121.

7102 Concepts in Marine Ecosystems (3) Prereq.: ENVS 7100 and 7120. Systems viewed as a whole and as applied to major biomes. Structure, function, diversity, and succession of ecosystems viewed as a whole and as applied to major biomes. Population dynamics; response of marine microorganisms to physicochemical factors and environmental alterations; microbial interactions; nutrient regeneration processes; nutritional requirements and micro-geometries; modeling and systems analysis in marine microbial ecology.

7284 Numerical Modeling of Ocean Circulation (3) V Prereq.: OCS 4170 and ME 4563 or equivalent. Numerical modeling of ocean dynamics; application of atmospheric and ocean circulation schemes; review of state-of-art models.

7101 Toxicology of Aquatic Environments (3) See ENVS 7121.

7102 Concepts in Marine Ecosystems (3) Prereq.: ENVS 7100 and 7120. Systems viewed as a whole and as applied to major biomes. Structure, function, diversity, and succession of ecosystems viewed as a whole and as applied to major biomes. Population dynamics; response of marine microorganisms to physicochemical factors and environmental alterations; microbial interactions; nutrient regeneration processes; nutritional requirements and micro-geometries; modeling and systems analysis in marine microbial ecology.
organ systems, using electron and light microscopy; pathological and biochemical aspects of diseases in various animal species; direct student participation in morphological description and literature review.

7509 Surgical Pathology (1-2) V Prereq.: DVM degree or equivalent and consent of instructor. May be taken for a max. of 6 hrs. credit when topics vary. One or more phases of current surgical pathology. May be taken for a max. of 6 hrs. credit when topics vary. One or more phases of current surgical pathology.

7515 Veterinary Dermatopathology (2) V Prereq.: DVM degree or equivalent and PBS 7501. 1 hr. lecture; 1 hr. lab. Comparative gross, microscopic, immunocommune, and pathogenic study of naturally occurring neoplastic disease in animals.

7516 Advanced Diagnostic Pathology of Animals (1-2) V Prereq.: DVM degree or equivalent. May be taken for a max. of 6 hrs. credit when topics vary. Necropsy of various animals submitted for postmortem examination: gross and histologic microscopy; and immunohistochemistry; correlation and synthesis of clinical information, anatomical finding, and other ancillary laboratory results, for an accurate determination of disease diagnosis and pathogenesis.

7525 Veterinary Clinical Pathology (1-2) V Prereq.: DVM degree or equivalent. May be taken for a max. of 6 hrs. credit when topics vary. Necropsy of various animals submitted for postmortem examination: gross and histologic microscopy; and immunohistochemistry; correlation and synthesis of clinical information, anatomical finding, and other ancillary laboratory results, for an accurate determination of disease diagnosis and pathogenesis.

7530, 7531, 7532 Laboratory Animal Science I, II, III (2, 2, 2) F,S,Su Prereq.: DVM degree or equivalent and consent of instructor. Biology, husbandry, diseases, medical care, regulations, and experimental uses of the commonly used laboratory animal species; courses need not be taken in sequence.

PETROLEUM ENGINEERING • PETE

1010 Introduction to Petroleum Engineering (2) F Scientific bases of petroleum geology and chemistry, exploitation, drilling, production, reservoir engineering, and refining.

2031 Reservoir Rock Properties (3) F Prereq.: MATH 1552 and credit or registration in PHYS 2102. Physical and chemical properties of petroleum reservoir rocks related to the production of oil and gas.

2032 Reservoir Fluid Properties (3) F Prereq.: credit or registration in PHYS 2102. Physical and chemical properties of petroleum reservoir fluids related to production of oil and gas.

2034 Rock and Fluid Properties Laboratory (1) S Prereq.: PETE 2031 and 2032, and registration in the other course. 3 hrs. lab.

2060 Computational Methods in Petroleum Engineering (2) F Prereq.: MATH 1552. 1 hr. lecture; 1 hr. lab. Computational methods in infinite series, fundamentals of numerical methods, and petroleum engineering commercial software.

2081 Communicating Petroleum Engineering Technology (3) F Prereq.: ENGL 2000, junior standing in the College of Engineering, and permission of department. Communication skills including technical writing, speaking, group management, and computer usage applied to petroleum engineering topics.

3025 Economic Aspects of Petroleum Production (3) F Prereq.: PETE 2031. Mineral ownership and leasing in Louisiana; production decline curve analysis; profitability analysis; risk analysis; evaluation of petroleum properties.

3036 Well Logging (3) F Prereq.: EE 2930, PETE 2034, and consent of instructor. Interpretation and logging for the detection and evaluation of hydrocarbons and geologic formations; evaluation by means of electric, acoustic, and radioactive well logs.

3037 Petroleum Field Operations (3) F Prereq.: permission of instructor. Petroleum field operations; field operations and surface production facilities; field operations and surface production facilities; field operations and surface production facilities; field operations and surface production facilities; field operations and surface production facilities.

3053 Petroleum Engineering Aspects of Subsurface Geology (3) S Prereq.: PETE 3025 and 3036, or senior status in geology and/or geophysics. Petroleum engineering geology; interpretation of subsurface data; reservoir mapping; determination of reservoir volume.

3990 Independent Research (1-2) F,S,Su May be taken for a max. of Number of hours of outline of proposed work; and charge of faculty supervisor must be stated at time of registration. Individual research or engineering studies with faculty supervision.

4045 Drilling Engineering (3) F Prereq.: CE 2200 and credit or registration CE 3400. Drilling process, including equipment and performance; well pressure control and buoyancy; rheology, circulation pressure, and optimum hydraulics of drilling fluids; oil well casing design and cementing techniques.

4046 Well Design-Production (3) S Prereq.: PETE 4045. Analysis and design of well production systems; rod pump, gas lift.

4050 Reservoir Dynamics (3) Prereq.: PETE 2032 and MATH 2065. Fundamentals of reservoir fluid mechanics and application to single-well performance; well testing, gas reservoir engineering; waterflooding fundamentals.

4051 Reservoir and Well Management (3) F Prereq.: PETE 3035. Quantitative study and behavior prediction of volumetric and water-drive reservoir systems by systems balance.

4056 Numerical Simulation of Improved Recovery Processes (3) S Prereq.: MATH 2065, and PETE 4050 and 4051. Use of computer simulation to predict oil and gas reservoir performance and to design enhanced recovery processes.

4058 Reservoir Mechanics Laboratory (1) S Prereq.: PETE 4051. 3 hrs. lab. Simulation of reservoirs with physical models of fluid flow in porous media.

4059 Drilling Fluids Laboratory (1) F Prereq.: credit or registration in PETE 4045. 3 hrs. lab. Accompanies PETE 4045.

4060 Prevention of Oil and Gas Well Blowouts (1) S Prereq.: credit or registration in PETE 4045. 3 hrs. lab. Causes and detection of well kicks and the proper handling of these kicks to prevent well uncontrolled flow (blowout) from the well; methods and techniques currently used in the oil and gas industry.

4053 Advanced Reservoir Recovery of Petroleum (3) V Prereq.: PETE 4050 and 4051. Reservoir mechanics and application of immiscible fluids displacement methods to secondary recovery of oil.

4055 Surface Flow of Produced Fluids (3) V Prereq.: PETE 2032 and 2034. Operating principles and design criteria for equipment used in field processing of oil and gas, e.g., Leeds and Northrup line, gas dehydration units, gas sweetening units, cryogenic gasoline plants, separators, gas transmission and compression facilities.

4066 Well Design-Drilling (3) V Prereq.: PETE 4045. Design of drilling operations; bit selection and evaluation; mathematical modeling of bit wear and penetration rate; determination of formation pore pressure and fracture pressure; selection of well casing and caving setting depths; directional drilling; special considerations for horizontal wells.

4057 Environmental Control in Petroleum Engineering (3) V Prereq.: PETE 4045, 4051, and 4059. Environmental impact and pollution mechanisms in petroleum engineering technologies; basic concepts regarding oilfield waste generation, toxicity, and environmental regulatory process; synergy between process productivity and environmental performance.

4080 Formation Analysis (3) V Prereq.: PETE 3036. Use of different formation evaluation techniques to provide a comprehensive description of reservoir content productivity; drilling fluid and cuttings analysis; core analysis; formation tester; drillstem test; analysis of openhole logs by overlay, crossplot, and digital evaluation methods.

4089 Natural Gas Engineering (3) V Prereq.: PETE 4051. Application of production engineering principles and practices to gas and gas-condensate reservoirs; prediction of gas well performance; management of all types of gas reservoirs; underground gas storage.

4241 Special Topics in Petroleum Engineering Design (3) V Prereq.: senior or graduate standing and permission of instructor. May be taken for a max. of 6 hrs. credit when topics vary. One or more phases of current petroleum engineering design.

4253 Utilization and Appraisal of Petroleum Properties (3) V Prereq.: PETE 3025, 3035, and 4051. Technical aspects of utilization and evaluation of petroleum properties subject to joint management.

4998 Senior Project I (1) Prereq.: Senior status in the College of Engineering. Written and oral presentation required. First phase of theoretical and/or experimental investigations of an approved topic in petroleum engineering.

4999 Senior Project II (1) S Prereq.: PETE 4998 and senior status in the College of Engineering. Written and oral presentation required. Theoretical and/or experimental investigation, including a literature review, of an approved topic in petroleum engineering.

7195 Reservoir Characterization (3) See GEOI 7195.

7201 Fluid Flow in Porous Media (3) V Prereq.: PETE 4052 and 4056, or equivalent. General hydrodynamic principles and gas flow, for flow of fluids through porous media; two-dimensional flow problems and potential theory methods; gravity flow systems; two-fluid systems; systems of non-linear equations; and experimental investigation of streamline tracking methods.

7202 Advanced Well Testing Theory and Analysis (3) V Prereq.: PETE 4051 and 4052 or equivalent. Unsteady-state flowing fluids reservoirs; reservoir performance, fluid flow analysis, and optimization of theory to pressure build-up analysis, well interference testing, pulse testing, pressure draw down analysis, drill stem testing, and water influx analysis.


7221 Drilling Data Acquisition and Processing (3) V Prereq.: PETE 4059, 4080, and 4088 or equivalent. Mud and surface drilling data acquisition and processing. Downhole data acquisition with drilling stopped and while drilling. Data processing: formation evaluation and data analysis.

7222 Downhole Production Fluid Dynamics (3) V Prereq.: PETE 4057 and 4058. Wellbore sidewall core and fluid recovery: data analysis; production and completion techniques; thermodynamic properties of fluids; downhole production data acquisition and interpretation; cased hole formation evaluation.

7231 Nonthermal Methods of Enhanced Oil Recovery (3) V Prereq.: Theory and field practice related to miscible displacement processes and chemical and polymer flooding techniques.

7232 Thermal Methods of Oil Recovery (3) V Prereq.: Heat transfer and heat generation applied to the performance prediction of oil recovery by such field processes as forced and reverse in situ combustion, continuous and cyclic hot fluid injection, and production well heating.

7241, 7242 Selected Topics in Advanced Petroleum Engineering (3) V May be repeated for credit when topic varies. A total of 12 sem. hrs. of credit may be earned in these two courses. 3032 Special Topics in Petroleum Engineering (1-4) F,S,Su May be taken for a max. of 6 sem. hrs. of credit. Individual study and research.

7280 Mathematical Simulation of Petroleum Reservoir Performance (3) V Prereq.: PETE 4058 or equivalent; and PETE 4051 and 4052. Development and application of mathematical models for predicting petroleum reservoir performance, including multiphase fluid flow in three dimensions.

7285 Statistical Reservoir Modeling (3) Prereq.: probability theory. V Use of statistics and the principles of model uncertainty; spatially variable rock properties for subsurface reservoirs; distributions, transforms, Bayesian updating, variograms/covarograms, estimation and correlation with various kriging methods, conditional simulation.
PHILOSOPHY • PHIL

General education courses are marked with stars (★).

★ 1000 Introduction to Philosophy (3) Major works on such themes as appearance and reality, human nature, nature of knowledge, relation of mind and body, right and good, existence of God, and freedom and determinism.

★ 1001 Honors: Introduction to Philosophy (3) Prereq.: ENGL 1002 or equivalent. Same as PHIL 1000, with a special honors emphasis for qualified students. Credit will not be given for both this course and PHIL 1000.

★ 1021 Introduction Logic (3) No special background presupposed. Formal and informal reasoning; introduction to propositional logic; formal and informal fallacies; scientific reasoning.

1900 Contemporary Moral Problems (3) Philosophical study of contemporary moral problems such as capital punishment, abortion, sex equality, sexual liberation, terrorism, war and nuclear arms, animal rights, world hunger, environmental ethics, and the morality of suicide.

★ 2010 Symbolic Logic I (3) Classical propositional and first-order predicate logic; syntax and semantics of formal languages; translation between formal languages and English; formal methods of proof.

2016 Ethics (3) Classical and recent theories of obligation and value, including works of philosophers such as Plato, Aristotle, Kant, Hume, and Nietzsche; topics including freedom, rights, justification of moral judgments.

★ 2023 Philosophy of Art (3) Philosophical theories of beauty, art, and art criticism.

★ 2024 Philosophy in Literature (3) Philosophical themes in world literature: fiction, poetry, drama, and autobiography.

2025 Bioethics (3) Defining health and disease; deciding on rights, duties, and obligations in the patient-physician relationship; genetic engineering; sex and reproductive rights, sexual identity, abortion, and the right to die; the meaning and morality of death; euthanasia and the dignity of death; allocation of medical resources, both large-scale and small-scale; experimentation with fetuses, children, prisoners, and animals; genetic testing, screening, and interference.

★ 2028 Philosophy of Religion (3) Same as REL 2028. Essence and meaning of religion as a pervasive phenomenon in human society; the person as a religious person; defining and determining death; euthanasia and the dignity of death; allocation of medical resources, both large-scale and small-scale; experimentation with fetuses, children, prisoners, and animals; genetic testing, screening, and interference.

★ 2030 Philosophy of Religion (3) Same as REL 2028. Essence and meaning of religion as a pervasive phenomenon in human society; the person as a religious person; defining and determining death; euthanasia and the dignity of death; allocation of medical resources, both large-scale and small-scale; experimentation with fetuses, children, prisoners, and animals; genetic testing, screening, and interference.

★ 2031 Philosophy of Religion (3) Same as REL 2028. Essence and meaning of religion as a pervasive phenomenon in human society; the person as a religious person; defining and determining death; euthanasia and the dignity of death; allocation of medical resources, both large-scale and small-scale; experimentation with fetuses, children, prisoners, and animals; genetic testing, screening, and interference.

★ 2032 Special Topics in Philosophy (1-3) May be taken twice for credit when topics vary.

3052 Moral Philosophy (3) May be taken twice when topics vary. Topics in ethics and meta-ethics: egoism, consequentialism, relativism, virtue ethics, values, ethics and religion; naturalistic fallacy, truth and justification, realism and objectivity, motivation and practical reasoning, autonomy, and game theory.

3090 Friedrich Nietzsche (3) See GERM 3090.

3110 The Philosophy of Socrates (3) Early dialogues of Plato: Socrates on pleasure, friendship, virtue, justice, courage, temperance, wisdom, and happiness; on knowing the better and following the worse; on reason and inspiration; Socratic irony.

3350 Introduction to Epistemology (3) Survey of central issues in the theory of knowledge: knowledge as justified true belief; the Gettier problem; induction as a source of justification; a priori knowledge; fallibilist vs. infallibilist and internalist vs. externalist conceptions of justification; structure of justification.

4002 Philosophy of Film (3) Topics of film.

4003 Contemporary French Philosophy (3) Major contemporary French philosophers, including Bergson, Sartre, Merleau-Ponty, De Beauvoir, Levinas, Derrida, Foucault, Nancy Ricœur, Marion, Janicaud; themes such as the rethinking of critical theory, Marxism, and political thought; intellectual movements such as structuralism and post-structuralism, phenomenology, hermeneutics and deconstruction, feminism and psychoanalysis.

4010 Symbolic Logic II (3) Prereq.: PHIL 2010 or consent of instructor. Syntax and basic model theory of classical first-order logic; soundness and completeness.

4101 Topics in Advanced Logic (3) Prereq.: PHIL 4010 or consent of instructor. Also offered as LING 4011. Topics may include advanced metaphysics of symbolic languages, intentional logics, and Montague grammar.

4105 Philosophy of Male and Female (3) Philosophical examination of the concepts of human nature that underlie a variety of modern discourses about women and femininity.

4908 Politics and Ethics (3) See POLI 4908.

4786 Selected Topics (3) May be taken for a max. of 6 sem. hrs. when topics vary.

4914 Philosophy of Language (3) Prereq.: one logic course or consent of instructor. Also offered as LING 4914. Various theories of meaning, their implications and presuppositions, and their relevance to issues in such areas as theory of perception, theory of truth, metaphysics, ethics, philosophy of mind and action.

4920 Presocratic Philosophy (3) Prereq.: PHIL 2013 or equivalent. Study of the major Presocratic Philosophers from Thales to Heraclitus. Also offered as LING 4920. Prereq. for PHIL 4939. Study of his works, such as, Either/Or, The Sickness Unto Death, Fear and Trembling, Concluding Unscientific Postscript, Stages on Life’s Way, and The Present Age.

4908 Aesthetics (3) Meaning and truth in the arts; artistic intuition and aesthetic experience.

4911 Philosophy of Mind (3) Prereq.: PHIL 2013 and/or 2035; or equivalent. Recent philosophical treatments of human nature; the mind-body problem, identity of the person in time, the person as a being and volitional, and relation of the person to the world.

4924 Topics in Meta-Ethics (3) Prereq.: two courses in philosophy or consent of instructor. May be taken for a max. of 6 sem. hrs. of credit when topics vary. Naturalistic fallacy, truth and meaning, realism an objectivity, motivation and practical reasoning, autonomy, and justification of ethical theory.

4930 Ethics (3) Prereq.: two courses in philosophy or consent of instructor. May be taken for a max. of 6 sem. hrs. of credit when topics vary. Naturalistic fallacy, truth and meaning, realism an objectivity, motivation and practical reasoning, autonomy, and justification of ethical theory.

4931 Descartes, Spinoza, and Leibniz (3) Prereq.: 6 hrs. of philosophy or consent of instructor. 17th century rationalism, with emphasis on epistemology and metaphysics.

4932 Locke, Berkeley, Hume (3) Language, epistemology, ontology, self, God, causation, and idealism in the writings of these British empiricists.

4933 Kant (3) Prereq.: PHIL 2035 or equivalent. Basic topics and arguments of Kant’s Critique of Pure Reason.

4936 19th Century Philosophy (3) Prereq.: PHIL 2013 and/or 2035; or equivalent. 19th century philosophy, with emphasis on German thought; readings in Fichte, Hegel, Marx, Nietzsche, Bergson, and others.

4938 Philosophical Thought in America (3) Late 19th and early 20th centuries; topics from such philosophers as Peirce, James, Royce, Dewey, Santayana, Ward, and Mead.

4939 Kierkegaard (3) Also offered as REL 4939; Study of his works, such as, Either/Or, The Sickness Unto Death, Fear and Trembling, Concluding Unscientific Postscript, Stages on Life’s Way, and The Present Age.

4941 Philosophy of Mind (3) Prereq.: PHIL 2013 and/or 2035; or equivalent. Recent philosophical treatments of human nature; the mind-body problem, identity of the person in time, the person as a being and volitional, and relation of the person to the world.

4942 Topics in Meta-Ethics (3) Prereq.: two courses in philosophy or consent of instructor. May be taken for a max. of 6 sem. hrs. of credit when topics vary. Naturalistic fallacy, truth and meaning, realism an objectivity, motivation and practical reasoning, autonomy, and justification of ethical theory.

4943 Ethics (3) Prereq.: two courses in philosophy or consent of instructor. May be taken for a max. of 6 sem. hrs. of credit when topics vary. Naturalistic fallacy, truth and meaning, realism an objectivity, motivation and practical reasoning, autonomy, and justification of ethical theory.

4944 Philosophy of Religion (3) Prereq.: two courses in philosophy and/or religious studies. Also offered as REL 4944. Major themes and works in philosophical theology.

4950 Political Philosophy (3) Prereq.: PHIL 1000 or 2020 or equivalent. Freedom, obligation, authority, justice, law, the state, and revolution.

4956 Philosophy of Law (3) Moral issues in foundations of law and legal authorities; justice, law, social contract theories; principles of punishment; legal liability; moral legislation; Good Samaritan laws; moral basis of contract law.

4961 Phenomenology (3) Prereq.: PHIL 2015 or 4916 or equivalent. Contemporary phenomenology; reading in Husserl.

4964 Advanced Epistemology (3) Prereq.: PHIL 1950 or consent of instructor. Topics may include naturalized epistemology, internalism vs. externalism about justification; a priori knowledge; justification and truth; skepticism, Bayesian approaches to justification, contextualist theories of knowledge, and the possibility of non-inferential justification.

4951 Philosophy of Science (3) Prereq.: consent of instructor. Philosophical issues related to concept formation and theory construction in the natural, behavioral, and social sciences.

4952 Topics in Metaphysics (3) May be taken for a max. of 6 sem. hrs. of credit when topics vary. Topics include ontology, modality, universals, truth, causation, reductionism, identity (physical and personal), realism, and the meaning of life.

4953 Contemporary Analytical Philosophy (3) Prereq.: one logic course and either PHIL 2035 or 4933. Topics from leading philosophers in contemporary movements as logical empiricism, formalism, and ordinary language analysis, including Moore, Russell, Wittgenstein, Carnap, Goodman, Ryle, Strawson, and Quine.

4954 Recent Speculative Philosophy (3) Prereq.: two other philosophy courses or consent of instructor. Theories of being and knowing in recent absolute idealism, process philosophy, and phenomenological existentialism.

4957 Kant’s Moral Philosophy (3) Study of selected Kant’s works in moral philosophy such as, Groundwork of the Metaphysic of Morals, Metaphysics of Morals.
PHYSICAL SCIENCE • PHSC

General education courses are marked with stars (★).

★ 1001 Physical Science (3) Prereq.: MATH 1021. Credit will not be given for both this course and any other college-level physics course. First half of a two-semester survey of the natural sciences; topics in the first semester are taken primarily from the field of physics.

★ 1002 Physical Science (3) Prereq.: PHYS 1001. Credit will not be given for both this course and any other college-level astronomy course. Second half of a two-semester survey course in the physical sciences; topics in the second semester are taken primarily from the fields of astronomy, chemistry, and geology.

★ 1021 Physical Science with Laboratory (3) F, S Prereq.: MATH 1021 or 1029. Credit will not be given for this course and PHSC 1001. 2 hrs. lecture; 2 hrs. lab.
Exposition of physical science concepts through laboratory investigations; topics such as nature of matter, forces and motion, electricity and magnetism, and sound.

★ 1022 Physical Science with Laboratory (3) F, S Prereq.: MATH 1021 or 1029. Credit will not be given for this course and PHSC 1001. 2 hrs. lecture; 2 hrs. lab.
Exposition of physical science concepts through laboratory investigations; topics such as changes in matter, light and color, and observational astronomy.

PHYSICS • PHYS

Prerequisites: All prerequisites in physics courses should be rigidly observed.
Corequisites: A student may not continue in a course after dropping a corequisite course prior to the last day of the midsemester examination period.

Of the 7000-level courses, those numbered in the 7200s, as well as 7333, 7363, 7383, 7398, and 7411 are offered every year; 7333 and 7373 every other year. All other courses are offered sporadically as interest demands and in order to provide a varied curriculum.

General education courses are marked with stars (★).

1100 Introduction to Physics (3) Prereq.: credit or registration in MATH 1550. Measurement, vectors, kinematics, Newton's laws of motion, wave motion, temperature, the electric field, DC circuits, and geometrical optics.

★ 1201 ★ 1202 General Physics for Physics Majors (4) Prereqs.: PHYS 1100 or placement by examination; credit or registration in MATH 1550. Prereq. for 1202: PHYS 1201 and credit or registration in MATH 2065. Mechanics, kinematics, heat, sound, light, electricity, and magnetism; topics in modern physics.

★ 1201 ★ 2002 General Physics (3,3) Prereq. for PHYS 2201 and credit in MATH 2065 or 2090. Credit will not be given for these courses and PHYS 1201, 1202, or 2102. 2002: 3 hrs. lab. Credit will not be given for both this course and PHYS 1201, 1202, 2102: 2 hrs. lecture; 3 hrs. lab. Basic electrical and electronic components, operational amplifiers, and digital electronics.

4122 Intermediate Mathematical Physics (3) Prereq.: PHYS 2221 or CHEM 4581, and credit or registration in MATH 2065 or 2090. Mathematical methods of physics, with application to selected problems.

4132 Electromagnetism and Electromagnetic Waves (3) F, S Prereq.: PHYS 2221 or CHEM 4581 and credit or registration in MATH 2065 or 2090. Electromagnetic waves, wave motion, thermodynamics, and kinetic theory.

4152 Thermodynamics and Statistical Mechanics (3) V Prereq.: PHYS 2221 and credit or registration in MATH 2065 or 2090. Statistical mechanics, kinetic theory.

4212 Modern Optics (3) V Prereq.: PHYS 2221 and credit or registration in MATH 2065 or 2090. Modern theory of electromagnetic waves and radiation.

4241 Introduction to Quantum Mechanics (3,3) Prereq.: PHYS 2221 and credit or registration in MATH 2065 or 2090; or CHEM 4581 and credit or registration in MATH 2065 or 2090. Emphasis on geometrical optics and optical instruments, spherical diffraction theory, spatial filtering and holography, Gaussian beam optics, optical resonators, lasers, and spatial and optical coherence.

4316 Modern Optics Laboratory (3) V Prereq.: PHYS 4135. 1 hr. lecture; 5 hrs. lab. Techniques in modern optics, including interferometers, electro-optic and magnetooptic devices, fiber optics, spatial filtering, holography, and spectroscopy.

4414, 4412 Introduction to Quantum Mechanics (3,3) Prereq.: PHYS 2221 and credit or registration in MATH 2065 or 2090; or CHEM 4581 and credit or registration in MATH 2065 or 2090; PHYS 4414 is pre-requisite for 4412. Modern theory of electromagnetic waves and radiation.

4433 Modern Quantum Mechanics (3,3) Prereq.: PHYS 2221 and credit or registration in MATH 2065 or 2090. Properties of the crystalline state and the free-electron band theories of metals, insulators, and semiconductors.

4471 Nuclear Physics (3) V Prereq.: PHYS 2203 or 4481. Properties of the crystalline state and the free-electron band theories of metals, insulators, and semiconductors.

4499 Research in Experimental Physics (3) F Prereq.: PHYS 4198 or consent of instructor and department chair. Individual research project conducted and reported under supervision of individually selected faculty member.

4462 Computational Science II (3,3) Prereq.: PHYS 2411 or equivalent. Continuation of PHYS 2411. Advanced techniques for numerical computations in the physical sciences.

4991 Special Problems in Physics (1-3) Prereq.: thorough knowledge of the foundations of physics and mathematics, demonstrated ability in science, and consent of instructor and department chair. May be taken for a max. of 5 hrs. credit. Advanced problems, harmonic oscillator, angular momentum, perturbation theory, matrix algebra, coordinate systems, and/or experimental work on advanced problems in physics.

6111 Mathematical Physics for Teachers (3) Su only—V Prereq.: PHYS 2002 or 2102. Not for degree credit for physics majors. Mathematical structure of physics.

6211 Classical Physics for Teachers (3) Su only—V Prereq.: PHYS 2002 or 2102. For high school and junior college teachers. 18 hrs. for the M.N.S. degree program. Application of conservation principles to development of classical physics.
Courses 335

POLITICAL SCIENCE • POLI

General education courses are marked with stars (*).

1001 Fundamental Issues of Politics (3) F,S,Su

Central questions at issue in politics; their significance.

2001 Analyzing Politics and Public Policy (3)

Techniques of analysis, logic of empirical research, and the use of policy analysis.

2051 American Government (3) F,S,Su An honors course; POLI 2052, is also available. Principles, structures, processes, and functions; emphasis on national government.

2052 HONORS: American Government (3) Same as POLI 2051, with special honors emphasis for qualified students.

2053 Introduction to Comparative Politics (3) F,S,Su Survey of politics in democratic, post-communist, and developing societies; emphasis on major actors and institutions.

2056 Government of Louisiana (3) F,S,Su Prereq.: POLI 2051 or equivalent. State and local government and politics in Louisiana.

2057 Introduction to International Politics (3) F,S,Su Basic principles, problems, and concepts of international politics; evolution and nature of the nation-state; concepts of sovereignty, power, and national interests; patterns of conflict and cooperation; foreign policies of the major powers.

2070 Public Policy Making: An Introduction (3) F,S,Su Sequential process of policy making from problem identification through policy formulation, adoption, implementation, and evaluation of impact; application to such areas as civil rights, welfare, urban affairs, taxation, and government spending.

3000 HONORS: Thesis (3) Cumulation of political science honors program; details available from department.

3090 HONORS: Seminar (3) Students not enrolled in the honors program may be admitted with consent of the instructor. Subject matter and instructor vary. Details available from the department during registration.

3356, 3397 HONORS: Readings Course (1-3-3) Same as POLI 4996, 4997, with special honors emphasis for qualified students.

3901 Undergraduate Internship in Political Science (1-4) F Open to undergraduate students approved by the Department of Political Science. May be counted toward the total number of hours required for a major in political science but not toward fulfilling field requirements. Program of study, research, and work in governmental or private agencies concerned with public policy.

3990 Contemporary Political Issues (3) For undergraduate political science or other social sciences majors having a 2.70 overall average; also open to well-qualified students in other fields with consent of department. May be repeated for credit when topics vary. Course content depends on interests of instructor and class.

4000 Special Topics in American Politics (3) F,S,Su Prereq.: consent of department. May be repeated for a max. of 6 sem. hrs. credit when topics vary.

4011 Research Methods in Political Science (3) F,S,B Basic components of the research process in political science, including design and structure of research, modes of observation, and techniques of analyzing data.

4101 Bureaucracy, Politics, and Public Policy (3) F,S,Su Prereq.: POLI 2051 or equivalent. Analysis of the interrelationships between bureaucracy and politics in formulation and execution of public policy; forces and forms affecting these relationships.

4104 Budgetary Process and Policy Making (3) Prereq.: POLI 2051 or equivalent. Budgeting by public agencies; impact of political actors, institutions, and processes on budgetary policies at the national, state, and local levels of government.


4125 Urban Politics and Policy Making (3) Prereq.: POLI 2051 or equivalent. Political problems in urban government; the political environment of American cities, private sources of power, political machines and reform, crime and violence, service delivery, metropolitan fragmentation, and the consequences of growth and decay; public policy approaches to complex urban problems.

4200 American Constitutional Law (3) F Prereq.: POLI 2051 or equivalent. Law of the Constitution and place of the Supreme Court in American political system; separation of powers, judicial review, federalism, and federal powers.

4201 The American Constitution and Civil Liberties (3) S Prereq.: POLI 2051 or equivalent. Political relevance of major federal constitutional limitations; property rights; First Amendment freedoms; rights of criminal defendants and ethnic minorities.

4202 Jurisprudence (3) S Prereq.: POLI 2051 or equivalent. Legal philosophies of natural law, positivism, idealism, socialism, and legal realism; relationships of law, morals, and political order.

4203 Judicial Politics (3) F Prereq.: POLI 2051. Political role of U.S. state and federal courts; organization, staffing, financing; judicial policy making; public perception of the judicial process.

4206 Campaigns and Elections (3) Prereq.: POLI 2051 or equivalent. Examination of campaigns and elections in the U.S. political system at the national, state, and local levels.

4207 Politics of Sexual Diversity (3) Prereq.: POLI 2051 or equivalent. The political meanings of sexual identity; evolution of lesbian and gay social movements and of political organizations that favor and oppose the expansion of gay rights; legal opinion and policy-making regarding sexual diversity.

4208 Gender and American Politics (3) Also offered as WGS 4028. The role of gender in the political arena in the United States.

4230 Political Attitudes and Public Opinion (3) F,S,Su Beliefs and attitudes among the mass public; emphasis on attitude formation and change.

4231 Political Parties in the United States (3) F Structure and function of political parties at local, state, and national levels; voting studies of presidential elections.

4232 Interest Groups in American Politics (3) V Interest group politics; effect of voluntary organizations on political behavior.

4233 Political Participation (3) V Voting behavior, conventional participation, and political protest and violence; political behavior and public policy.

4235 The Legislative Process (3) F Prereq.: POLI 2051 or equivalent. Legislative politics; emphasis on the U.S. Congress; effect of party, constituency, and legislative institutions on legislative behavior and public policy; role of Congress in the American political system.

4236 The American Presidency (3) V Prereq.: POLI 2051 or equivalent. The executive apparatus of the American political system; emphasis on process of presidential selection, evolving role of the president, politics of the executive apparatus of the American political system, and presidential interaction with other political institutions and actors.

4238 Blacks and the American Political System (3) V Prereq.: POLI 2051. Interaction of blacks with the American political system; major actors and political resources available to blacks; responses of national institutions and leaders to black aspirations.

4239 Southern Politics (3) V Contemporary politics of the American South.

4240 Special Topics in International Relations (3) F,S,Su Prereq.: consent of department. May be repeated for a max. of 6 sem. hrs. credit when topics vary.

4241 International Law (3) V Prereq.: POLI 2057 or equivalent. Development of international law; law of peace, war, and neutrality; treaty law; recognition, war crimes, law enforcement, and diplomatic immunity under the United Nations.


4301 American Foreign Policy (3) F "National interest" as guiding consideration in development of American foreign policy today; role in the present, importance of the constitutional framework; presidential and congressional leadership; pressure groups and public opinion; changing world environment and American responses.

4304 Contemporary International System (3) V Prereq.: POLI 2057 or equivalent. Developments and trends in the international system since World War II; classical and modern versions of the balance of power; bipolarity, multipolarity, and other elements of systems theory; concept of deterrence and game theory; decision making theory; integration theory; conflict and conflict-resolution theory.

4306 International Political Economy (3) Prereq.: POLI 2057 or equivalent. Theories of international interdependence, dependency, and inequality; politics of decision making on protectionism and international finance; role of multinational corporations in world political economy; North-South debate; economic issues and national security.

4314 International Conflict and Cooperation (3) F,S,Su Theories of international conflict, war, and conflict resolution.

4349 Global Environmental Politics (3) F,S,Su Political and economic factors affecting the global environment.

4350 Globalization and Politics (3) Prereq.: POLI 2057 or equivalent. Overview of the concepts, theories, and empirical evidence associated with the emerging phenomenon known as globalization, with particular emphasis on its political, economic, and cultural dimensions.

4365 Latin American Politics and Politics of Latin America (3) F International relations among Latin American countries; special emphasis on the Arab-Israeli conflict, terrorism, and U.S. policy toward the region.

4367 Special Topics in Comparative Politics (3) F, S, Su Prereq.: consent of department. May be taken for a max. of 3 sem. hrs. of credit when topics vary.

4381 Comparative Politics of the Middle East (3) S,Su Government and politics of Middle Eastern countries, with special emphasis on the Arab-Israeli conflict, terrorism, and U.S. policy toward the region.

4382 Comparative Political Institutions (3) F,S,Su Credit will not be given for both this course and POLI 7976. Cross-regional comparison of the interaction between politics and economics; topics include electoral business cycles, foreign trade, foreign investment, industrial policy, and the environment.

4383 Comparative Political Institutions (3) F,S,Su Credit will not be given for both this course and POLI 7976. Cross-regional comparison of political institutions; emphasis on constitutional design, electoral and party systems, legislatures and cabinets, and parliamentary and presidential structures.

4384 Comparative Politics of Developing Areas (3) V Problems of development confronted by contemporary states and societies of the Third World; emphasis on role of ethnic pluralism, political parties, bureaucracies, and the mass media.

4385 Latin American Governments and Politics (3) F Governmental and political processes of Latin America; their contributions to modern government.

4386 The Politics of Development and Politics of modern Asia, with a focus on China; contemporary nationalism, political development, revolution, and impact of communism, democracy, and capitalism on Asian states.

4387 Russian Politics and Foreign Policy (3) Contemporay political institutions and policies of Russia; influence of internal forces, such as culture, ideology, and social structure; political economy, and social problems and policies.

4382 Politics and Government of East Central Europe (3) F Political systems of the former communist states of Eastern Europe; domestic institutions and policies; legacies of communism; political parties and elections.

4387 Politics of the European Union (3) V The political, social, legal, and economic unification of Europe.

4388 Politics in Western Europe (3) National political systems of Western Europe.

4386 The Politics of France and Francophone Areas (3) The political development, institution, and culture of the French Republic and selected Francophone areas.

4371 State, Society, and Citizenship in Contemporary China (3) Political events in contemporary China; emphasis on the state and the citizen in the Reform Era.

4388 American Political Thought (3) V Development of the American liberal-democratic tradition, and dissent to that tradition.

4389 History of Political Theory from Plato to More (3) F Ancient and medieval political thought.
1009 Poultry Science and Production (3) F,SS Prereq.: consent of instructor. May be taken for a max. of 8 hrs. of credit when topics vary.

1010 Poultry Nutrition (3) F May be taken for a max. of 6 hrs. of credit when topics vary.

1011 Beginning Portuguese (4) Credit will not be given for both this course and POLI 4062. May be taken for a max. of 6 sem. hrs. of credit when topics vary. Focus on experimental research and the relationship between political processes and economic performance, and the impact of global economic forces on regional and domestic politics.

7900 Seminar in American Political Thought (3) V May be taken for a max. of 6 hrs. of credit when topics vary.

7901 Seminar in Classical and Medieval Political Theory (3) May be taken for a max. of 6 hrs. of credit when topics vary.

7902 Seminar in Early Modern Political Theory (3) May be taken for a max. of 6 hrs. of credit when topics vary.

7903 Seminar in Analytical and Empirical Political Theory (3) May be taken for a max. of 6 hrs. of credit when topics vary.

7904 Seminar in Contemporary Political Theory (3) May be taken for a max. of 6 hrs. of credit when topics vary.

7907 Seminar in Comparative Political Economy (3) V Credit will not be given for both this course and POLI 4062. May be taken for a max. of 6 sem. hrs. of credit when topics vary. Focus on the relationship between political and economic processes; topics include models of development, economic performance, and the impact of global economic forces on regional and domestic politics.

7980 Seminar in American Political Thought (3) V May be taken for a max. of 6 hrs. of credit when topics vary.

7981 Seminar in Classical and Medieval Political Theory (3) May be taken for a max. of 6 hrs. of credit when topics vary.

7982 Seminar in Early Modern Political Theory (3) May be taken for a max. of 6 hrs. of credit when topics vary.

7983 Seminar in Analytical and Empirical Political Theory (3) May be taken for a max. of 6 hrs. of credit when topics vary.

7984 Seminar in Contemporary Political Theory (3) May be taken for a max. of 6 hrs. of credit when topics vary.

7987 Seminar in Comparative Political Economy (3) V Credit will not be given for both this course and POLI 4062. May be taken for a max. of 6 sem. hrs. of credit when topics vary. Focus on the relationship between political and economic processes; topics include models of development, economic performance, and the impact of global economic forces on regional and domestic politics.

7980 Seminar in American Political Thought (3) V May be taken for a max. of 6 hrs. of credit when topics vary.

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7984 Seminar in Contemporary Political Theory (3) May be taken for a max. of 6 hrs. of credit when topics vary.

7987 Seminar in Comparative Political Economy (3) V Credit will not be given for both this course and POLI 4062. May be taken for a max. of 6 sem. hrs. of credit when topics vary. Focus on the relationship between political and economic processes; topics include models of development, economic performance, and the impact of global economic forces on regional and domestic politics.

7980 Seminar in American Political Thought (3) V May be taken for a max. of 6 hrs. of credit when topics vary.

7981 Seminar in Classical and Medieval Political Theory (3) May be taken for a max. of 6 hrs. of credit when topics vary.

7982 Seminar in Early Modern Political Theory (3) May be taken for a max. of 6 hrs. of credit when topics vary.

7983 Seminar in Analytical and Empirical Political Theory (3) May be taken for a max. of 6 hrs. of credit when topics vary.

7984 Seminar in Contemporary Political Theory (3) May be taken for a max. of 6 hrs. of credit when topics vary.

7987 Seminar in Comparative Political Economy (3) V Credit will not be given for both this course and POLI 4062. May be taken for a max. of 6 sem. hrs. of credit when topics vary. Focus on the relationship between political and economic processes; topics include models of development, economic performance, and the impact of global economic forces on regional and domestic politics.

7980 Seminar in American Political Thought (3) V May be taken for a max. of 6 hrs. of credit when topics vary.

7981 Seminar in Classical and Medieval Political Theory (3) May be taken for a max. of 6 hrs. of credit when topics vary.

7982 Seminar in Early Modern Political Theory (3) May be taken for a max. of 6 hrs. of credit when topics vary.

7983 Seminar in Analytical and Empirical Political Theory (3) May be taken for a max. of 6 hrs. of credit when topics vary.

7984 Seminar in Contemporary Political Theory (3) May be taken for a max. of 6 hrs. of credit when topics vary.

7987 Seminar in Comparative Political Economy (3) V Credit will not be given for both this course and POLI 4062. May be taken for a max. of 6 sem. hrs. of credit when topics vary. Focus on the relationship between political and economic processes; topics include models of development, economic performance, and the impact of global economic forces on regional and domestic politics.

7980 Seminar in American Political Thought (3) V May be taken for a max. of 6 hrs. of credit when topics vary.
207 Child Psychology (3) Prereq.: PSYC 2000 or 2060 or equivalent. Psychological and social development of the child.

2078 Adolescent Psychology (3) Prereq.: PSYC 2000 or 2060 or equivalent. Adolescent behavior considered in terms of biological, emotional, and physical development.

2599 Undergraduate Practicum in Psychology (1-3) Prereq.: PSYC 2000 or 2660, and consent of instructor; LSUS and overall GPA of at least 2.50. May be taken for a max. of 3 sem. hrs. of credit. Student responsible for registering with a faculty member. Individually supervised experience in psychological laboratories and community agencies.

3018 Advanced Experimental Psychology (3) Prereq.: PSYC 2017 or equivalent. 2 hrs. lecture; 2 hrs. lab. Supervised research in experimental psychology: selection, design, execution, and analysis of the psychological experiment.

3020 Psychological Tests and Measurements (3) Prereq.: PSYC 2000 or 2001 and a first course in statistics. Test construction, standardization, validation; intelligence, clerical, mechanical, spatial aptitude tests; interest and personality tests; test batteries.

3050 Introduction to Personnel and Industrial Psychology (3) Prereq.: PSYC 2000 or 2001. Organizational psychology, leadership, job satisfaction, motivation; human relations psychology; human engineering; personnel psychology; industrial, military, and governmental selection, testing, and interview; human factors and psychology of the workplace.

3081 Personality (3) Prereq.: PSYC 2000 or 2060 or equivalent. Determinants and dynamics of personality; theoretical models of personality.

3082 Introduction to Abnormal Psychology (3) Prereq.: PSYC 2000 or 2060 or equivalent. Abnormal personality and behavior disorders.


3201 Psychological Theories of Religion (3) See REL 3201.

4008 History of Modern Psychology (3) Prereq.: PSYC 2000 or 2060 and 2011 and 3 additional hrs. of psychology. History of psychology, development of a philosophy of teaching.

4011 Intermediate Statistics (3) Prereq.: PSYC 2000 or 2060 and 2011. Open to psychology majors; open to other matriculated students with permission of instructor. Historical survey of psychology, with reference to schools of psychology.

4017 Intermediate Research Methods (3) See SOCL 4217.

4030 Psychology of Thinking and Decision Making (3) Prereq.: PSYC 2000 or 2660. Experimental methods and research findings on human thinking, decision making, concept formation, judgment, problem solving.


4102 Psychology and Aesthetic Experience (3) Prereq.: PSYC 2000 or 2060. Behavior from the standpoint of learning; recent experimental literature in the learning area; major theories of learning.

4103 Psychology of Memory and Forgetting (3) Prereq.: PSYC 2000 or 2011. Major theoretical concepts; review of experimental literature in the field of memory and forgetting.

4104 Physiological Psychology (3) Prereq.: PSYC 2000 or 2060 or equivalent. Functions of the nervous system with respect to sensation, perception, learning, and motivation.

4105 Drugs and Behavior (3) Prereq.: PSYC 2000 or consent of instructor. Modes of action and effects on behavior of drugs and drugs of abuse.

4106 Comparative Psychology (3) Prereq.: PSYC 2000 or 2060. Behavioral development across species with reference to evolutionary and genetic factors relevant to understanding human behavior.

4107 Psychopathology (3) Prereq.: PSYC 2000 or equivalent. Major categories of mental disorders; assessment; treatment and prognosis.

4108 Neuropsychopharmacology (3) Prereq.: PSYC 2000 or equivalent. Current knowledge of the behavioral effects of drug actions on the nervous system; pharmacology of drugs of abuse and psychiatric disorders.

4109 Emotion and Motivation (3) Prereq.: PSYC 2000 or equivalent. Experimental procedures, data, and theories in emotion and motivation; physiological relationships.

4309 Madness and Medicine (3) Prereq.: PSYC 2000 or 2091. The history of medical treatments for mental disorders.

4401 Research and Theory in Sexuality (3) Prereq.: PSYC 2000 or 2060 and one additional course in psychology (3000 level or above). Determinants and dynamics of personality; psychological experiment.

4900 Advanced Graduate/Organizational Psychology (3) Prereq.: PSYC 2000 and 2070 or equivalent. Research, theory, and applications in industrial/organizational psychology; focus on psychological assessment of job candidates; testing; learning applied to organizational training; emotion, motivation, social processes, cognition in the job setting, and leadership in organizations.

470 Developmental Psychology (3) Prereq.: PSYC 2000 or 2091. Theories of development, contemporary issues, and research findings at success across the lifespan.

4702 Developmental Psychology of Adulthood and Aging (3) Prereq.: PSYC 2000 or 2660. Theories, issues, and research findings on psychological changes occurring throughout adulthood and later life.

4708 Applied Behavior Analysis (3) Prereq.: PSYC 4012 or graduate standing. Basic principles of behavior analysis, and intervention in the application of basic learning principles; emphasis on school applications.

4711 Intensive Statistics (3) Prereq.: PSYC 2000 or 2011 and 2070 or equivalent. Advanced statistical software and interpretation of output; major topics include simple and factorial analysis of variance, linear and multiple correlation and regression.

4150 Advanced Educational Psychology (3) Prereq.: PSYC 2000 or 2011 and 3 additional hrs. of psychology. Psychological theory and research as applied to the teaching-learning process.

4716 Advanced Child Psychology (3) Prereq.: PSYC 2000 or 2011 and 3 additional hrs. of psychology. Psychological theories of child development, child behavior, and research methodology.

4718 Advanced Adolescent Psychology (3) Prereq.: PSYC 2000 or 2011 and 3 additional hrs. of psychology. Psychological theories of adolescent behavior and problems.

4999 Independent Reading and Research in Psychology (1-5) Prereq.: LSUS and overall GPA of at least 2.50. May be taken for a max. of 6 sem. hrs. Open to seniors and graduate students. Student responsible for registering with a faculty member and selecting area of research or reading.

7020 Measurement of Behavior (3) Prereq.: PSYC 4111 or equivalent; graduate standing in psychology or consent of instructor. Techniques and theories of behavior measurement; problem of reliability; validity; design, and analysis of measurement instruments for the psychological sciences.

7030 Cognitive Basis of Behavior (3) Prereq.: graduate standing in psychology or other matriculated graduate students with consent of instructor. Cognitive processes involved in memory, language, decision making; role of cognitive variables in controlling behavior.

7051 Biological Basis of Behavior (3) Prereq.: graduate standing in psychology or other matriculated graduate students with consent of instructor. Selected biological systems involved in mediation of behavior.

7040 Social Basis of Behavior (3) Prereq.: graduate standing in psychology or other matriculated graduate students with consent of instructor. Social, organizational, and cultural influences on human behavior; research in social and organizational psychology.

7640, 7641 Practicum in Social-Industrial Psychology (1-6,1-6) Prereq.: consent of instructor. May be taken for a max. of 9 sem. hrs. of credit. Supervised experience in social- industrial psychology.

7640, 7641 Practicum in School Psychology (1-6,1-6) Prereq.: consent of instructor. May be taken for a max. of 9 sem. hrs. of credit. Supervised experience in school psychology.

7650, 7651 Practicum in Developmental Psychology (1-6,1-6) Prereq.: consent of instructor. May be taken for a max. of 6 sem. hrs. of credit. Supervised experience in developmental psychology.

7688, 7689 Practicum in Clinical Psychology (1-3,1-3) Prereq.: consent of instructor and enrollment in a clinical psychology training program. 12 sem. hrs. are required. Supervised experience in the application of clinical psychological assessment and intervention techniques with behaviorally disordered populations (adult, child, medical).

7690 Teaching of Psychology Practicum (1-3) Prereq.: PSYC 7990. Course may be taken for a max. of 6 sem. hrs. of credit. Closely supervised experience in teaching, in which students will function as the instructor of record for an undergraduate course in the Psychology department; objectives include enhanced teaching skills and the development of a philosophy of teaching.

7754 Psycholinguistics: Linguistic Perspectives (3) Prereq.: ENGL 4010. See COMD. Also offered as LING 7754.

7925 Psychological Assessment II (3) Prereq.: PSYC 7125 or equivalent; graduate standing in clinical psychology or consent of instructor. Administration and interpretation of objective tests; assessment of personality and psychopathology; neuropsychological assessment techniques.

7925 Psychopathological Diagnosis (3) Prereq.: PSYC 7925 or equivalent; graduate standing in clinical psychology or consent of instructor. Interpretation of assessment techniques; practice in determining differential diagnosis; treatment planning based on assessment techniques.
7972 Psychotherapy and Behavior Change (3) Prereq.: graduate standing in psychology or consent of instructor. Theoretical and empirical considerations relevant to psychoanalytic, humanistic, behavioral, and cognitive-behavioral approaches for treating disordered behavior.

7928 Advanced Techniques in Adult Clinical Psychology (3) Prereq.: PSYC 7125, 7185, 7927, and 7982; graduate standing in psychology or consent of instructor. Common assessment methods and empirically supported treatment procedures for the major adult behavior disorders.

7929 Cultural Diversity Issues in Counseling and Therapy (3) Prereq.: graduate standing in psychology or consent of instructor. Neurocognitive system and behavioral assessment techniques; neuropsychology and diagnostic criteria.

7938, 7939 Seminar in Experimental Psychology (3.3) Each course may be taken for a max. of 12 hrs. of credit when topics vary.

7947 Advanced Seminar in Behavior Analysis (3) Prereq.: graduate standing in psychology or consent of instructor. Neurocognitive system and behavioral assessment techniques; neuropsychology and diagnostic criteria.

7950 Industrial/Organizational Psychology Internship (3 or 4) Prereq.: completion of general examination. May be taken for a max. of 12 hrs. of credit when topics vary. Topics, concepts, and research methodology, including issues in the application of behavior analysis, including assessment and treatment of behavior disorders.

7956, 7957 Current Problems in Industrial Psychology (3.3) Prereq.: consent of instructor. Each course may be taken for a max. of 12 hrs. of credit when topics vary.

7969 Internship in School Psychology (1-6) Prereq.: satisfactory completion of the general and language examinations and faculty approval. May be taken for a max. of 12 hrs. of credit. One full academic year of supervised internship that is no less than 1200 hours, half of which must be in a school setting; internship required for the M.S. degree in school psychology.

7971 Advanced Techniques in Clinical Child Psychology (3) Prereq.: PSYC 7125, 7171, and 7925; graduate standing in clinical or school psychology or consent of instructor. Behavioral treatment of children's behavior problems.

7972 Child Behavior Therapy (3) Prereq.: PSYC 7171 or equivalent; graduate standing in clinical or school psychology or consent of instructor. Behavioral treatment of children's behavior problems.

7973 School-Based Psychological Interventions (3) Prereq.: graduate standing in clinical or school psychology or consent of instructor. Theories of psychopathology, epidemiology, and etiological hypotheses, and pertinent research evidence.

7983 Biological Variables in Psychopathology (3) Prereq.: PSYC 4014 or equivalent; graduate standing in clinical or school psychology or consent of instructor. Biological variables in major mental disorders; psychological variables in physical disorders.

7984 Special Topics in Advanced Techniques in Behavioral Science (1-12) Prereq.: PSYC 7185; or consent of instructor. May be taken for a max. of 12 hrs. of credit when topics vary. Assessment and treatment procedures used by behavioral scientists; medical settings; issues in medical consultation and liaison.

7988, 7999 Current Problems in Clinical Psychology (3.3) Prereq.: graduate standing in psychology or consent of instructor. Each course may be taken for a max. of 6 hrs. of credit when topics vary. Research and methodological issues.

9790 Teaching Psychology (3) Prereq.: graduate standing in psychology. Required of all doctoral candidates to become instructor of record in the department. Philosophy, theory, and practice in higher education with applications to teaching and graduate education in psychology.

9797 Clinical Psychology Internship (3 or 6) Prereq.: completion of course work and general examination. Open only to graduate students nominated by the Department of Psychology and accepted by an approved internship program. May be taken for a max. of 15 sem. hrs. of credit. Supervised evaluation and treatment of individuals manifesting mental disorders.

9799 Professional Considerations in Psychology (3) Prereq.: Graduate standing in psychology. Required of all clinical psychology candidates. Professional ethics, practice, and responsibility.

8000 Thesis Research (1-12 per sem.) S/U grading. 8993 to 8999 Independent Research (1-6 each) Prereq.: consent of instructor. May be repeated for a max. of 12 hrs. credit; a max. of 15 sem. hrs. in this series is allowed toward doctoral requirements. Pass-fail grading. Depending on the area of independent research, students register for research in:

9393 Experimental Psychology
949 Social Psychology
959 Industrial Psychology
9797 Developmental Psychology
9899 Clinical Psychology
999 Personality Psychology
9000 Dissertation Research (1-12 per sem.) S/U grading.

PUBLIC ADMINISTRATION • PADM

5010 Statistical Methods for Public Administration (3) Prereq.: college algebra. 2 hrs. lecture; 2 hrs. lab. Open only to students in the M.P.A. program. Also offered as IDS 7510. Descriptive measures for populations and samples; basic probability theory; distributions of discrete and continuous random variables; hypothesis testing and estimation for means, variances, and proportions; measures of association: linear regression; index numbers; applications in public administration.

5600 Microeconomics for Policy Analysis (3) Open only to students nominated by or with consent of instructor. Also offered as ECON 5600. Concepts and analytical tools of microeconomics; their relevance for decision and policy making in public and nonprofit sectors; theories of demand, production, cost, market structures, and distribution; analysis of economic problems and policies, efficiency criteria, social impacts, and limitations of the market system.

7010 Decision Models for Public Administration (3) Open only to students in the M.P.A. program. Also offered as IDS 7510. Models for decision making under conditions of certainty, risk, and uncertainty; statistical decision making with and without sample information; linear programming using graphical and simplex methods; transportation and assignment problems; project management using PERT and CPM; forecasting models; cost benefit analysis. Grading may be S/U or with consent of instructor.

7610 Healthcare Organization and Finance (3) Overview of effective management of healthcare organizations, including understanding of their historical development and future opportunities; current issues relating to financing, regulation, reimbursement, managed care systems, and system integration.

7620 Strategic Management of Healthcare Organizations (3) Corequisite: MGMT 7620. Strategic planning and development of healthcare organizations focusing on long-term viability; integration of financial decisions with organizational and patient care.

7640 Legal and Ethical Issues in Health Care Management (3) Legal and ethical issues in the delivery of health care, including legal responsibility to patients, Government’s responsibility to patients, government’s responsibility to patients, patient, providers and insurers, governmental influence in health care management, patient-provider relationships, advancing technology and medical alternatives, working with limited resources, and organizational efforts to deal with ethical issues.

7710 Financial Management (3) Cross-listed as FIN 7510. Financial management for non-profit organizations, including sources of financing for different levels of governments, insurance, and capital budgeting, as well as asisé related topics.

7800 Independent Study in Public Administration (3) Prereq.: at least 15 credit hours of graduate work; prior written approval of faculty supervising work. May be taken for a max. of 6 hrs. of credit. Independent study by M.P.A. student.

7850 Public Administration Internship (3) Prereq.: at least 15 sem. hrs. of graduate course work completed and approval of the Director of the M.P.A. Program. Required of all M.P.A. students. Work within a federal, state, or local government unit, nonprofit or private organization or facility, including interfacing with the public sector; regular meetings with faculty and preparation of research paper indicating relationship between principles of public management and work activities.

7900 Public Administration Colloquium (3) Required of all M.P.A. students in final semester of program; research project required. Legal, ethical, economic, political, and management principles used in assessing public administration topics; policy and administration issues.

7902 Seminar in Public Policy (3) Also offered as POLI 7902.

7910 Public Administration Theory and Practice (3) Contents and boundaries of public administration as discipline; topics include history and philosophy of public administration as a field of study; organizational theory; professional ethics; policy development; management techniques to enhance productivity; leadership; diversity; and other relevant issues for public managers; case studies used intensively.

7915 Organizational Analysis for Public and Nonprofit Organizations (3) Analyzing elements of effective organizational functioning in the public and nonprofit sectors, and the development of diagnostic skills to improve performance; incorporates organizational behavior and theory in the study of achieving effectiveness, efficiency, and growth.

7918 Public Personnel Policy Explores human resource policy, including procedures and principles of personnel administration; traditional aspects of personnel administration including recruiting, classification, evaluation, and compensation. Analytical techniques include workforce diversity, drug abuse, whistle blowing, sexual discrimination, labor relations, and other relevant issues.

7914 Budgeting (3) Introduction to public budgeting; study of budget techniques; importance of budgeting in policymaking; and understanding the budget process.

7915 Technology and Innovation in Public Sector (3) Evaluation of influence and role of public policies on formulation and implementation of technology and innovation.

7916 State and Local Government Administration (3) Examination and analysis of how state and local governments are structured and how they are managed; case studies will be used to illustrate state and local administration; current issues relating to financing, regulation, zoning, delivery systems of local governments, debt financing, and capital budgeting, as well as new and emerging issues.

7917 Public Financial Management (3) Prereq.: at least 15 credit hours of graduate work; prior written approval of faculty supervising work. May be taken for a max. of 6 hrs. of credit. Independent study by M.P.A. student.

7919 Ethics in the Public Service (3) Prereq.: Graduate standing in public administration or consent of instructor. Theoretical and developing indicators to monitor public program. Development and future opportunities; current issues relating to financing, regulation, zoning, delivery systems of local governments, debt financing, and capital budgeting, as well as new and emerging issues.

7910 Independent Study in Public Administration (3) Prereq.: at least 15 credit hours of graduate work; prior written approval of faculty supervising work. May be taken for a max. of 6 hrs. of credit. Independent study by M.P.A. student.
consequentialism, deontology, virtue ethics, and ethical relativism; readings, case studies, and experiential exercises will be used to explore the role of ethics in public service.

7925 Seminar in Nonprofit Management (3) Overview of nonprofit management functions as applied to nonprofit organizations.

RELIGIOUS STUDIES • REL General education courses are marked with stars (*).

3005 Paul and Early Christianity (3) Paul's writings in historical context; assessment of his place in the development of the church; significant themes in his theology.
3011 Special Topics in Religious Studies (3) May be taken for a max. of 12 hrs. of credit when topics vary.
3015 Jesus in History and Tradition (3) May be taken for a max. of 12 hrs. of credit when topics vary. See REL 1001.
3028 Mysticism (3) Mystical religious experience in eastern and western religion; some attention to shamanism and the occult; mystical grounds for belief in God.
333 Native American Religions (3) Survey of native North American religious traditions from prehistory to the present; including issues of conversion and Christianization, freedom of religion, and gender.
3461 Religion in the United States (3) May be taken for a max. of 6 hrs. of credit when topics vary.
3600 Women and Witchcraft (3) A cross-cultural examination of “witchcraft” and issues of gender in North America, Europe, and Africa.
4107 A History of God (3) Traces the development of the concept of God from antiquity to the present.
4108 Ideas of the Afterlife (3) Traces the development of ideas concerning life after death in various traditions from antiquity to the present.
4109 The Middle East to 1800 (3) May be taken for a max. of 6 hrs. of credit when topics vary. See HIST 4095.
4109 The Modern Middle East (3) May be taken for a max. of 6 hrs. of credit when topics vary. See HIST 4096.
4161 History of Religion in the United States (3) May be taken for a max. of 6 hrs. of credit when topics vary.
4171 Religion in Southern Culture (3) Religion as a component of Southern history and culture; emphasis on the religious culture of Louisiana.
4191 Religions of China and Japan (3) May be taken for a max. of 6 hrs. of credit when topics vary. See HIST 4191.
4227 Contemporary Christian Thought (3) Major theological movements of the 20th century.
4228 Major Religious Thinkers (3) May be taken for a max. of 6 hrs. of credit when topics vary. Concentrat- ed study of the work of four religious thinkers.
4236 Studies in Literature and Religion (3) May be taken for a max. of 6 hrs. of credit when topics vary.
4301 Theories of Religion (3) Theories about the origin, nature, and function of religion from the social sciences and other disciplines.
4560 Seminar in Biblical Studies (3) May be taken for a max. of 6 hrs. of credit when topics vary.
4600 Hinduism (3) A survey of Hinduism from its origins to the present.
4800 Buddhism (3) Fundamental teachings from the Bud- dha to Zen; emphasis on Indian, Tibetan, and South and East Asian traditions.
4928 Medieval Philosophy (3) May be taken for a max. of 6 hrs. of credit when topics vary.
4939 Kierkegaard (3) May be taken for a max. of 6 sem. hrs. of credit when topics vary.
4944 Philosophical Theology (3) May be taken for a max. of 6 hrs. of credit when topics vary.
4990 Independent Reading and Research (1-3) Open to advanced students with prior approval of faculty member who will direct the course. Student is responsible for selecting area of reading and research and gaining agree- ment of faculty member to direct the course. May be taken for a max. of 6 hrs. of credit.
7250 Seminar: Theological Study of Religion (3) Meth- od, theory, and approaches in the study of religion; empha- sis on classical and recent works in the discipline.
7600 Seminar: Contemporary Christianity (3) May be taken for a max. of 6 hrs. of credit when topics vary. Modern critical study of Western religions; relationship between religion and modern culture.
7700 Seminar: Asian Religions (3) May be taken for a max. of 6 hrs. of credit when topics vary. See ANTH 4031.
7707 Seminar: Religious Studies (3) May be taken for a max. of 6 hrs. of credit when topics vary. A cross-cultural examination of “witchcraft” and issues of gender in North America, Europe, and Africa.
8001 Natural Resource Conservation (3) May be taken for a max. of 6 hrs. of credit when topics vary. See REL 3005.
3037 Field Studies in Silviculture (1) S Prereq.: RNR 2001; 3002. 1 hr. lecture; 3 hrs. lab. Students are responsible for paying for travel expenses associated with this course. Field tours of a range of forestry practices and forest field experiences in various silviculture practices.

3038 Field Studies in Timber Harvesting (1) S Prereq.: RNR 3002 and 3103. One week of field practice. Students are responsible for paying for travel expenses associated with this course. On-site studies of harvesting systems used in southern forestry; participation in timber harvesting; exercises in product/raw material relationships.

3039 Field Studies in Wood Utilization (1) S Prereq.: RNR 2043, 3002, and 3103. One week of field practice. Students are responsible for paying for travel expenses associated with this course. On-site studies of wood manufacturing facilities; exercises in product/raw material relationships.

3040 Silvicultural Prescriptions (1) S Prereq.: RNR 3002 and 3103. One week of field practice. Students are responsible for paying for travel expenses associated with this course. Field studies and exercises in the understanding of forest silvicultural prescriptions incorporating elementary economic analysis and silvicultural principles.

3041 Forest Practice (1-4) F,S,Su 1-4 weeks practicum. Students are responsible for paying for travel expenses associated with this course. Insight into management objectives and issues in forested ecosystems not found in the West Gulf Coastal Plain; experience gained through on-site tours and discussions with various natural resource professionals.

3103 Forest Biometrics (1) S Prereq.: RNR 2001, EDF 2201, and MATH 1431. Principles in measuring trees, stands, wood products, and other forest resources; sampling and inventories; statistical inference.

3105 Forest Biology (2) S Prereq.: RNR 2101. This is an 8-week course. The general University drop/add dates do not apply. The instructor will provide students with drop/add dates established by the Office of the University Registrar. Topics include: tree anatomy, tree growth, tree physiology, forest genetics, and ecological principles specific to the understanding of forest ecosystems and sustainable management of forests.

3106 Timber Harvesting (2) S Prereq.: 3 hrs. lab. Students are responsible for paying for travel expenses associated with this course. This is an 8-week course. The general University drop/add dates do not apply. The instructor will provide students with drop/add dates established by the Office of the University Registrar. Methods of harvesting timber crops; logging equipment, planning, road layout, legal and social issues, environmental concerns, statistical tools, logging operations, and contracts; field trips and practical exercises included.

3107 Wood Procurement (2) S Prereq.: RNR 3102; 1 hr. lecture; 3 hrs. lab. Students are responsible for paying for travel expenses associated with this course. This is an 8-week course. The general University drop/add dates do not apply. The instructor will provide students with drop/add dates established by the Office of the University Registrar. Methods of purchasing and marketing timber crops; practice of timber and pulpwood purchasing systems; value assessments, wood specifications, human relations, negotiations, ethics, competitive bidding; legal and social issues of wood storage; and global aspects; field trips and practical exercises included.

3108 Case Studies in Habitat Restoration (2) S Prereq.: RNR 2101. One weekend field trip. Students are responsible for paying for travel expenses associated with this course. The general University drop/add dates do not apply because this is an 8-week course. The instructor will provide students with drop/add dates established by the University Registrar. Principles in planning, design, and implementation of habitat restoration and mitigation; evaluation of habitat restoration efforts using the case study method.

4002 Fisheries Literature and Communication (3) F 2 hrs. lecture; 3 hrs. lab. Organization and communication of technical fisheries literature.

4011 Wildlife Management Techniques (4) F Prereq.: RNR 2303 and EDF 2201. 4 hrs. lab. Weekend field trips. Students are responsible for paying for travel expenses associated with this course. Population inventory and analysis; harvest management; methods to capture and determine species, sex, and age; immobilization and marking methods; measures of condition; survey practices; and habitat evaluation.

4012 Wildlife Management Techniques (4) F Prereq.: senior standing; 2 hrs. lecture; 3 hrs. lab. Students are responsible for paying for travel expenses associated with this course. Resource-oriented recreation in the forest; demand and supply; recreational planning and development of forest lands and waters; basic recreation management principles and policies.


4032 Marine Fisheries Resources (3) S Survey of the biology, harvest, and management of major fish and invertebrate species from major marine organisms throughout the world; emphasis on stock trends and the effects of biological and socioeconomic factors on development of management programs.

4035 Limnology (3) F Prereq.: RNR 2001, CHEM 1201, 1202, 1212 or equivalent. Geomorphology, physicochemistry, biology, and ecology of inland waters.

4041 Field Studies in Measurment (2) S One week field practicum. Students are responsible for paying for travel expenses associated with this course. Extended field trips, one weekend field trip. Ecology, silviculture, and management of hardwood forest ecosystems; improvement, conservation, and use for forest products, wildlife habitats, and other amenities.

4053 Ecology and Management of Wetland Wildlife (2) S History and value of wetlands, waterfowl, fur animals, alligators, wetland habitat management.

4054 Aquaculture and Ecology of Wetland Plants (3) See BIOL 4820.

4056 Management Forest Fire Protection and Use (2) F 3 hrs. lecture; 3 hrs. lab. Students are responsible for paying for travel expenses associated with this course. 8-week course. The general University drop/add dates do not apply. The instructor will provide students with drop/add dates established by the Office of the University Registrar. Forest fire control and use; emphasis on southern forests.

4061 Principles of Aquaculture (3) S Prereq.: RNR 4145 or ECON 2306 or AGEC 2030 or equivalent. RNR 3036, 3037, and 3040. 3 hrs. lecture; 3 hrs. lab. Compounding and discounting; management of a single stand, even-aged and uneven-aged management, decision criteria, and decision variables, management of an existing stand; forest taxation and valuation; management of many stands; harvest scheduling.

4062 Aquaculture and Management of Wild Hoods (4) S Prereq.: RNR 3102 or consent of instructor. 3 hrs. lecture; 3 hrs. lab. Students are responsible for paying for travel expenses associated with this course. 8-week course. The general University drop/add dates do not apply. The instructor will provide students with drop/add dates established by the Office of the University Registrar. Forest fire control and use; emphasis on southern forests.

4081 Aquaculture and Ecology of Wetland Plants (3) See BIOL 4820.

4082 Aquaculture and Management of Wild Hoods (4) S Prereq.: RNR 4145 or ECON 2306 or AGEC 2030 or equivalent. RNR 3036, 3037, and 3040. 3 hrs. lecture; 3 hrs. lab. Compounding and discounting; management of a single stand, even-aged and uneven-aged management, decision criteria, and decision variables, management of an existing stand; forest taxation and valuation; management of many stands; harvest scheduling.

4083 Field Studies in Measurment (2) S Field studies associated with this course. Habitat selection, food habitats, and reproductive biology of selected species of amphibians, reptiles, birds, mammals, and fishes, emphasis on application of university niche exploitation strategies among these groups.

4084 Field Studies in Dendrology (4) S Prereq.: RNR 2001. One 2-week field trip and 4 hours a day for 2 weeks at off-campus sites. Students are responsible for paying for travel expenses associated with this course. Identification of woody and herbaceous plants important to wildlife species and techniques used to quantify wildlife habitat; emphasis on collecting field data and plant identification in field setting to assess habitat quality for wildlife.

4085 Field Studies in Measurment (2) S Students are responsible for paying for travel expenses associated with this course. Habitat selection, food habitats, and reproductive biology of selected species of amphibians, reptiles, birds, mammals, and fishes, emphasis on application of university niche exploitation strategies among these groups.

4084 Field Studies in Dendrology (4) S Prereq.: RNR 2001. One 2-week field trip and 4 hours a day for 2 weeks at off-campus sites. Students are responsible for paying for travel expenses associated with this course. Habitat selection, food habitats, and reproductive biology of selected species of amphibians, reptiles, birds, mammals, and fishes, emphasis on application of university niche exploitation strategies among these groups.

4085 Field Studies in Measurment (2) S Students are responsible for paying for travel expenses associated with this course. Habitat selection, food habitats, and reproductive biology of selected species of amphibians, reptiles, birds, mammals, and fishes, emphasis on application of university niche exploitation strategies among these groups.

4086 Field Studies in Measurment (2) S Students are responsible for paying for travel expenses associated with this course. Habitat selection, food habitats, and reproductive biology of selected species of amphibians, reptiles, birds, mammals, and fishes, emphasis on application of university niche exploitation strategies among these groups.
**Courses**

**4042 Forest Products Marketing (3)** Principles of forest products marketing; attendance of trade shows; management of marketing activities; and competition in a global environment.

**4044 Mechanical and Physical Properties of Wood (3)** V. Prereg.: RNR 2043 or equivalent. 2 hrs. lecture; 3 hrs. lab. (Tuesdays and Thursdays) Chemical composition, physical properties, and mechanical behavior of wood; application of linear and nonlinear relationships in wood structures; stress distribution, working stresses, and design properties of wood components.

**4055 Design and Control of Wood-Using Processes (3)** V. Prereg.: RNR 2043 or equivalent. Examination of chemical properties of wood to utilization processes involving machining, gluing, and finishing.

**4064 Chemical Properties of Wood (4)** V. Prereg.: RNR 2043 or equivalent. 2 hrs. lecture; 3 hrs. lab. 3 hrs. lab. Chemistry of wood, cellulose, lignin, and extraneous materials in wood and bark; chemical utilization and modification of wood.

**4074 Seasoning and Preservation (4)** V. Prereg.: RNR 2043 or equivalent. 3 hrs. lecture; 3 hrs. lab. Principles of lumber drying and wood preservation; economics of the treatment.

**4095 Industrial Forestry Operations (2)** Survey of major forest products corporations; upper management personnel; corporate structure, philosophy, strategy, business outlook, employment and personnel trends; wood procurement, land management, environmental concerns.

**4051 Wildlife Habitat Management (3)** V. Prereg.: RNR 2043 or equivalent. 2 hrs. lecture; 1 hr. lab. One-week field trip. Students are responsible for paying for travel expenses associated with this course. Principles of management to modify a diversity of wildlife species, as well as specific management strategies to benefit single species; management scenarios for a variety of forest management lab will be different.

**4061 Problems in Natural Resource Management (1-4)** V. Prereg.: RNR 2043 or equivalent. 1-4 hrs. lecture; 1-4 hrs. lab. Students are responsible for paying for travel expenses associated with this course. Management, policy, and litigation practices; interests and values of various forest sites on physiological processes affecting survival, growth, and yield of trees; interpretation of response of trees to environmental stress.

**7005 Ecophysiological Methods/Instrumentation (2)** S-O Prereg.: credit or concurrent enrollment in RNR 7004 or PLHL 7004, or consent of instructor. 2 hrs. lecture; 3 hrs. lab. Ecophysiology and instrumentation of field methods and instrumentation for eco-physiology or physiological plant ecology research.

**7006 Behavior Ecology (3)** F-E Behavioral ecology of plants and animals; evolution of behavior; behavioral strategies for survival and reproduction; importance of behavior to management and conservation strategies.

**7010 Nutrition of Aquatic Animals (3)** S-E Prereg.: CHEM 2060 or 2261 or ANSC 4009. 2 hrs. lecture; 3 hrs. lab. Nutrition of cultured finfishes and shellfishes; nutrient requirements for growth and reproduction, digestion, metabolism, nutrition, and health interactions; feeds and feeding practices.

**7012 Ecology and Management of Waterfowl (3)** F-O 2 hrs. lecture; 3 hrs. lab. Students are responsible for paying for travel expenses associated with this course. Behavioral and ecological strategies of waterfowl throughout the annual cycle; population dynamics and habitat management; political and economic aspects of harvest management.

**7013 Wildlife Population Dynamics (3)** F-O Prereg.: EXST 7005 or equivalent. 2 hrs. lecture; 2 hrs. lab. Theories of population biology, population regulation, population action, life tables, mortality rate calculation; band data analysis; population modeling.

**7015 Ecology and Management of Upland Birds (3)** F-O 2 hrs. lecture; 3 hrs. lab. Students are responsible for paying for travel expenses associated with this course. Ecology and management of selected upland birds found in North America; students will develop a comprehensive management plan for a selected species.

**7016 Current Topics and Techniques in Conservation Science** (3) F-O 2 hrs. lecture; 3 hrs. lab. Scientific basis for the preservation of biodiversity; conservation strategies of government and non-government organizations; current status of biodiversity around the world; new techniques applicable to exotic species; conservation, methods of ex situ and in situ propagation procedures, basic principles of genetics and breeding; importance of crustaceans and mollusks including soft crabs, marine shrimp, freshwater prawns, crabs, oysters, clams, and mussels; emphasis on environmental requirements, facility development, hatchery and production management, budgets, and processing and marketing.

**7017 Genetics and Culture of Finfish (4)** S-O Prereg.: RNR 4002 and BIOL 2153; or equivalent. 3 hrs. lecture; 3 hrs. lab. Principles and practical aspects of breeding for genetic improvement of commercially important crustaceans and mollusks including soft crabs, marine shrimp, freshwater prawns, crabs, oysters, clams, and mussels; emphasis on environmental requirements, facility development, hatchery and production management, budgets, and processing and marketing.

**7024 Advanced Ichthyology (4)** F-O Prereg.: RNR 4002 and BIOL 4154; or equivalent. 3 hrs. lecture; 3 hrs. lab. Principles and practical aspects of breeding for genetic improvement of commercially important fish.

**7025 Advanced Aquaculture (3)** Prereg.: RNR 4002 or equivalent. 3 hrs. lab. Principles and practical aspects of breeding for genetic improvement of commercially important aquatic species; emphasis on international aquaculture systems, exotic species, and preparation of management plan for commercial aquaculture.

**7026 Shellfisheries Aquaculture (4)** F-O Prereg.: RNR 4002 and BIOL 4154; or equivalent. 3 hrs. lecture; 3 hrs. lab. Principles and principles of semiaquatic and food fish systems; selection of bivalves, mussels, and other aquatic animals; emphasis on environmental requirements, facility development, hatchery and production management, budgets, and processing and marketing.

**9001 Russian (4)** (5) Prereg.: RUSS 1001 or equivalent. Hearing, speaking, reading, and writing Russian; development of practical command of Russian grammatical categories unfamiliar to English speakers.

**9002 Intermediate Russian II (5)** (5) Prereg.: RUSS 1001 or equivalent. Hearing, speaking, reading, and writing Russian; development of practical command of Russian grammatical categories unfamiliar to English speakers.

**9003 Russian for Reading Knowledge (5)** (5) Prereg.: RUSS 1001 or equivalent. Reading, speaking, reading, and writing Russian; development of practical command of Russian grammatical categories unfamiliar to English speakers.
Russian grammatical categories unfamiliar to English speakers; translation.

★ 2075 Introduction to Russian Culture and Civilization (3) Taught in English: knowledge of Russian not required. Also offered as HIST 2135. Geography, history, literature, music, art, architecture, and scientific and technological achievements of Russia.

3061 Advanced Russian Discourse I (3) Prereq.: RUS 2002 or equivalent. Vocabulary building and readings in modern Russian; drill in oral and written original composition; attention to style, syntax, idioms, and inflections.

3062 Advanced Russian Discourse II (3) Prereq.: RUS 3061 or equivalent. Vocabulary building and reading in modern Russian; drill in oral and written original composition; attention to style, syntax, idioms, and inflections.

3071 19th Century Russian Literature I (3) Prereq.: RUS 2002 or equivalent. Russian literature from the beginning to the 19th century. Students who have taken Modern Russian or equivalent and senior standing. May be taken for a max. of 6 sem. hrs. of credit. Required of Russian Area Studies majors.

3072 20th Century Russian Literature I (3) Prereq.: RUS 2002 or equivalent. Russian literature of the 20th century; study of literary texts; grammatical and cultural analysis; practice in listening and writing.

3073 19th Century Russian Literature II (3) Prereq.: RUS 2002 or equivalent. Russian literature of the end of the 19th century. Practice in listening and writing.

3074 20th Century Russian Literature II (3) Prereq.: RUS 2002 or equivalent. Continuation of RUS 3072. Russian literature of the 20th century; study of literary texts; grammatical and cultural analysis; practice in listening and writing.

★ 3401 The Fairytale (3) Taught in English: knowledge of Russian not required. Masterpieces of 19th century Russian literature, including the works of Turgenev, Dostoevsky, Tolstoy, Chekhov.


4081 Russian Literature in Translation: 19th Century (3) Knowledge of Russian not required. Masterpieces of 19th century Russian literature, including the works of Turgenev, Dostoevsky, and Chekhov.

4090 Introduction to Russian Linguistics (3) Also offered as LING 4090. Russian phonetics, morphology, and history of the Russian language.

4101 Topics in Russian Literature in Translation (3) May not be taken for graduate credit. Selected authors or works of Russian literature will be studied in their original language. The Russian novel from its beginning to the end of the 19th century.

4102 Russian Linguistics (3) Special works of Turgenev, Dostoevsky, and Chekhov.

4061 Soviet Literature (3) Russian literature from 1917 to the present.

★ 4081 Russian Literature in Translation: 19th Century (3) Knowledge of Russian not required. Masterpieces of 19th century Russian literature, including the works of Turgenev, Dostoevsky, and Chekhov.


4090 Individual Readings in Corrections Policy (3) Prereq.: for a max. of 4 sem. hrs. of credit when topics vary. Selected topics on corrections policy.

4090 Corrections Internship (3) Prereq.: 2.50 gpa, 60 hrs. of course credit; passing grade in SW 4920, 4922, 4980, or consent of instructor. Pass/fail grading. Field study/placement in a corrections institution under the supervision of a faculty member.

4099 Individual Readings in Corrections (3) Prereq.: 2.50 gpa, 60 hrs. of course credit; 3 hrs. from SW 4020, 4022, 4080, or consent of instructor. May be taken for a max. of 6 sem. hrs. of credit when topics vary.

4500 Crisis Intervention (3) Introduction to major theories and research that describes and explains the range and complexity of problems that may emerge from natural or other disaster scenarios.

7001 Human Behavior and the Social Environment I (3) Prereq.: majors only and credit for or concurrent registration in SW 7003, 7004, 7005, and 7007. Socio-behavioral science base of social work practice; interrelationship of biological, psychological, social, and cultural determinants of human behavior; major bio-psychosocial developmental achievements and adaptations of human beings from conception through death.

7002 Human Behavior and the Social Environment II (3) Prereq.: SW 7003, majors only and credit for or concurrent registration in SW 7006, 7008, 7009, 7010. Social science base of social work practice; social systems in which human beings develop and live; focus on research related to social interaction.

7003 Social Welfare History and Policy (3) Prereq.: majors only and credit for or concurrent registration in SW 7001, 7004, 7005, and 7007. Development of social work as a profession; evolution of social welfare policies and programs; nature of social policy and policy formulation.

7004 Human Diversity and Oppression (3) Prereq.: majors only and credit for or concurrent registration in SW 7001, 7003, 7005, and 7007. Social dynamics of human oppression; effects of institutional discrimination, inequality, stigma, and prejudice stemming from racism, sexism, classism, and other social oppressions and multiculturalism for human behavior, social work practice, and social policy.

7005 Social Work Practice I (3) Prereq.: majors only and credit for or concurrent registration in SW 7001, 7003, 7004, and 7007. Introduction to social work theory, principles, and intervention skills common to social work practice with individuals and families; psychosocial perspectives in intervention.

7006 Social Work Practice II (3) Prereq.: SW 7005. Majorly and credit for or concurrent registration in SW 7002, 7008, 7009, and 7010. Techniques of working with various types of groups including treatment groups and planning action groups; community organization techniques.

7007 Foundation Field Internship I (3) Prereq.: majors only and credit for or concurrent registration in SW 7001, 7003, 7004, and 7005. Pass/fail grading. $1000 internship fee. Application of foundation knowledge, skills, values, and ethics to practice in an approved internship agency.

7008 Foundation Field Internship II (3) Prereq.: majors only and credit for or concurrent registration in SW 7002, 7006, 7009, and 7108. Pass/fail grading. $1000 internship fee. Continuation of SW 7007. Application of knowledge, skills, values, and ethics to practice in an approved internship agency. 240 clock hours.

7009 Social Research Methodology (3) Prereq.: majors only and credit for or concurrent registration in SW 7002, 7006, 7008, and 7100 Standards and methods of scientific inquiry applied in social work research; concept formation; research design; sources, collection, and presentation of data.

7101 Differential Diagnosis (3) Prereq.: majors only and credit for or concurrent registration in SW 7001, 7003, 7005, 7007, and 7009. Diagnostic and treatment tools for examining the functionality of human behavior in the context of diverse social systems.

7200, 7201 Integrative Colloquium in Social Work I, II (3) Prereq.: admission to the PAD program in social work or consent of instructor. Broad-ranging analysis and discussion of problems and issues in the social work profession.

7202 Issues and Research Problems in Social Policy (3) Prereq.: admission to the PAD program in social work or consent of instructor. Issues and problems in social welfare policy; research focus on policy formulation.

7203 Data Analysis for Social Work Research I (3) Prereq.: admission to the PAD program in social work or consent of instructor. Introduction to data analysis for social work doctoral students, including: organizing and presenting data, descriptive statistics, correlation, simple linear regression, inferential statistical methods for one and two samples, and one-way analysis of variance.

7204 Issues and Research Problems in Social Work Research II (3) Prereq.: admission to the PAD program in social work or consent of instructor. Social work intervention with individuals, families, groups, and communities; formulation and development of problem-solving research agendas.

7205 Pedagogical Issues in Social Work Education (3) Prereq.: admission to the PAD program in social work or consent of instructor. Enhancement of pedagogical knowledge, skills, and values; emphasis on teaching for the social work profession.

7206 Research Practicum (3-9) Prereq.: admission to the PAD program in social work or consent of instructor. Enhancement of pedagogical knowledge, skills, and values; emphasis on teaching for the social work profession.

7207 Integrative Seminar (3) Prereq.: courses in PAD program and at least one research methods course, plus consent of instructor. Development of research questions and hypotheses, and initial drafts of the dissertation proposal, including: introduction, literature review, and methodology sections.


7307 Direct Practice with Children and Adolescents (3) Prereq.: SW 7006. Multivariate patterns of behavior in children and adolescents; intervention strategies with children, parents, families, and groups.
7308 Social Work with Groups: Theory and Practice (3) Prereq.: 7504, 7505, and 7506. Direct practice skills associated with effective social work practice with groups; member's behavior and corresponding role behaviors and responses.

7309 Advanced Methods of Group Treatment (3) Prereq.: consent of instructor. Diagnostic and treatment procedures used in intensive group therapy.

7402 Social Work in Corrections (3) Prereq.: consent of instructor. Implementation of social work values, purposes, and methods in a school setting. Focus on the behavioral aspects of incarceration; relationship of law to social work; foundation courses in criminal justice, juvenile courts, and the rights of the offender.

7405 Marital and Family Treatment in Social Work (3) Prereq.: consent of instructor. Dynamic processes in a family setting. Focus on power and communication with children and families. Definition of poverty, its causes, consequences; strategies for its amelioration and elimination.

7410 Comparative Social Welfare (3) Prereq.: completion of all foundation courses and consent of instructor. Comparative analysis of international welfare systems; differential cross-national welfare systems; similarities and differences among nations.

7412 Social Work in Medical Care (3) Nature of social work practice in the field of medical care; medical care system and consumer problems; role of medical social workers.

7415 Child/Family I (3) Theories and skills of assessment and intervention with children and families.

7502 Advanced Methods of Group Treatment (3) Prereq.: completion of all foundation courses. Identification and modification of dysfunctional transactional patterns; family communication, improving the quality of marriage and family relationships.

7408 Family Intervention in Practice (3) Prereq.: consent of instructor. Advanced practice skills associated with effective social work practice in multiple service environments.

7710 Task-Oriented Group Interaction in Social Work (3) Prereq.: consent of instructor. Emphasis on understanding barriers to goal-directed interaction and on helping groups accomplish tasks.

7801 Family Violence (3) Prereq.: consent of instructor. Their relevance to social work social practice; program development and interventive approaches and issues.

7803 Grant and Proposal Writing for Human Service Organization (3) Prereq.: consent of instructor. Methods of accessing federal, state, and private funds; developing grant and contract proposals.

7804 Addictive Disorders in Contemporary Society (3) Prereq.: consent of instructor. Topics related to addictive disorders in contemporary society; their relevance to social work practice.

7807 Special Topics in Social Work (3) Prereq.: consent of instructor. May be repeated once by PhD students if topics vary. Selected topics on social work and social welfare theory, practice, and policy.

7905 Independent Research and Research in Social Work Practice (3) Prereq.: consent of instructor. May be repeated once by PhD students if topics vary.

7906 Independent Research and Research in Social Welfare Policy (3) Prereq.: consent of instructor. May be repeated once by PhD students if topics vary.

7907 Public Policies and the Aging (3) Prereq.: consent of instructor. May be taken for credit when topics vary.

7909 Research Project: Nullthesis (3) Prereq.: completion of all foundation courses and consent of instructor. Pass/fail grading. Research project, state of knowledge paper, or position paper.

8000 Thesis Research (1-12 per sem.) Prereq.: majors only and credit for or concurrent registration in SW 7501, 7502, 7503, 7504, and 7506. Pass/fail grading. $100 internship fee. Supervised internship in an approved agency setting where advanced knowledge, skills, values, and ethics are applied in the practice setting. 240 clock hours.

7502 Advanced Field Internship I (3) Prereq.: majors only and credit for or concurrent registration in SW 7501, 7502, 7503, 7504, and 7506. Pass/fail grading. $100 internship fee. Supervised internship in an approved agency setting where advanced knowledge, skills, values, and ethics are applied in the practice setting. 240 clock hours.

7504 Advanced Social Policy (3) Prereq.: majors only and credit for or concurrent registration in SW 7501, 7502, 7503, 7504, and 7506. Dimensions and patterns of social policy; evolution and design of provisions and services; current issues, problems, and trends.

7505 Advanced Direct Practice (3) Prereq.: completion of all foundation courses. Majors only and credit for or concurrent registration in SW 7501, 7502, 7503, 7504, and 7505. Advanced methods of effective individual and family group treatment of systemic issues in a holistic perspective.

7506 Community and Agency Contexts for Direct Practice (3) Prereq.: majors only and credit for or concurrent registration in SW 7501, 7502, 7503, 7504, and 7505. Community, organizational, and social aspects of social work; indirect practice skills associated with effective social work practice in multiple service environments.

SOCIETY • SOCL

In this department, the second digit of the course number denotes the subject area of the course, as follows:

0—general courses; 1—theory; 2—methods and statistics; 3—social organization; 4—social institutions; 5—social issues; 6—social interaction; 7—population and ecology; 8—not used; and 9—reading and research (except for thesis research and directed research that are numbered 8000 and 9000, respectively).

General education courses are marked with stars (*).

★ 1001 Human Societies (3) Comparative and historical analysis of human societies; major patterns of social change.

1005 Social Life in the United States (3) Open only to international students. An orientation course on people, culture, social institutions, and processes.

1481 Introduction to Science, Technology, and Society (3) Sociological analysis of knowledge generation, institutions of science and technology, and public understanding of science.

1701 Population Issues (3) Social demography; interrelations between population and society.

★ 2001 Introductory Sociology (3) Major subject areas and principles of sociology.

2002 HONORS: Introductory Sociology (3) Same as SOCL 2001 with a special honors emphasis for qualified students.

2001 Selected Topics in Sociology (3) May be taken for a max. of 6 hrs. of credit when topics vary.

2210 Introduction to Statistical Analysis (4) 3 hrs. lec.; 2 hrs. lab. Prereq.: MATH 1021 or equivalent. Open to sociology majors; open by permission of instructor. Descriptive statistics; inferential statistical methods including confidence interval estimation and hypothesis testing; analysis of means and proportions; one-way analysis of variance; simple linear regression and correlation; analysis of categorical data.
4111 Development of Social Thought (3) Prereq.: SOCL 2001 or equivalent. Early social thought, from primitive, tribal, and tribalistic thinking contributing to classical and contemporary sociology.

4211 Intermediate Research Methods (3) Prereq.: SOCL 2211 or equivalent. Also offered as PSYC 4017. Techniques of sociological research: alternative research designs, measurement, sampling procedures, observation, data collection procedures, coding, data processing, and analysis procedures.

4301 Social Organization (3) Prereq.: SOCL 2001 or equivalent. Structure and function of social systems and institutions.

4311 Complex Organizations (3) Prereq.: SOCL 2001 or equivalent. Bureaucracies and complex formal organizations; theories, goals, structure, processes, organizational behavior, and interaction of organizations with the environment.

4321 The Community (3) Prereq.: SOCL 2001 or equivalent. Classical and contemporary perspectives on the community: formal and methodological issues associated with community studies.

4331 Social Stratification (3) Prereq.: SOCL 2001 or equivalent. Class and rank structure in society; determinants of social class, mobility, and changes in class position of both individuals and groups; attitudinal and behavioral consequences of stratification.

4341 Social Change (3) Prereq.: SOCL 2001 or equivalent. Major theoretical and empirical problems in the study of social change.

4351 Rural Social Organization (3) Prereq.: SOCL 2001 or 2351 or equivalent. Social organization in rural societies: groups, organizations, institutions, and communities.

4401 The Family (3) Prereq.: SOCL 2001 or equivalent. The family as a social institution: sociological perspectives from structural functionalism to ethnomethodology.

4411 Sociology of Work (3) Prereq.: SOCL 2001 or equivalent. Work and the division of labor in industrial society; sociology of occupations and professions.

4413 Gender and Work (3) Prereq.: SOCL 2001 or equivalent. Analysis of past and present contributions of ethnic and racial minority groups in the workforce; theoretical and methodological issues associated with gender differences in the labor force.

4421 Modeling Communication Within Marital and Family Relationships (3) See CMST 4118.

4441 Sociology of Work (3) Prereq.: SOCL 2001 or equivalent. Work and the division of labor in industrial society; sociology of occupations and professions.

4451 Science, Technology, and Society (3) Prereq.: SOCL 2001 or equivalent. Scientific institutions and development; nature of technological decision making; reciprocal effects of scientific and societal change.

4511 Minority Peoples in the United States (3) Prereq.: SOCL 2001 or equivalent. Scientific institutions and development; nature of technological decision making; reciprocal effects of scientific and societal change.

4512 Sex Roles in Contemporary Society (3) Prereq.: SOCL 2001 or equivalent. Changes in sex roles and related behavior of males and females, including institutional and structural changes.

4531 The Aged in Contemporary Society (3) Prereq.: SOCL 2001 or equivalent. Social, demographic, psychological, cultural, and health factors related to the aging process in contemporary society.

4551 Sociology of Development (3) Prereq.: SOCL 2001 or equivalent. Concepts, perspectives, and research themes in sociocultural developmental change.

4601 Personality and Social Structure (3) Prereq.: SOCL 3601 or PSYC 3140 or equivalent. Interaction of social structures, such as the family, peer group, and school, with the personalities of individuals; processes by which each affects the other.

4611 Attitudes and Attitude Change (3) Prereq.: SOCL 3601 or PSYC 3140 or equivalent. Analysis of attitudes; social factors in their formation and change.

4621 Small Groups (3) Prereq.: SOCL 3601 or PSYC 3140 or equivalent. Analysis of groups, their structure and functions.

4631 Social Networks and Society (3) Prereq.: SOCL 2001 or equivalent. Processes of network formation and their consequences for social structure, organizations.

4701 Population (3) Prereq.: SOCL 2001 or equivalent. Processes that influence size and composition of human populations; determinants and consequences of demographic trends.

4711 Human Ecology (3) Prereq.: SOCL 2001 or equivalent. Exposition and evaluation of theory of social organization; emphasis on interdependence of population, technology, and organization in adaptation of a population to its environment.

7121 Seminar: Classical Sociological Theory (3) Prereq.: consent of instructor. Historical survey of sociology with primary emphasis on European (Marx, Weber, and Durkheim) and early American (Mead and Park) sociological thought.

7131 Seminar: Contemporary Sociological Theory (3) Prereq.: SOCL 7211 or equivalent. Current theoretical perspectives on sociological issues from structural functionalism to ethnomet hodology.

7201 Research Methods in Sociology (3) Prereq.: SOCL 2201 or equivalent. Introduction to inferential methods in sociological research; emphasis on interpretation and current research.

7203 Advanced Research Methods in Social Science (3) Prereq.: SOCL 7201 or equivalent. Also offered as POLI 7961. Survey of advanced methodology in the social sciences; emphasis on general linear model and causal models.

7211 Seminar: Methods of Social Investigation (3) Prereq.: EXT 7003 or equivalent. Research methods in the social sciences; interplay of theory and methods of research; formulation of research problems and design; measurement and scaling; sampling; ethics in research; and critiques of scientific social research.

7213 Specialized Topics in Social Science Methods (2-3) Prereq.: SOCL 7201 or equivalent. Also offered as POLI 7963. Survey of advanced methodology in the social sciences; emphasis on general linear model and causal models.

7351 Seminar: Topics in Rural Sociology (3) Prereq.: consent of instructor. May be taken for a max. of 12 sem. hrs. credit if topics vary. Specialized areas in rural sociology.

7351 Seminar: Topics in Social Organization (3) Prereq.: consent of instructor. May be taken for a max. of 12 sem. hrs. credit if topics vary. Specialized areas in rural sociology.

7591 Seminar: Topics in Social Issues (3) Prereq.: consent of instructor. May be taken for a max. of 9 sem. hrs. credit if topics vary. Specialized areas in social issues.

7591 Seminar: Topics in Social Institutions (3) Prereq.: consent of instructor. May be taken for a max. of 12 sem. hrs. credit if topics vary. Specialized areas in social institutions.

7691 Seminar: Topics in Population and Ecology (3) Prereq.: consent of instructor. May be taken for a max. of 6 sem. hrs. credit if topics vary. Specialized areas in population and ecology.

7901, 7902 Independent Reading and Research (3, 3) Prereq.: successful completion of at least one year of graduate work.

8000 Thesis Research (1-12 per sem.) “S”/“U” grading.

9000 Dissertation Research (1-12 per sem.) “S”/“U” grading.

SPANIAN § SPAN
Native speakers of Spanish will not receive credit for courses marked with an asterisk (*). General education courses are marked with stars (★).

1500 Elementary Spanish (4) F, S, Su Prereq.: For students with previous study of Spanish who did not place into SPAN 1102 through the Spanish Placement Examination. Credit will not be given for this course and SPAN 1101. Material covered in SPAN 1101 is covered in 1050. An honors course in language laboratory. Basic lexicon and structure of Spanish; emphasis on communicative language use.

1101 Elementary Spanish (4) For students with no previous study of Spanish. Students with previous study of Spanish should enroll in SPAN 1050. Credit will not be given for this course and SPAN 1101. Supplementary work in language laboratory. Basic lexicon and structure of Spanish; emphasis on communicative language use.

1102 Elementary Spanish (4) F, S, Su Prereq.: two years of high school Spanish. Credit will not be given for this course and SPAN 1102. Credit will be awarded for SPAN 1101 upon successful completion of this course with a grade of C- or better. Review of vocabulary and grammar and emphasis on communicative language use.

2001 Spanish for Teachers (3) Su Credit not applicable toward a major in Spanish. Does not count toward satisfying foreign language requirement for undergraduates. Basic communication patterns; practical everyday vocabulary, with exercises in comprehension and conversation.

2101 Intermediate Spanish (3) F, S, Su Prereq.: SPAN 1101 or equivalent. An honors course. Credit will not be given for this course and SPAN 1101. This is also available. Continuation of elementary Spanish. Additional emphasis on reading and writing.

2102 Intermediate Spanish (3) F, S, Su Prereq.: SPAN 1101 or equivalent. An honors course. SPAN 2101, is also available. Continuation of SPAN 2101.

2103 HONORS: Intermediate Spanish (3) F, S Same as SPAN 2101, with special honors emphasis for qualified students.

2104 HONORS: Intermediate Spanish (3) F, S Same as SPAN 2102, with special honors emphasis for qualified students.

2154 Intermediate Oral Communication (3) V Prereq.: SPAN 2102 or equivalent. Development of listening and speaking competency.

2155 Spanish Textual Commentary (3) F, S Prereq.: SPAN 2102 or equivalent. Oral and written commentary on a variety of genres and nonprint media in Spanish.

2165 Advanced Oral Communication (3) Prereq.: SPAN 2154 or equivalent, and credit or registration in SPAN 2155, or consent of instructor.

2201 Tutoring Learners of Spanish as a Second Language (1) Prereq.: SPAN 2123 or equivalent, EDCL 2001 and concurrent enrollment in EDCL 1001. 3 hrs. lab/field experiences in multicultural settings. A carefully monitored and evaluated Spanish tutoring experience in a local middle or high school under the guidance of the course instructor and a mentoring teacher.

2302 Developing Language Lessons for Spanish as a Second Language (1) Prereq.: EDCL 1001, SPAN 2101, and concurrent enrollment in EDCL 1002. 3 hrs. lab/field experiences in multicultural settings. Under the supervision of a Spanish faculty member and a teacher mentor, teacher candidates will design and deliver second language Spanish language lessons that incorporate audio-visual materials and technology-enhanced language learning activities.

2301 Advanced Spanish Grammar and Composition (3) F, S Prereq.: Credit or registration in SPAN 2155.

2302 Literary Analysis (3) F, S Prereq.: SPAN 2123, 2155, and 2165. Literary genres and their characteristics; incorporation of audio-visual materials and technology-enhanced language learning activities. Critical reading and commentary of Spanish texts.
Courses

4002 Spanish for Reading Knowledge (5) Su

4080 Modern Spanish-American Prose Fiction in Translation (3) F

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4003 Structure of the Spanish Language (3) V

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3980 Special Topics in Spanish (3) F,S

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3074 Advanced Readings on Hispanic-American Civilization (3) F Prereq.: SPAN 3010

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3071 Survey of Spanish Literature (3) F Prereq.: SPAN 3020

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3072 Survey of Spanish Literature (3) S Prereq.: SPAN 3020

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3073 Advanced Readings on Spanish Civilization (3) F Prereq.: SPAN 3101

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4001 History of the Spanish Language (3) V Development of Spanish from its beginnings to the present.

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4002 Spanish for Reading Knowledge (5) Su

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3071 Survey of Spanish Literature (3) F Prereq.: SPAN 3020

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4003 Instructional Strategies for the Second Language Spanish Classroom (1) Prereq.: EDUQ 3002, SPAN 3002, and concurrent enrollment in EDUQ 4094. Teacher candidates should be in the last two semesters in SPAN 4003, and concurrent enrollment in EDCI 4004. 4 hrs. lab/field experiences in multicultural settings. Teacher candidates will study and participate in activities that incorporate different classroom instructional structures, including teacher-to-whole class, task-based group activities, and student-to-student (pair work); candidates will design and conduct Spanish language lessons using learner-centered activities.

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4004 Critical Issues in Teaching Spanish as a Second Language: Capstone Course (3) Prereq.: SPAN 3003, and concurrent enrollment in EDUQ 4094. Teacher candidates should be in the last two semesters in completion of the requirement for a major in Spanish. Taught in Spanish and in the consultation of knowledge about the Spanish language, literature, and culture with respect to the teaching of subject content to middle and high school level learners.

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4005 Structure of the Spanish Language (3) Prereq.: SPAN 3010 or equivalent. Spanish morphology and syntax; structural and linguistic, and generative- transformational analyses and applications.

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4006 Spanish Medieval Literature (3) Spanish literature from its beginnings to the end of the 14th century; emphasis on the mester de juglaría, mester de críceles, and masterpieces of prose and poetry of the 14th century.

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4034 Special Topics in 18th and 19th Century Literature (3) M May be taken for a max. of 6 sem. hrs. of credit when topics vary.

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4035 Special Topics in Golden Age Prose (3) V May be taken for a max. of 6 sem. hrs. of credit when topics vary.

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4036 Special Topics in Golden Age Lyric and Dramatic Poetry (3) M May be taken for a max. of 6 sem. hrs. of credit when topics vary. Spanish drama and lyric poetry of the 16th and 17th centuries.

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4037 Spanish Literature from 1808 to 1936 (3) Prereq.: SPAN 3071 or 3072. Literature in all genres from the early Modernists to the Avant Garde.

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4046 Spanish Civil War (3) Prereq.: Since 1936 (3) Prereq.: SPAN 3071 or 3072. Literature in all genres since the Spanish Civil War.

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4081 Modern Spanish Prose Fiction in Translation (3) Taught in English. Knowledge of Spanish not required. Selected outstanding novels and short stories of modern Spanish literature from the 16th and 17th century Golden Age to the present; includes The Life of Lazarillo de Tormes and works by Cervantes, Pérez Galdós, Unamuno, Valle-Inclán, Pérez de Ayala, Cela, Lafort, and Gironella.

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4082 Modern Spanish-American Prose Fiction in Translation (3) Taught in English; knowledge of Spanish not required. Taught in Spanish or English. Spanish-American prose works by García Márquez, Cortázar, Fuentes, Carpenter, and Borges.

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4100 Women Writers in the Hispanic World (3) May be taken for a max. of 6 sem. hrs. of credit when topics vary. Examination of selected periods, themes, and genres.

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4144 Latin American Literature: 1942-1810 (3) Prereq.: one literature course in Spanish at the 3000 level or consent of instructor. Topics in colonial Latin American literature from 1492-1810.

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4145 Latin American Literature: 1810-1915 (3) Prereq.: one literature course in Spanish at the 3000 level or consent of instructor. Topics in Latin American literature from independence through modernismo (1810-1915).

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4146 Latin American Literature: 1915-1960 (3) Prereq.: one literature course in Spanish at the 3000 level or consent of instructor. Topics in Latin American literature from the historical avant-garde to 1960.

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4147 Latin American Literature: 1960-PreSent (3) Prereq.: one literature course in Spanish at the 3000 level or consent of instructor. Topics in Latin American literature from 1960 to the present.

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4200 Literature and Culture of Hispanics in the United States (3) Texts may be in English or Spanish. Selected periods, themes, and genres literature.

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4201 Cinema in Spanish (3) F,S Prereq.: consent of instructor. Screening and analysis of representative films from Spain and Latin America and their interrelations with literature.

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4400 Topics in Hispanic Cultural Studies (3) V May be taken for a max. of 6 sem. hrs. of credit when topics vary. Hispanic literary texts in relation to such domains as the arts, politics, religion, and society.

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4603 Applied Spanish Linguistics (3) Taught in Spanish or English. Problems of teaching Spanish pronunciation to English-speaking students.

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4604 Spanish Phonetics (3) Spanish phonetic systems; corrective and fluency drills in the language laboratory; problems of teaching Spanish pronunciation to English-speaking students.

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7983 Spanish Language Acquisition (3) V May be taken for a max. of 6 sem. hrs. of credit when topics vary. Spanish language variation.

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7985 Research in Hispanic Linguistics (3) May be taken for a max. of 6 sem. hrs. of credit with consent of department. Selectively investigation guided by departmental graduate faculty.

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7990 Special Topics in Hispanic Criticism (3) V With consent of department, may be taken for a max. of 6 hrs. of credit when topics vary.

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7991 Literature and Politics in the Modern Hispanic World (3) F,S

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7992 Theatre in the Modern Hispanic World (3) Study of Spanish American drama through its literary manifestations.

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7993 Literature and Religion in the Hispanic World (3) Prereq.: SPAN 3071 and/or 3072. Study of religious and spiritual systems in literature.

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8000 Thesis Research (1-12 per sem.) *S/"U" grading.

SWAHILI • SWAH Native speakers of Swahili will not receive credit for courses marked with an asterisk (*).

General education courses are marked with stars (**).

*1001 Elementary Swahili Language and Culture I (4) Also offered as AAAS 1001. Introduction to Eastern Africa and its cultures; basic phonology and structures of Swahili, emphasis on communicative language skills.

*1002 Elementary Swahili Language and Culture II (4) Prereq.: SWAH 1001. Also offered as AAAS 1002. Increased emphasis on speaking, reading, writing, and deepening appreciation of Swahili's role in Eastern African socio-cultural development.

*2003 Intermediate Swahili Language and Culture I (4) Prereq.: SWAH 1002. Also offered as AAAS 2003. Further mastery of grammar; development of reading skills and analysis of contemporary texts.

*2004 Intermediate Swahili Language and Culture IV (4) Prereq.: SWAH 2003. Also offered as AAAS 2004. Further development of skills in reading and analyzing contemporary texts, and more difficult forms of expression, such as Swahili poetry and traditional literary texts.

SYSTEMS SCIENCE • SYSC

7090 Systems Science Design Project (1-9) Prereq.: minimum of 12 sem. hrs. earned toward the systems science degree. Individual design, development, implementation, and documentation of a project applying systems techniques, possibly involving computing, to a problem in the student's specialization.

8000 Systems Science Thesis Research (1-12 per sem.) *S/"U" grading.

THEATRE • THTR

General education courses are marked with stars (**).

1000 Theatre Forum (0) May be repeated. Pass-fail grading. Weekly student performance and masterclass forum.

1001 Practical Elements of Stagecraft (3) Introduction to the skills and techniques used by artists and craftsmen in realization of the technological elements of all areas of live production, including training sessions in each of the main areas and departmental productions.

* 1020 Introduction to Theatre (3) Arts of the theatre and its artists; acting, directing, costume and scenic design: playwriting, architecture.

* 1021 HONORS: Introduction to Theatre (3) Same as THTR 1020, with basic emphasis for qualifed students.

1025 Acting: Improvisation (3) Exploration, through theatre games and movement training, of the actor's problems of intention, listening, physical expression of emotion, concentration, and mime.

1029 Stage Movement I (3) 2 hrs. lecture; 2 hrs. lab. Beginning stage movement for the actor, including flexibility, realization, spatial awareness, gesture and body composition, and physical characterization.

1127 Beginning Modern Dance I (3) 1 hrs. lab. May be taken for a max. of 2 hrs. of credit.

1131 Beginning Ballet (1) 3 hrs. lab. May be taken for a max. of 2 hrs. of credit.
1153 Beginning Jazz Dance (1) 3 hrs. lab. May be taken for a max. of 3 hrs. of credit.

1277 Intermediate Modern Dance (1) 3 hrs. lab. May be taken for a max. of 2 hrs. of credit.

1231 Intermediate Ballet (1) 3 hrs. lab. May be taken for a max. of 2 hrs. of credit.

1253 Intermediate Jazz Dance (1) 3 hrs. lab. May be taken for a max. of 2 hrs. of credit.

1800 Introduction to Dance (3) 3 hrs. lab. Introduction to the duties and responsibilities of the theatrical stage manager; emphasis on the stage manager's place in the theatrical organization and how he/she interacts with other members of the production team.

2022 Introduction to Theatre Design (3) Prereq.: concurrent registration in THTR 2026. Basic principles in designing lighting, costumes, scenery, and sound.

2023 Stage Makeup (4) Fundamentals of stage makeup. Study of base makeup and its variations, hair, color, light, and shade; practical experience in makeup through various productions.

2024 Introduction to Theatre Technology (3) Introduction to all areas of theatre technology and how they affect production; areas to be covered include: production-stage management, scenery, costumes, stage properties, lighting, sound, and music.

2025 Fundamentals of Acting (3) Prereq.: THTR 1025; and concurrent registration in THTR 2026. Principles involved in learning the skills of acting and their application through development of technical skill.

2026 Theatre Practicum I (1) May be taken for a max. of 3 sem. hrs. of credit. No more than a total of 3 sem. hrs. of THTR 2026 and 4116 may be taken for undergraduate credit. Participation in performance or production of a play produced by the Department of Theatre.

2027 Stage Voice: Basic Techniques (3) Development of the speaking voice through physical awareness, breath release, phonation, resonance, and articulation to meet theatre performance standards.

2028 Introduction to Dramatic Literature (3) A study of representative plays from the Greek era to the present.

2030 Intermediate Acting: Realism and Personalization (3) Prereq.: THTR 2025; 2 hrs. lecture; 3 hrs. lab. Study of the skills needed to portray realistic characters; exploration of the Stanislavski's work, including examination of naturalism and method acting.

2180 HONORS: Introduction to Dramatic Literature: Same as THTR 2128, with special emphasis for qualified students.

2130 American Musical Theatre (3) Also offered as MUS 3120. Development of the American musical in its cultural, theatrical, and social contexts from its beginnings to the present day; elements of musical theatre focusing on the work of composers, lyricists, designers, directors, choreographers, and performers.

2025 Advanced Acting (3) Prereq.: THTR 2030. Open only to theatre performance majors. 2 hrs. lecture; 3 hrs. lab. Characterization and scene work.

2027 Stage Voice: Advanced Techniques (3) Prereq.: THTR 2027. Continued development of the actor's vocal craft.

2029 Stage Movement I (3) Prereq.: THTR 1029. Continuation of THTR 1029. Specialized activities in character types, rhythm and tempo, mask work, and basic stage combat.

2101 Development of Theatre and Drama I (3) Historical survey of the development of theatre and drama from ancient Greek to French neoclassicism. Study of the skills needed to portray realistic characters; exploration of the Stanislavski's work, including examination of naturalism and method acting.

2132 Development of Theatre and Drama II (3) Historical survey of the development of theatre and drama from the 18th century to the present.

2113 Costume Construction Techniques for the Stage (3) Prereq.: THTR 2024. 6 hrs. lab. Study of the skills and techniques unique to the construction of costumes for the stage; emphasis on historical construction, cutting, finishing, design analysis, and adaptations for stage performance.

2114 Costume Crafts (3) Prereq.: THTR 3123; 2 hrs. lecture; 2 hrs. lab. Skills used in construction/modification of costume craft items; includes leatherwork, wig styling, hat making, shoe alteration, and construction of costume props.

3125 Tutus and Dancewear Construction (3) 6 hrs. lab. Skills and techniques unique to the construction of costumes for dancers; emphasis on stretch fabric and tute; construction includes: construction, cutting, fitting, design analysis, and adaptations necessary for dance performance.

3126 Costume Rendering (3) 2 hrs. lecture; 2 hrs. lab. Drawing and painting costumes for the theatre; emphasis in color, pattern, texture.

3130 Script Analysis (3) Prereq.: THTR 2028. Methods of studying playscripts in preparation for their production on stage through an examination of modernist scripts.

3134 Scenery and Properties Construction (3) Prereq.: THTR 2022 and 2024; 2 hrs. lecture; 2 hrs. lab. Examination and application of construction techniques and methodology as they apply to theatrical scenery and properties.

3220 Introduction to Nonprofit Arts Management (3) Overview of the organizational structure and operations of arts and cultural institutions, specifically those organized as non-profits.

3240 Marketing the Arts (3) Lecture and discussion, case analysis, service learning application of marketing concepts to not-for-profit arts organizations. 6 hrs. lab. May be repeated for a max. of 4 hrs. of credit. Admission by audition. Participation in dance theatre.

3290 Writing for Theatre, Film, Stage, and Screen (3) 3 hrs. lab. Survey of the historical, critical, and cultural context of the American film and theatre industries, with emphasis on the role of the screenwriter in the creative process. 6 hrs. lab. May be taken for a max. of 4 hrs. of credit. Admission by audition. Participation in dance theatre.

4021 Direction (3) Prereq.: THTR 2024 or equivalent. Technical skills required by the director, including the ability to work with actors to create a successful production. 6 hrs. lab. May be repeated for a max. of 4 hrs. of credit. Admission by audition. Participation in dance theatre.

4022 Musical Theatre Production (1-3) Prereq.: THTR 2024 or equivalent. Participation in the production of a musical theatre production under the direction of a member of the theatre faculty. 6 hrs. lab. May be repeated for a max. of 3 hrs. of credit. No more than a total of 3 hrs. of THTR 4022 and 4136 may be taken for undergraduate credit. Participation in performance or production of a play produced by the Department of Theatre.

4024 Directing I (3) Prereq.: THTR 2024 or equivalent. Technical skills required by the director, including the ability to work with actors to create a successful production. 6 hrs. lab. May be repeated for a max. of 4 hrs. of credit. Admission by audition. Participation in dance theatre.

4131 Seminar: Contemporary Theatre and Drama (3) May be taken for a max. of 6 hrs. of credit when topics vary. Selected topics in a chosen area of the contemporary theatre. 2 hrs. lecture; 2 hrs. lab. An advanced examination into the construction of both theatrical and nontheatrical scenes.

4132 Development of Theatre and Drama (3) Prereq.: THTR 2024 or equivalent. 2 hrs. lecture; 2 hrs. lab. An advanced examination into the construction of both theatrical and nontheatrical scenes.

4134 Scenery and Properties Construction (3) Prereq.: THTR 3134 or equivalent. 2 hrs. lecture; 2 hrs. lab. An advanced examination into the construction of both theatrical and nontheatrical scenes.

4151 Lighting Design I (3) Prereq.: THTR 3140 or equivalent. 2 hrs. lecture; 2 hrs. lab. An advanced examination into the construction of both theatrical and nontheatrical scenes.

4155 Lighting Design II (3) Prereq.: THTR 3140 or equivalent. 2 hrs. lecture; 2 hrs. lab. An advanced examination into the construction of both theatrical and nontheatrical scenes.

4199 History of Theatrical Design (3) Prereq.: THTR 2022. Historical survey of theatre with emphasis on the development of lighting, costume and scenic design for the Greek theatre to the present; focus on individual designers important to each discipline.

4300 Special Topics in Arts Administration (3) Prereq.: consent of instructor. May be taken for a max. of 9 sem. hrs. of credit when topics vary.

4301 Advanced Fundamentals of Nonprofit Arts Management (3) Prereq.: THTR 1029 or equivalent. Continued study of the principles of nonprofit arts management with emphasis on the economics of the arts including the income gap, the fiscal impact of the industry, and the importance of arts advocacy.

4305 Advanced Development Strategies (3) Prereq.: THTR 3520 or consent of instructor. Principles of fund raising for the not-for-profit organization including grant writing, individual and corporate giving, planned giving, capital campaigns, and special events.

4306 Scene Painting I (3) Prereq.: THTR 3415 or equivalent. 1 hr. lecture; 4 hrs. lab. (A) Contemporary scene painting for the stage; emphasis on advanced professional techniques.

4451 Lighting Design I (3) Lighting design for the theater; emphasis on script analysis, production concepts, and visual ideas.

4801 Dance History (3) Prereq.: THTR 1809 or consent of instructor. Development of dance from primitive cultures to the present.

4803 Dance Theatre (1) 3 hrs. lab. May be taken for a max. of 3 hrs. of credit every semester. Admission by audition. Experienced modern dancers participate in modern dance theatre as lead dancers and as choreographers.
4820 Advanced Stage Management (3) Prereq.: THTR 7221. Survey of theatrical production management techniques, including professional experience component with departmental approval.

4831 CAD Drafting for the Theatre (3) Prereq.: THTR 3001. EQUIV: ED 2421. 2 hrs. lab. Introduction to the fundamentals of AutoCAD drafting and its use in the theatre industry.

4901 Special Projects in Theatrical Design (1-3) Prereq.: consent of instructor. 2 hrs. lab. Approval of projects required by instructor prior to registration. Execution of practical production projects in theatrical design.

4902 Special Projects in Theatrical Technology (1-3) Prereq.: consent of instructor. 2 hrs. lab. Approval of projects required by instructor prior to registration. Execution of practical production projects in theatrical technology.

7001 Independent Projects in Performance Training (1-4) Prereq.: consent of instructor. May be repeated for a max. of 6 sem. hrs. of credit. Individual projects in performance training with close faculty supervision; emphasis may be in one or all of the following areas: acting, movement, voice, directing, or dance.

7008 Drama Writing (3-6) See ENGL 7008.

7130 Script Analysis and Dramaturgy (3) Methods of studying playscripts in preparation for their production on stage, through Aristotelian, modern, and postmodern approaches.

7220, 7221 Acting Studio IA, IB (4.5) Prereq.: admis- sion to M.F.A. Acting program. 3 hrs. lecture, 1 hr. lab. (IA) Intensive work in actor's basic tools; text analysis; comprehensive Stanislavskian technique and characteriza- tion. (IB) Emphasis on scene work from the modern reper- toire; auditioning.

7222, 7223 Acting Studio IA, IB (4,4) Prereq.: THTR 7221, 7222 (IA) Acting demands of Greek and Shakespearean drama; scene work with selected texts. (IBB) Acting demands of commedia dell'arte, comedy of manners, and farce; scene work with selected plays.

7224, 7225 Acting Studio IIIA, IIIB (2.2) Prereq.: THTR 7222. (IIIA) Special acting problems and stretch roles. (IIIB) Problems in audition techniques and building a career in performing art.

7227 Voice for the Actor I (3) Prereq.: admission to the M.F.A. program. 2 hrs. lecture; 2 hrs. lab. Development of vocal process through exercises in relaxation, alignment, and breathing; basis in speech articulation.

7228 Voice for the Actor II (3) Prereq.: admission to the M.F.A. program. 2 hrs. lecture; 2 hrs. lab. Further develop- ment for the actor's resonance, pitch, range, and articula- tion; improvisations with texts.

7229, 7230, 7231 Voice for the Actor III, IV, V (3,3,2) Prereq.: THTR 4228 or equivalent. 2 hrs. lecture; 2 hrs. lab. (IV) Advanced vocal dynamics of vocal range in more complex texts; work on major periods of dramatic literature; emphasis on character and style. (V) Dialects and special problems in vocal characterization; introduction to individual coaching in scene study from THTR 7224 and in support of performance problems.

7233 Stage Movement III (4) Prereq.: admission to the M.F.A. program or consent of instructor. 3 hrs. lecture, 2 hrs. lab. Preparation and integration of the actor's body in spatial awareness, flexibility, realignment, gesture, and body composition.

7234 Stage Movement IV (3) Prereq.: admission to the M.F.A. program or consent of instructor. 3 hrs. lecture; 1 Ar. lab. Continuation of THTR 7233 with additional work on ballet, T'ai Chi, physical improvisation, and dance.

7235, 7236 Stage Movement V, VI (3,3) Prereq.: THTR 7234 or equivalent. 2 hrs. lecture; 2 hrs. lab. (V) Un- armed and armed stage combat techniques. (VI) Period styles: manners, mutes, dance forms, and social under- standings in movement for major epochs of theatre from the Dark Ages through the 18th century; advanced stage combat.

7237, 7238 Stage Movement VII, VIII (3,3) Prereq.: THTR 7236 or equivalent. 2 hrs. lecture; 2 hrs. lab. (VII) Continued movement styles with focus on Greek, commedia dell'arte, Renaissance, Baroque, Rococo, and contemporary theatre. (VIII) Exposure to major trends in movement as performance material.

7320, 7321 Directing Seminar IA, IB (3,3) Prereq.: admission to M.F.A. directing program or consent of instructor. 2 hrs. lecture; 2 hrs. lab. (IA) Stage director's study of a script in preparation for creating an approach to production. A play's text and director's approach into dynamic images on stage; one act of a realis- tic play mounted on workshop level.

7322, 7323 Directing Seminar IIA, IIB (3,3) Prereq.: THTR 7321. SECTIONS: A) Preparation and presentation of scene design projects; emphasis on period and style. (IBB) Emphasis on ballet, opera, musical theatre.

7341, 7342 Rendering for the Theatre IA, IB (3,3) Prereq.: admission to M.F.A. design technology program or consent of instructor. 1 hr. lecture; 4 hrs. lab. (IA) Drawing and rendering techniques for scenic, costume, and lighting designers; emphasis on basic design elements and use of various media. (IB) Emphasis on methods of presen- tation.

7518 Studies in American and European Dress (3) See also HUEC 7518. May be taken for a max. of 6 sem. hrs. of credit when topics vary.

7519 Seminar in American Dress: 18th Century to 1880 (3) See also HUEC 7519. May be taken for a max. of 6 sem. hrs. of credit when topics vary.

7520 Seminar in American Dress: 1880 to Present (3) See also HUEC 7520. May be taken for a max. of 6 sem. hrs. of credit when topics vary.

7521, 7522, 7523 Advanced Costume Design I, II, III (4,4,4) Prereq.: admission to M.F.A. design technology program or consent of instructor. 3 hrs. lecture; 2 hrs. lab. (I) Preparation of advanced costume design projects; emphasis on scansion, characterization, and problem solving. (II) Emphasis on designing entire production projects to achieve unity, coherence, and style. (III) Emphasis on ballet, opera, musical theatre.

7524 Advanced Costume Technology I (4) Prereq.: admission to M.F.A. design technology program or consent of instructor. 2 hrs. lecture; 4 hrs. lab. Advanced problems in the planning and construction of historical costumes for the theatre, with emphasis on pattern drafting and draping.

7525, 7526 Advanced Costume Technology II, III, IV, V (3,3,3) Prereq.: admission to M.F.A. design technology program or consent of instructor. (II) Advanced planning and construction of costumes for the theatre; emphasis on historical construction, cutting, and tailoring. (III) Emphasis on selection, modification, and preparation of fabrics for stage costumes. (IV) Emphasis on costume accessories including millinery, footware, armur, and jewelry.

7623, 7624 Theatre Technique Seminar IA, IB (3,3) Prereq.: admission to M.F.A. design technology program. (IA) Advanced techniques used on stage and in the scene shop. (IB) Techniques using electronics and optics for the stage.

7625, 7626 Theatre Technique Seminar IIA, IIB (3,3) Prereq.: admission to M.F.A. design technology program. (IIA) Emphasis on theatre architecture and theatrical con- sultation. (IB) Emphasis on roles and responsibilities of the technical director and on preparation to enter the profes- sional world.

7630 Directed Professional Internship (1-12) Prereq.: admission to M.F.A. theatre program. 1-24 hrs. lab. Major acting, di- recting, design, or technical responsibility for one or more LSU productions.

8000 Thesis Research (1-12 per sem.) “S”/”U” grading. 9000 Dissertation Research (1-12 per sem.) “S”/”U” grading.

UNIVERSITY • UNIV

Unique courses of timely and general interest are offered periodically as “University” courses. These courses are inter-disciplinary, broad in scope, and centered on topics of current concern. Permission to offer a UNIV course must be obtained from the Office of Academic Affairs and the course must be approved by the Faculty Senate Courses and Curriculum Committee. University courses may not be offered more than twice (with the exception of The Boyd Professor Lecture Series). Each course carries undergraduate credit of one to three semesters. Acceptance of such credit toward fulfillment of degree requirements is decided by the faculty of each college or school within the University. The topic, credit, and class time of each University course are announced by the Office of Academic Affairs prior to the beginning of the semester in which the course is to be taught.

UNIVERSITY COLLEGE • UC

0060 Study Skills (2) F For students in Student Support Services Program only. Not for degree credit. Pass-no credit grading. Basic learning principles; includes time management, goal setting, note-taking, listening skills, reading, theme and report writing, memory, and organization.

0070 Success in Mentoring, Education, and Research (2) F For students in HHMI Professors Program or LA-STEM Research Scholars Program only. Not for degree credit. Pass-no credit grading. Students will be mentored as they prepare to become mentors and researchers. Introduction to college success tools, including learning strategies, time management, and organization.

0080 Pursuing Mentoring, Education, and Research (2) S Prereq.: UC 0050: For students in the HHMI Professors Program or LA-STEM Research Scholars Program only. Not for degree credit. Pass-no credit grading. Students continue to implement the college success tools gained in UC 0050 and learn about research; students begin a service-learning project mentoring high school students and continue to be mentors.

0090 Advanced Independent Mentoring, Research Presentation, and Service-learning Project (2) S Prereq.: DVM or equivalent degree or consent of instructor. May be taken for a max. of 8 sem. hrs. of credit when topics vary.

VETERINARY MEDICINE • VMED

7001 Seminar: Veterinary Clinical Sciences (1) V Prereq.: DVM or equivalent degree or consent of instructor. May be taken for a max. of 8 hrs. of credit when topics vary. Development in veterinary internal medicine, surgery, dermatology, ophthalmology, cardiology, neurology, theriogenology, and laboratory/exotic animal medicine.

7002 Research Techniques in Veterinary Clinical Sciences (1-4) Prereq.: appropriate 4000- or 5000-level course in selected topic or equivalent and consent of instructor. May be taken for a max. of 6 sem. hrs. when topics vary. Specialized research techniques related to a specific discipline of veterinary clinical sciences.

7003 Special Topics in Veterinary Clinical Sciences (1-4) Prereq.: appropriate 4000- and 5000-level course in selected topic or equivalent and consent of instructor. May be taken for a max. of 8 hrs. of credit when topics vary. Aspects of the biochemical, physiological, pathophysiological, epidemiological and economic basis of veterinary medicine.

7201 Veterinary Gastroenterology (2) V Prereq.: DVM or equivalent degree or consent of instructor. Gastrointestinal diseases and related conditions; emphasis on diagnostics, pathophysiology, and management options.

7202 Veterinary Surgical Techniques (1) V Prereq.: DVM or equivalent degree or consent of instructor. 3 hrs. lab. May be taken for a max. of 6 hrs. of credit when topics vary. Advanced surgical and experimental techniques related to an organ system.

7203 Advanced Veterinary Orthopedics (2) V Prereq.: DVM or equivalent degree or consent of instructor. Bone, muscle, tendon, and ligament diseases with emphasis on pathophysiology, diagnostics, and management options.

7204 Veterinary Clinical Neurology (2) V Prereq.: DVM or equivalent degree or consent of instructor. Diseases of the central and peripheral nervous system with emphasis on pathophysiology, diagnostics, neurosurgery, and other management options.

7205 Advanced Veterinary Urogenital Disease (2) S Prereq.: DVM or equivalent degree or consent of instructor. Urinary and reproductive tract diseases and related conditions with emphasis on pathophysiology, diagnostic, and management options.

7206 Veterinary Cardiovascular Disease (2) V Prereq.: DVM or equivalent degree or consent of instructor. Cardiovascular diseases and related conditions with emphasis on pathophysiology, diagnostic and management options.

7207 Veterinary Respiratory Disease (2) V Prereq.: DVM or equivalent degree or consent of instructor. Respiratory diseases and related conditions with emphasis on pathophysiology, diagnostic and management options.

7210 Veterinary Scientific Journal Review (1) Prereq.: appropriate 4000- and 5000-level course in selected topic or equivalent and consent of instructor. May be taken for a max. of 6 sem. hrs. of credit. In depth critique of current veterinary journals with emphasis on appraising experimental design, analysis, and interpretation and application of results.

VETERINARY SCIENCE • VETS

2900 Gender, Race, and Nation (3) Prereq.: WGS 2500 and permission of instructor. May be taken for a max. of 6 sem. hrs. of credit when topics vary. An interdisciplinary study of gender and sexuality across diverse racial, ethnic, cultural, and class boundaries.

4900 Independent Reading and Research in Women's and Gender Studies (3) Prereq.: WGS 2500 and permission of instructor and department. May be taken for a max. of 6 sem. hrs. when topics vary. Issues central to contemporary feminist inquiry.

7150 Seminar in Feminist and Gender Theory (3) Prereq.: WGS 2500 and permission of instructor and department. May be taken for a max. of 6 sem. hrs. when topics vary. Topics in feminist and gender theory. Students are encouraged to develop research projects relevant to their primary disciplines and to their research interests.