COURSES OF INSTRUCTION
Course Numbering System and Abbreviations

Students should be familiar with the University's course numbering system and its significance, and with the abbreviations used to indicate the amount of credit.

Upper- and Lower-Division Courses

Courses numbered from 1500 to 1599 are designed for freshman level; from 2600 to 2699, the sophomore level; from 3700 to 3799, the junior level; and from 4800 to 4899, the senior level. Courses numbered from 5800 to 5899 are swing courses, i.e. senior-level courses that have also been approved for graduate credit. The freshman and sophomore levels constitute the lower division, and the junior and senior levels the upper division.

Sequences

Ordinarily, a comma between numbers (e.g., 1501, 1502) indicates that the course sequence extends throughout the year, but that credit is given for each course individually.

Abbreviations

The abbreviation “s.h.” at the end of a course description stands for “semester hours of credit.” Thus, credit for a three-hour, two-semester course is indicated by the notation “3+3 s.h.,” meaning “three semester hours of credit each semester.”

The abbreviation “NC” means “No Credit.”

“Prereq.” stands for “Prerequisite.” The prerequisite for a course is usually listed in the course description.

Honors courses are designated by the suffix “H.” Laboratory courses are designated by the suffix “L.”

The key for course area abbreviations can be found on page 418.

Courses are listed in alphabetical order by subject area and followed by the course abbreviation. Exceptions to this are Foreign Languages, where each language is included alphabetically under the heading FNLG; and Applied Music classes, which are listed under MUAC–Music, Applied Classes.

The department or college offering the courses is noted in smaller type in the heading. Courses in interdisciplinary programs are indicated as such.

NEOMED stands for Northeast Ohio Medical University.

Technology/Laboratory Materials Fees will be applied to some courses. Check the Banner Self-Service Class Schedule to determine the fee for any particular course.

ACCOUNTING—ACCT
Lariccia School of Accounting and Finance

Lower-Division Courses

1503. Elementary Accounting. Principles, concepts, and terminology related to the accounting cycle. Examination of procedures related to control of cash and payroll activities. Does not fulfill WCBA requirements. 3 s.h.

2600. Accounting Field Experience. Internship and/or cooperative education experiences in accounting. Students may be assigned to corporate, non-profit, or government entities on a semester basis. Can repeat this course once for a different field experience. Pre-req.: 2.5 GPA, department approval and sophomore standing. 1 s.h.

2602. Financial Accounting. Study of the accounting cycle and generally accepted accounting principles including preparation of financial statements. Pre-req.: Sophomore standing or C or better in BUS 1500 and C or better in MATH 1507 or level 40 on math placement test. 3 s.h.

2603. Managerial Accounting. Study of the accounting informational needs of management. Emphasis on techniques of planning and control. Pre-req.: C or better in ACCT 2602. 3 s.h.

2603L. Managerial Accounting Spreadsheet Lab. The purpose of this course is to provide spreadsheet skills to business majors. The course will be taught using current software and will cover areas like spreadsheet design, formula development, pivot tables, charting basics and importing and exporting of data. This course is required for accounting and finance majors and may be taken concurrently with Accounting 2603. Pre-req.: C or better in ACCT 2602 and concurrently with ACCT 2603 or permission of the director. 1 s.h.

Upper-Division Courses

3701, 3702. Intermediate Accounting 1, 2. Comprehensive study of the theories and concepts underlying financial accounting. Emphasis on income determination, asset valuation, measurement of liabilities and changes in financial position. Pre-req.: C or better in ACCT 2603 and ACCT 2603L and 2.5 overall GPA for ACCT 3701; C or better in ACCT 3701 and 2.5 overall GPA for 3702. 4+4 s.h.

3709. Accounting Information Systems. Study of systems analysis, design, and implementation within the context of an accounting information system. Topics include a treatment of the business computing environment, security and control of information, the accounting information system as a component of the management information system, and decision support and expert systems. Pre-req.: C or better in ACCT 3701. 2.5 overall GPA. 3 s.h.
3710. Analysis and Design of Accounting Databases. An introduction to the analysis of accounting databases. Specific emphasis is placed on the structure and use of accounting databases, particularly XBRL. Prereq.: ACCT 3709. 2.5 overall GPA 3 s.h.

3711. Cost Accounting. Study of cost accumulation for products manufactured under job order or continuous manufacturing processes; cost behavior and profit-volume relationships; cost structures for control and motivation; relevant costs for non-routine decision making. Prereq.: C or better in ACCT 2603 and ACCT 2603L and 2.5 overall GPA. 3 s.h.

3712. Advanced Cost. In-depth study of standard and differential costing. Compilation and preparation of budget data for managerial and administrative purpose. Prereq.: C or better in ACCT 3711. 2.5 overall GPA.

3721. State and Local Taxes. Theory applicable to state and local taxation. Primary emphasis on taxation principles in current use by state and local government units located throughout the United States. Case law is studied, some representative tax returns prepared. Prereq.: C or better in ACCT 2603. 2.5 overall GPA.

3730. Oil and Gas Accounting. Accounting and taxation principles and procedures for the petroleum industry. Topics include exploration, leasing, drilling and production problems. Prereq.: C or better in ACCT 2603. 2.5 overall GPA.

3750. Fraud Examination. Study of occupational fraud and abuse. Topics include asset misappropriation schemes, corruption, and fraudulent statements, including fraudulent financial statements. Coverage of these topics includes implications for the fraud examiner and corporate management. Prereq.: C or better in ACCT 2602. 2.5 overall GPA.

4801. Advanced Accounting. Financial accounting and reporting related to complex and highly sophisticated business transactions. Topics include the equity method, business combinations, variable interest entities, segment and interim reporting, worldwide diversity of accounting standards, foreign currency transactions and translation, SEC reporting, legal reorganizations and liquidations, partnership accounting, and estates and trusts. Prereq.: C or better in ACCT 3702 and FIN 3720. 2.5 overall GPA. 4 s.h.

4808. Auditing and Fraud Investigation. The theory and practice of financial auditing with emphasis on fraud investigation. Topics include professional standards, audit reports, evidence, occupational fraud, data interrogation, and computer-assisted audit techniques. Students analyze actual business fraud cases. Prereq.: C or better in ACCT 3702, 3709, and 3711. C or better in FIN 3720. 2.5 overall GPA. 4 s.h.

4809. Security and Privacy in Electronic Commerce. This course focuses on the technology and communication infrastructure supporting electronic commerce and its impact on auditing. Encryption, public key infrastructure, digital signatures, payment schemes, and web commerce are discussed. Prereq.: ACCT 4808. 2.5 overall GPA. 3 s.h.

4813. Federal Taxation 1. Introduction to Federal taxation theory and concepts relating to individuals and business entities, including tax research and tax form preparation. Prereq: C or better in ACCT 3701, or FIN 3720. 2.5 overall GPA. 4 s.h.

4815. Estate Planning. A study of estate and gift tax law including tax return preparation. Emphasis on the importance of estate planning and the devices available for use in such planning, and effective uses of lifetime gifts, trusts, life insurance, pension plans, profit sharing, and other fringe benefit plans. The effects of state inheritance tax and property laws upon estate planning will be included. Prereq: C or better in ACCT 4813. 2.5 overall GPA.

4817. Income Tax Preparation 1. Preparation of actual federal, state and local income tax returns of people from the community. Completion of an IRS training program in federal income taxation of individuals, including international students and scholars and military personnel. Training using professional income tax preparation software is also provided. Prereq.: ACCT 3701 or permission of instructor. 2.5 overall GPA.

4818. Income Tax Preparation 2. A continuation of ACCT 4817. Income Tax Preparation 1. Completion of an updated/current IRS training program in federal income taxation of individuals, including international student and scholar and military income tax preparation. Students also receive updated training in current income tax preparation software. Students prepare federal, state and local income tax returns for individuals using current law. Because of previous experience in ACCT 4817, students prepare more-complex tax returns and provide guidance and leadership to first-year students. May be repeated once. Prereq.: ACCT 4817. 2.5 overall GPA. 3 s.h.

4835. Research in Accounting and Taxation. This course provides useful guidance and information in conducting practical professional tax and accounting research. A broad range of case analyses allows the instructor to focus on appropriate current topics in the accounting profession. Three hours lecture and hands-on research per week. Prereq.: C or better in ACCT 3702 and ACCT 4813. 2.5 overall GPA. 2 s.h.

4840. Accounting Internship. The student is given the opportunity to relate theory to practice in a career related on-site field experience with a participating organization. Prerequisites: Accounting major, junior standing, 2.5 overall GPA, and approval of director.

4851. Professional Practice in Accounting. Provides students with cooperative education experiences in accounting. Students may be assigned to public, corporate, or government entities on a semester to semester basis. May be repeated. Prereq: Accounting major, junior standing. 2.5 overall GPA. 1 s.h.
ADVERTISING — ADV
Department of Marketing

Upper-Division Courses

3711. Marketing Communications. Examines the integration of promotional activities within a marketing context. Presents the marketing communication role of the four elements in the promotional mix then takes a holistic perspective that focuses on the interrelationships among advertising, public relations, sales promotion, and personal selling. Prereq.: BUS 1500 and sophomore standing. 3 s.h.

3712. Creative Strategies in IMC. The creative process is related to the different message and graphic needs required in advertising, public relations, and sales promotion. Examines the synergistic possibilities of the separate efforts focused on the same creative strategy within an integrated marketing communications (IMC) campaign. Prereq.: ADV 3711 and GPA of 2.5. 3 s.h.

3717. Media Planning and Buying. Planning, executing, and controlling of media buys. Techniques of allocation of budget among print and electronic media explored on national, regional, and local levels familiarizing the student with syndicated media resources. Prereq.: ADV 3711 and GPA of 2.5. 3 s.h.

4811. Direct Marketing. In-depth investigation of direct marketing including mail order and direct response advertising. Measurability, accountability, lists, and the integration of direct marketing into the total marketing efforts. Prereq.: ADV 3711 and GPA of 2.5. 3 s.h.

4855. IMC Campaigns. Capstone course in the integrated marketing communications curriculum. By employing the fundamental theories and practices garnered from previous integrated marketing communications courses for a specific IMC problem, the focus is the development of an integrated marketing communications campaign. Prereq.: ADV 3711, 3712, 3717 and GPA of 2.5. 3 s.h.
3701. Leadership Studies I. Study of leadership, professional knowledge, and communication skills required for an Air Force officer. The role of a leader as supervisor and counselor is discussed along with military ethics. Prereq.: Permission. 3 s.h.

3702. Leadership Studies II. Study of quality management fundamentals and communication skills for the Air Force officer. The Air Force personnel evaluation system is discussed along with military ethics. Prereq.: Permission. 3 s.h.

3703. Leadership Laboratory. An instruction program that prepares an individual to undertake the broad range of technical tasks associated with military leadership and defense management. Grading is Credit/No Credit. 1 s.h.

3704. Leadership Laboratory. An instruction program that prepares an individual to undertake the broad range of technical tasks associated with military leadership and defense management. Grading is Credit/No Credit. 1 s.h.

4801. Defense Studies/Preparation for Active Duty 1. A look at political, economic, and social constraints upon national security and defense structure. The role of the military including joint operations is discussed. Prereq.: Permission. 3 s.h.

4802. Defense Studies/Preparation for Active Duty 2. The role of the military and regional defense issues are studied. Current Air Force issues and other topics relevant to preparing an Air Force officer for active duty are covered. Prereq.: Permission. 3 s.h.

4803. Leadership Laboratory. An instruction program that prepares an individual to undertake the broad range of technical tasks associated with military leadership and defense management. Grading is Credit/No Credit. 1 s.h.

4804. Leadership Laboratory. An instruction program that prepares an individual to undertake the broad range of technical tasks associated with military leadership and defense management. Grading is Credit/No Credit. 1 s.h.

AFRICANA STUDIES—AFST Interdisciplinary

2600. Introduction to Africana Studies 1. The social-historical and intellectual heritage of black people in Africa and the Americas. 3 s.h.

2601. Introduction to Africana Studies 2. The cultural and intellectual heritage of black people in Africa and the Americas as reflected in literature, philosophy, and art. 3 s.h.

3700. Africana Studies Colloquium 1. A social studies seminar focusing on the historic, economic, political, or social aspects of the experiences of people of African descent. May be repeated once with different content. Prereq.: AFST 2600. 3 s.h.

3701. Africana Studies Colloquium 2. A humanities seminar focusing on the art, music, literature and/or philosophy of people of African descent. May be repeated once with different content. Prereq.: AFST 2601. 3 s.h.

ALLIED HEALTH—AHLT
Department of Health Professions

1502. Applied Pathophysiology. Introduction to clinical anatomy, physiology, and pathophysiology with application to acute and chronic illness. 4 s.h.

3705. Pharmacotherapeutics. Advanced concepts and integration of various drug interactions as applied to modern drug therapy. Analysis of drug regimens related to a broad spectrum of pathologic conditions. Prereq.: BIOL 1545 or 1551 and 1552, MATC 2605, or permission of instructor. 3 s.h.

3706. Practice Management for Dental Hygiene. Management of dental hygiene care including appointment control, developing and maintaining recall systems, and insurance management. Dental marketing problem solving and the business relationship between dental patients and dental hygiene professionals. Prereq.: DHYG 2628. 3 s.h.

3708. Preventive Public Health Care. Application of current health care philosophies in disease prevention. In-depth case study of a specific public health problem and its prevention. Prereq.: BIOL 1545 or 1551 and 1552, or permission of instructor. 3 s.h.

3709. Elements of Urban Environmental Health Practices. Focus on development and implementation issues of environmental and public health programs necessary for urban and rural communities to meet acceptable public health standards at the local health department level with emphasis on resources and staffing. AHLT 3708, or permission of instructor. Also listed as PHLT 3709. 3 s.h.

3710. Gerodontology. In-depth study of geriatrics as it relates to dental hygiene care and specific concerns of the elderly. An extramural experience with a geriatric patient. Prereq.: DHYG 1513. 3 s.h.

3720. EMS Management. A review of EMS system design, staffing, chain of command, medical education, policies and procedures, record keeping, interagency relationships, community resources and involvement, and legal aspects relevant to private and public emergency medical services. Prereq.: EMS 2614. 3 s.h.

3721. Pediatric Emergency Care. A study of the pathophysiology, symptomatology, advanced diagnostic and therapeutic techniques of medical and traumatic emergencies unique to the pediatric patient. Prereq.: EMTC 2640. 3 s.h.

3740. Pathology of Infectious Diseases. Pathology, prevention, transmission, and treatment of infectious disease; emphasis on nosocomial, opportunistic, and emerging bacterial, fungal, parasitic, and viral organisms. Prereq.: BIOL 1545 or 1551 and 1552, or permission of instructor. 3 s.h.
3755. Principles of Occupational Health and Safety. Contemporary concepts of occupational health and safety as they apply to health-related environments. Includes development of elements needed to implement comprehensive health and safety plans. Prereq.: AHLT 3708. 3 s.h.

4801. Special Topics. The directed study and research of a special problem or issue related to the health field. The topic of interest allows the student to participate in the investigation of aspects of administration, education, business, or research as these pertain to the particular health specialty. May be repeated for a total of 6 s.h. Prereq.: AHLT 5840 or permission of instructor. 1-3 s.h.

4804. Stress and the Health Care Professional. Personal reactions of those involved in health education or the delivery of health care to patients, families, and their health environment. Indicators of stress and coping strategies, organizational systems, communication theory, conflict resolution, problem solving, and burnout. Prereq.: AHLT 5840 or permission of instructor. 3 s.h.

4805. Health Education for Allied Health. University as well as hospital-based programs reviewed in regard to accreditation, clinical vs didactic instruction, use of simulations, and evaluation techniques. Public health education and the role of the Allied Health professional. A major learning unit and/or research project required. Prereq.: AHLT 3708 or permission of instructor. 3 s.h.

4806. Research Methods. Measurement and interpretation of health data and their application in the research process. Research design considerations, data collection methods, and data analysis of health care research projects. Prereq.: AHLT 5840, or permission of instructor. 3 s.h.

4808. Environmental Health Concerns. Industrial hygiene, hazardous and infectious waste, air and quality, and sanitation policies in health care facilities. Pertinent federal, state, and local legislation. Prereq.: AHLT 3708 or permission of instructor. 3 s.h.

4810. Management Skills for Health Professionals. A study of the conceptual framework of supervision in Health Care Organizations with emphasis on managerial skills, formulation of policies, principles of budgeting, performance appraisals, and community relations. Prereq.: AHLT 5840, 4805, or permission of instructor. 3 s.h.

4812. Advanced Cardiac Life Support. ECG interpretation, cardiovascular drug pharmacology, airway management and resuscitation techniques used in the management of cardiac emergencies. The course exceeds the objectives of the American Heart Association's Advanced Cardiac Life Support program for initial certification or recertification. Two hours lecture, three hours laboratory. Prereq.: AHLT 3705 or permission of instructor. 3 s.h.

4820. Directed Research. Individual study of an issue related to the health care field. Students must present research at a faculty and student forum. Prereq.: Senior standing and AHLT 4806 or a research methods course approved by the course instructor. 2 s.h.

4831. Industrial Hygiene. Basic concepts of industrial hygiene including anticipation, recognition, and evaluation of environmental and safety hazards as they pertain to the workplace. Prereq.: AHLT 3708, 4808, or permission of instructor. 3 s.h.

4831L. Industrial Hygiene Laboratory. Application of basic concepts of industrial hygiene including anticipation, recognition, and evaluation of environmental and safety hazards as they pertain to the workplace. 1 s.h.

4835. Health Care Diversity. Strategies of communication that enable the student to understand socioeconomic, political, ethnic, and religious diversity in health care. Prereq.: AHLT 5840 or permission of instructor. 1 s.h.

5807. Epidemiology. A study of the interrelationships of the host, agent, and environment in determining the causation, frequency, and distribution of disease. Prereq.: AHLT 3708, 5840, 4806, or permission of instructor. 3 s.h.

5816. Environmental Regulations. Structure and function of federal, state, and local agencies responsible for implementing environmental legislation. Emphasis on the duties and authority of different health and environmental agencies and specific legislation dealing with environmental impacts. Prereq.: AHLT 3708, 5807 or permission of instructor. 3 s.h.

5840. Comparative Health Systems. Problems and issues facing global health care systems including access to care, financing and rationing of services. A major project is included. Prereq.: AHLT 3708 or permission of instructor. 4 s.h.

AMERICAN STUDIES—AMER Interdisciplinary

2601. American Identity. Study of American Identity through historical, literary, artistic, material, media and other sources. Emphasis on American pluralism and cultural debates over the meaning of American identity. 3 s.h.

2605. Turning Points in U.S. History 1. Key episodes in the social, economic, political, and cultural developments of the United States to 1877, exploring how diverse peoples shaped the growing nation. Cross-listed with HIST 2605. 3 s.h.

2606. Turning Points in U.S. History 2. Key episodes in the social, economic, political, and cultural developments of the United States since 1877, exploring how diverse peoples shaped the growing nation. Cross-listed with HIST 2606. 3 s.h.
2610. Work and Class in American Culture. Interdisciplinary thematic exploration of work and class in American culture with emphasis on the Mahoning Valley. Includes the impact of social movements, technological developments, and new ideas and knowledge. Examines the relationship of class to such social categories as race, gender, sexuality, ethnicity, and place. Prereq.: Placement in ENGL 1550. 3 s.h.

3700. Minority Groups. Survey of the origins and characteristics of ethnic and racial minority groups, with emphasis on the significance of membership in such a group for in-group, out-group, and community solidarity. Cross-listed with SOC 3700. Prereq.: SOC 1500.

3701. Approaches to American Studies. Survey of central issues and themes in American cultural studies, with emphasis on interdisciplinary approaches and cultural diversity. May focus on a theme chosen by the instructor, such as nature and culture, work, or class in America. May be repeated once with a different topic. 3 s.h.

3705. Cultural Anthropology. A cross-cultural comparison of the cultural norms that regulate society, emphasizing the functional prerequisites for the existence of society and individual demands on society. Cross-listed with ANTH 3705. Prereq.: ANTH 2602. 3 s.h.

3720. Applied Sociology. Uses of sociology in practical affairs, providing theory and data for public policy, institutional reform, social action programs, and social inventions. Contributions to architectural design, industrial engineering, community planning, and innovative legislation. Cross-listed with SOC 3720. Prereq.: SOC 1500. 3 s.h.

Anthropology—ANTH

Lower-Division Course

1500. Introduction to Anthropology. An exploration of what it means to be human from a biological and cultural perspective using archaeology, bioanthropology, and ethnography to trace over four million years of human development. 3 s.h.

1503. The Rise and Fall of Civilizations. Comparative survey of the archaeological evidence on the origins, development, and collapse of the great early civilizations of the world. The transformation of societies from settled villages to urban states in Mesopotamia, Egypt, China, Mexico, and Peru. Analysis of the archaeological discoveries, alternative interpretations, and general theories of cultural evolution. 3 s.h.

2600. Human Osteology. An examination of the anatomy of the skeleton in a defleshed state to gain an understanding of the characteristics and personal biology of individuals and to explore the range of human variation within and between populations. 3 s.h.

Upper-Division Courses

3701. Social Statistics. Measurement and interpretation of social data by the use of descriptive techniques. Examines methods of probability theory as a basis for statistical inference, hypothesis testing, correlation, chi-square, and variance analysis. Prereq.: SOC 1500 or ANTH 1500, successful completion of ENGL 1551 and MATH 1501 or a level 3 or higher on the math placement exam. Listed also as SOC 3701. 4 s.h.

3702. Archaeology. An introduction to the methods and subject matter of archaeology in its reconstruction of Paleolithic and prehistoric cultures as inferred from artifacts. Prereq.: ANTH 1500 or ANTH 1503. 3 s.h.
3703. Biological Anthropology. The physical origins and development of the human species as a member of the primate order and the biological bases of human differences disclosed by human paleontology and archaeology. Prereq.: ANTH 1500. 3 s.h.

3704. Primates. Primate evolution throughout the Cenozoic Era, from primate origins to the advent of hominids. Examines research into the natural behavior of a wide range of primates, focusing on the social organization of terrestrial monkeys and apes. Prereq.: ANTH 3703. 3 s.h.

3705. Cultural Anthropology. A cross-cultural comparison of the cultural norms that regulate society, emphasizing the functional prerequisites for the existence of society and individual demands on society. Cross-listed with AMER 3705. Prereq.: ANTH 1500. 3 s.h.

3760. Cultures of the Old World. An examination of the ethnography, cultural contributions, and achievements of Old World peoples, which may include the cultures of Europe, Africa, the Middle East, Asia or Australia and Oceania. May be taken up to three times for credit if the topic is different. Prereq.: ANTH 3705 or 6 s.h. in AFST, including AFST 2601. 3 s.h.

3761. Cultures of the New World. An examination of various topics in New World cultures. Topics vary by semester and may include native South Americans, native North Americans, Native Americans' civil rights, the reservation system, and others. May be taken up to three times for credit if the topic is different. Prereq.: ANTH 1500. 3 s.h.

3762. The Power and Meaning of Food. Explores the relationship between culture and food in its material and symbolic forms. Examines the patterns of production, distribution, exchange, and consumption of food across time and within particular cultural and global contexts. Topics include the place of food in ritual, gift-giving, maintaining identities, and culture change. Prereq.: ANTH 3705. 3 s.h.

3775. Native North Americans. Detailed discussion of the culture and achievements of the tribal peoples native to North America. Prereq.: ANTH 1500. 3 s.h.

3777. Archaeological Techniques. Practice in archaeological field methods, including surveying, mapping, excavation, and artifact analysis. Amount of field work and lab analysis can vary from four weeks to one semester. Credit hours may vary accordingly from 1 to 9 hours with approval of the instructor and department chair. Prereq.: ANTH 3702 or permission of the chair. 1-9 s.h.

3779. Fieldwork in Historical and Industrial Sites Archaeology. Excavation of New World sites after 1492, culminating in the physical examination of the remains of historical, industrial, and post-industrial sites. Techniques for literature search and fieldwork. May be repeated once with different site or theoretical focus. Prereq.: ANTH 3702 or permission of chair. 3 s.h.

3780. Forensic Anthropology I. Forensics from the perspective of anthropology, especially through hands-on study of human remains. Detailed study of methods of determining the sex, age, ancestry, and stature of an individual, field methods for forensic anthropology and trauma analysis. Prereq.: ANTH 2600 or BIOL 3705. 3 s.h.

3790. Aging in Cross-Cultural Perspective. Examines the phenomenon of aging from cross-cultural perspectives with an emphasis on cultural evolution and its impact upon the status, roles and cultural values associated with aging and the aged. Listed also as SOC 3790 and GERO 3790. Prereq.: ANTH 1500 or SOC 1500, or GERO 1501. 3 s.h.

4800. Undergraduate Research. Research participation under the direction and guidance of a full-time faculty member. Designed to acquaint the advanced student with special research problems associated with various aspects of the discipline. May be repeated to a maximum of 4 s.h. Prereq.: Permission of chairperson and junior standing. 1-2 s.h.

4801. Anthropological Thought. Analysis of the theories and methodology of the major contributors to contemporary anthropological thought, such as the evolutionist, diffusionist, functional, and multilineal schools. Prereq.: ANTH 3705. 3 s.h.

4815. Anthropology of Religion. A survey of anthropological approaches to the study of religion, illustrated by a critical consideration of past and present contributions to the field. Study of selected religious systems, areally and topically. Prereq.: ANTH 3705 or 6 s.h. in REL including REL 2601. 3 s.h.

4824. Old World Prehistory: Topics. Examination of the prehistoric development of Old World (Africa, Europe, Far East, Middle East, and Oceanic cultures). May be taken twice for credit if topic is different. Prereq.: ANTH 3702. 3 s.h.

4825. New World Archaeology: Topics. Examination of the archaeological evidence of the development of New World cultures from early prehistoric to late post-industrial times. Topics vary by semester and may include historical archaeology, North American prehistory, Ohio prehistory, Maya, Aztec and Inca, South American prehistory, and others. May be taken up to three times for credit if the topic is different. Some topics may include field work. Prereq.: ANTH 3702. 3 s.h.

4850. Research Methods. An introduction to methods employed in social research. Attention is given to (1) the logic of sociological inquiry and the relationship between theory and methods; (2) the various qualitative and quantitative methods; (3) research design, data collection, organization, analysis, interpretation and application; (4) the social, cultural, political, and ethical context of social research; and (5) computer skills employed in data analysis. Prereq.: SOC 3701 or ANTH 3701 or GERO 3701. Listed also as SOC 4850 or GERO 4850. 3 s.h.
4851. Social Research. A seminar in social research wherein participants apply research methods in the theoretical and/or empirical investigation of a social issue and/or problem. Participants are involved in all phases of the research process. Prereq.: ANTH 4850 or SOC 4850. Listed also as SOC 4851. 3 s.h.

4877. Method and Theory in Archaeology. Past and contemporary theory and methodology in archaeology, with emphasis on recent innovations in the U.S. and Europe. Prereq.: ANTH 3702. 3 s.h.

4881. Forensic Anthropology 2. A continuation of Forensic Anthropology I. An in-depth examination of the human skeletal system and its differentiation from other commonly found animal remains and the ways in which skeletal remains help determine the cause of death, trauma to skeleton, antemortem skeletal conditions, postmortem interval, postmortem changes to bone, additional aspects of individualization, etc. Prereq. ANTH 4880 with "C" or better. 3 s.h.

4882. Paleoanthropology. The origin and evolution of the human species in biological terms from studies of human evolution and emergence of certain critical biocultural essentials. Emphasis on fundamentals of paleoanthropological research, evidence of human evolution, important fossil finds and sites, and phyletic relationships. Prereq.: ANTH 3703 with "C" or better. 3 s.h.

4883. Case Studies in Forensic Anthropology. Introduction to advanced methods of forensic anthropology. The course consists of discussions and analysis of articles and case studies pertaining to forensic anthropology and the role of the forensic anthropologist. Prereq.: ANTH 4881. 3 s.h.

4890. Advanced Topics in Archaeology. Study of select subjects dealing with various aspects of advanced archaeological issues, methodologies, techniques, and applications. Topics vary by semester and include archaeological laboratory techniques and cultural resource management. May be taken twice with different topics. Prereq.: ANTH 3702. 3 s.h.

4891. Advanced Topics in Biological Anthropology. Study of select subjects dealing with various aspects of advanced archaeological issues, methodologies, techniques, and applications. Topics vary by semester and include primate ethology and human paleontology. Prereq.: ANTH 3703 and 9 s.h. in ANTH. 3 s.h.

ART–ART

Department of Art

Lower-Division Courses

1501. Fundamentals of 2D Design. The fundamental ideas and principles of 2-dimensional form. Emphasis on basic design concepts, pictorial composition, color theory, vocabulary, media and processes. Slide lectures, directed readings and studio problems. 3 s.h.

1502. Fundamentals of 3D Design. Investigation of the interactions between line, plane, mass, and space. Emphasis on basic 3D concepts, color theory, vocabulary, media and techniques. Slide lectures, directed readings, writings and studio problems. Prereq.: ART 1501. 3 s.h.

1503. Foundation Portfolio Review. A mandatory review of work completed in the Freshman Foundation Studio courses for students seeking the BFA in Studio Art degree. Students must pass the review to continue in the program and prior to selecting a concentration. Prereq.: Art 1503 or permission of instructor, 1521 and enrollment in Art 1522 and 1502. 1 s.h.

1505. Creative Art Appreciation. This course will introduce to the non-art major creative techniques including drawing, painting, monoprinting, xerography, paper casting, and the artist books. Students will acquire the vocabulary necessary to talk, write and communicate intelligently about their own creative art as well as the creative art of others and gain technical visual skills as well as aesthetic training and appreciation of art through exposure to the diversity of the world’s creative development of the pictorial narrative record and books. 3 s.h.

1521. Foundation Drawing. An introduction to basic drawing concepts, materials and methods. Emphasis on observational drawing. Concepts including the effective use of line, mass, volume, composition, space, and the formal principles of design. 3 s.h.

1522. Intermediate Drawing. A continuation of ART 1521 with greater emphasis on process, technique, spatial organization, and the development of pictorial content. Various topics are explored including figure drawing and the use of color. Prereq.: ART 1501 and 1521. 3 s.h.

1540. Masterpieces of World Art. An introduction to the ways that art communicates and how art interacts with our environment, our society, and our lives. Rather than a chronological study of the development of art, the course emphasizes the in-depth study of a number of works and issues, drawn from art from throughout the world, both past and present. Intended for non-art majors. 3 s.h.

1541. Survey of Art History 1. A study of world art, focusing on the western European tradition. Covers the period from prehistoric times through 1500. Introduces key concepts, methods, and vocabulary for the study of art. 3 s.h.

1542. Survey of Art History 2. A study of world art, focusing on the western European tradition. Covers the period from 1500 to the present. Introduces key concepts, methods, and vocabulary for the study of art. 3 s.h.

2611. Introduction to Sculpture. An introductory course for those who have little or no experience with sculpture. Students explore basic sculptural concepts and theories using a variety of materials and methods. Directed readings, writings, technical
workshops, and participation in course work exhibitions required. Prereq.: ART 1503 and 1522. 3 s.h.

2615. Introduction to Metals. Basic metals fabrication in the creation of jewelry and small metal objects. Design as applied to hand processes. Prereq.: ART 1502, 1522. 3 s.h.

2621. Life Drawing. Students develop sound composition based upon accuracy of observation of the human figure. Understanding of proportion and the detailed study of skeletal and muscular systems will be addressed. Prereq.: ART 1502, 1522. 3 s.h.

2625. Introduction to Printmaking: Intaglio and Relief. An introduction to basic intaglio and relief printmaking processes, including etching, collagraph, lino-cut, woodcut, and multiple-block printing. Emphasis on technical, formal, and conceptual issues related to each technique. Prereq.: ART 1503. 3 s.h.

2626. Introduction to Printmaking: Lithography and Screenprinting. An introduction to basic lithography and screenprinting processes, including stone and plate lithography and photo-mechanical screenprinting. Emphasis on technical, formal, and conceptual issues related to each technique. Prereq.: ART 1503. 3 s.h.

2631. Introduction to Ceramics. Introduction to handbuilding methods, low-fire glaze application, pit firing, and firing procedures. Prereq.: ART 1503 and passing the foundation portfolio review, or permission of instructor. 3 s.h.

2650. Introduction to Painting. Exploration of new and traditional painting techniques and media. The student is encouraged to see significantly rather than imitatively in the process of developing form and content. Prereq.: ART 1502, 1522, and passing the foundation portfolio review. 3 s.h.

2653. Watercolor Painting. Opaque, transparent, and inventive procedures with watercolor. Emphasis is on expressive use of the medium and development of personal style. Prereq.: ART 1502, 1522, and passing the foundation portfolio review. 3 s.h.

2661. Introduction to Graphic Design. The basic concepts of graphic design theory including layout and organization of space, the elements of visual communication and the process of presentation from thumbnails through comprehensives. Prereq.: ART 1503 and passing the foundation portfolio review. 3 s.h.

2662. Introduction to Typography. Introduction to the basic technical understanding of type, including classification, anatomy, legibility, readability, and specification as well as an understanding of typography as an art form with an emphasis on typographic space in the page layout. Prereq.: ART 2661. 3 s.h.

2669. Introduction to Interactive Design. An investigation of the aesthetic and practical processes, philosophies, and history behind the field of interactive design for on screen applications. Students employ various hardware/software tools available to design-ers for visual interactive design. Prereq.: ART 2691 and 2661 or permission of instructor. 3 s.h.

2670. Photography for Non-majors. An introduction to fine art photography emphasizing visual literacy and technical skills for non-art majors. Course content focuses on digital camera operation, composition and design, lighting, ethics, basic computer editing, and outsourced printing. Student must provide camera. 3 s.h.

2674. Introduction to Photography. Introduction to black and white digital photographic image capture emphasizing visual literacy, creative possibilities and critical awareness of the medium as an art form. Course content focuses on DSLR camera operation, composition and basic computer editing. A digital SLR camera is required. Prereq: ART 1503 or permission of instructor. 3 s.h.

2675. Introduction to Digital Photography. Introduction to color digital still photography utilizing the computer as a fine art tool. Course content focuses on retouching, image manipulation, color management and high quality printing. Prereq: ART 2671 or 2674. 3 s.h.

2676. Introduction to Analog Photography. Introduction to photographic analog printing emphasizing photography as an expressive art form. Course content focuses on lighting, film development and black and white enlargement and printing. Prereq: Art 2674 or 2671. 3 s.h.

2691. Introduction to Digital Imaging. An introduction to the theory of computer-based imaging and explores a variety of “hands-on” techniques pertaining to image creation, manipulation, and construction. Prereq.: ART 1503 and passing the foundation portfolio review. 3 s.h.

Upper-Division Courses

3703. Junior Portfolio Review. A mandatory review of work within each studio concentration. Students must pass to continue in the program. Prereq.: Junior standing. 1 s.h.

3712. Intermediate Sculpture. Examination of sculptural concepts through individual projects. Emphasis is on contemporary sculptural issues, techniques, and media. Directed readings, technical workshops and critiques required. Prereq.: ART 2611. 3 s.h.

3713. Advanced Sculpture Studio. This course continues the examination of contemporary sculptural issues, techniques and media. Students explore alternative sculptural approaches. Individual student projects determined by faculty consultation and critiques. Directed readings, writings, group discussions. Prereq.: ART 3712 or permission of instructor. 3 s.h.

3715. Intermediate Metals. This course examines the casting process used in creating jewelry and small metal objects. Emphasis will be on sound craftsmanship and successfully meeting the design challenges
...of the metals medium. Slide lecture, demonstrations, assigned readings and studio problems. Prereq.: ART 2615.

3721. Expressive Drawing. Course work intended to provide a wider and more unusual format in the drawing process within the context of drawing philosophy and concepts. Use of color dynamics and different experimental materials, as well as increased scale and gestural action. Prereq.: ART 1522. 3 s.h.

3725. Intermediate Printmaking: Intaglio and Relief. Further exploration of intaglio and relief printmaking processes, including digital and photo-mechanical processes, and color inking techniques. Emphasis on refining technique, experimentation, and further development of concept through the study of historical and contemporary printmaking artists. Prereq.: ART 2625. 3 s.h.

3726. Intermediate Printmaking: Lithography and Screenprinting. Further exploration of lithography and screenprinting processes, including digital and photo-mechanical processes, multiple-plate color printing, and alternative screenprinting methods. Emphasis on refining technique, experimentation, and further development of concept through the study of historical and contemporary printmaking artists. Prereq.: ART 2626. 3 s.h.

3727. Topics in Advanced Printmaking. Variable topics including silkscreen, intaglio, monoprinting, woodblock, bookmaking, and lithography. Students will develop their individual aesthetic through one of the processes. May be repeated up to four times with different topics. Prereq.: ART 2624 3 s.h.

3732. Intermediate Ceramics. Continuation of handbuilding methods; introduction to wheel-thrown ceramics. Prereq.: ART 2631. 3 s.h.

3733. Advanced Ceramics. Emphasis on clay as a means of personal expression through handbuilt and wheel-thrown ceramics. Prereq.: ART 3732. 3 s.h.

3737. Pre-K-4, Visual Arts Education. Cognitive and interdisciplinary arts activities for multiple age levels to meet the developmental needs of learners at diverse ages. Curriculum development, long- and short-range planning, motivational procedures, assessment processes, field-based activities. Prereq.: Junior standing (63 s.h.). 3 s.h.

3741. Topics in Medieval Art. Topics in European Art from the beginnings of Christianity through the Gothic period (500 and 1500 A.D.). Specific content varies by semester and may include a general survey of Medieval art, or in-depth topics such as Early Christian and Byzantine art or Medieval sculpture. May be taken twice for credit if content differs. Prereq.: ART 1541 or consent of instructor. 3 s.h.

3742. Topics in Renaissance Art. The art and architecture of Europe during the 15th and 16th centuries. Examines the work of Michelangelo, Leonardo da Vinci, Durer, and others. Topics vary by semester and include the Renaissance in Italy and the Renaissance in Northern Europe. May be repeated if the content is different. Prereq.: ART 1542 or consent of instructor. 3 s.h.

3743. Baroque and Rococo Art. Art and architecture of the 17th and early 18th centuries, an era of world exploration and scientific investigation. The works of such artists as Bernini, Velazquez, and Rembrandt are included. Prereq.: ART 1542 or consent of instructor. 3 s.h.

3744. Seventeenth and Eighteenth Century American Art. Covering all aspects and media of painting, sculpture, architecture, and the decorative arts of 17th and 18th centuries. Prereq.: ART 1542 or consent of instructor. 3 s.h.

3745. Nineteenth Century European Art. European painting and sculpture of Neo-classicism, Romanticism, and Realism. Include Impressionism and related movements. Art as part of social and political developments, and the foundations of modern formalism. Prereq.: ART 1542 or consent of instructor. 3 s.h.

3746. Nineteenth Century American Art. Covering all aspects and media of painting, sculpture, architecture and the decorative arts of the 19th century. Prereq.: ART 1542 or consent of instructor. 3 s.h.

3747. African-American Art. A survey of Black American art history from the 17th century through the 20th century. Prereq.: AFST 2601 or ART 1541 or 1542, or consent of instructor. 3 s.h.

3748. Special Topics in Studio Art. Study in one of the many areas of the visual process that focuses on specific content or technical methods. Prereq.: ART 1503 or consent of instructor. 3 s.h.

3751. Intermediate Painting 1. Coursework is extended to expand the format for the painting process. Students will be introduced to concepts that will provide avenues for diverse investigation and a foundation for personal expression. Prereq.: ART 2650. 3 s.h.

3752. Intermediate Painting 2. An understanding of painting processes in relation to both historical and contemporary painting practices. Concentration on individual content, direction, style, and technique. Prereq.: ART 3751. 3 s.h.

3761. Intermediate Graphic Design. The interaction of type and images in visual communication. Students will be introduced to typographic grid as an organizing principle as well as the relationship of form to content. Prereq.: ART 2662. 3 s.h.

3762. Advanced Typography. The development of sensitivity for specific typefaces and their effective use in communications. Emphasis will be directed toward the expressive use of type in interpretive, symbolic, and metaphoric solutions. Prereq.: Art 3761. 3 s.h.

3763. Illustration. Visual expression through various media, both electronic and traditional. Emphasis is on problem-solving through the exploration of
technique, creative process and the development of personal styles. Prereq.: ART 1503. 3 s.h.

3764. Typeface Design. An investigation of typeface design. Students will engage in developing one or more unique typefaces, and the promotional materials used to market them. Students will engage in research related to the history of type design, and current type trends and cultural inspirations. Prereq.: ART 2661. 3 s.h.

3765. Motion for Interactive Design. An Investigation of motion for interface/web design. Students will engage current technologies to create dynamic motion for screen-based design. Prereq: ART 2669 and 2662 or permission of instructor. 3 s.h.

3768. Pre-Press Production. Introduction to the technical requirements of preparing a design for production including the importance of understanding pre-press software, printing technology and printing specifications. Prereq.: ART 2661. 3 s.h.

3769. Intermediate Interactive Design. A further investigation of interactivity/screen design. Students will encounter projects ranging from web design to interactive screen-based publications. Prereq: ART 2669 and ART 2662 or permission of instructor. 3 s.h.

3774. Intermediate Digital Photography. An exploration of concepts and techniques in digital fine art photography. Course content focuses on advanced image manipulation, lighting skills, large-scale printing and conceptual development. Prereq: ART 2675, or 2672 and 2673. 3 s.h.

3775. Photography: Issues and Practice. An examination of the critical theories of contemporary photographic practice. Trends within photography and related art forms are examined, from aesthetic, cultural, social and political points of view. Lectures are supplemented by directed readings, essays, and hands-on studio projects. Prereq.: ART 3703. 3 s.h.

3776. Intermediate Analog Photography. An exploration of concepts and techniques in traditional analog fine art photography. Course content includes medium and large format films, advanced black and white printing and lighting techniques. Prereq: ART 2676, or 2672 and 2673. 3 s.h.

3777. Alternative Intermediate Photography. Selected technical and conceptual topics developing alternative image making strategies that may include mural printing, mixed media, transfer imagery, digital negatives, non-silver processes, image toning and liquid emulsions. Readings and discussions. Prereq.: ART 2671. 3 s.h.

3780. African Art. Study of African tribal art forms and their relationship to the historical period in which they were created. The impact and influence of African art on the development of contemporary Western art trends. Prereq.: AFST 2601 or ART 1541 or 1542, or consent of instructor. 3 s.h.

3781. Native North American Art. The art and architecture of the native peoples of North America. Included are archeological sites and living artistic traditions, stressing the relationship between art and society. Prereq: ART 1542, a course in cultural anthropology, or consent of instructor. 3 s.h.

3782. Topics in Pre-Columbian Art. The art and architecture of the ancient peoples of Mexico, Central and South America. Topics vary by semester, and include Mesoamerica (Mexico and northern Central America) and the Andes (Peru and Bolivia). May be taken twice if the consent is different. Prereq.: ART 1541, a course in cultural anthropology, or consent of instructor. 3 s.h.

3783. History and Theory of Graphic Design. A chronological survey of graphic design from ancient to modern times. An emphasis on critical visual theory, specific designers who influenced the field as well as the relationship between visual communication and historical/cultural events. Prereq.: ART 1542. 3 s.h.

3786. History of Art and Technology. The historical overview of the role of technology in the art-making process as well as the identification of current and future uses of technology in the art world. Prereq.: ART 1542. 3 s.h.

3787. History and Appreciation of Art and Music. Illustrated lectures on art and music to develop the cultural growth of the non-art and non-music student. Art and music forms, comparisons of compositional styles, and discussion of the developments, influences, and experiments of the important periods to date. No prior training in art or music required. (Not intended for art majors). Listed also as MUSIC 3787. Prereq.: Junior standing. 3 s.h.

3788. Theory of Art. The theories and philosophical implications of form in the visual arts, with emphasis on contemporary thought. Prereq.: ART 1541, 1542, and junior standing. 3 s.h.

3792. Digital Audio Video Production. This course provides an overview of methods, procedures, and results attainable with digital audio/video editing tools. Topics include digital recording, editing and compositing for 2D and 3D effects, lighting, transition, and rendering optimization. Prereq.: ART 2691. 3 s.h.

3794. Introduction to Motion Studies. An introductory study of time-based motion graphics including traditional and two-dimension (2D) computer animation. Principles and techniques of motion graphics from storyboarding to digital composition. Discussion of exemplary works, historical background, and technological trends in motion graphics. Prereq.: ART 2691. 3 s.h.

3795. Advanced Digital Audio/Video Production. A project-oriented advanced study in digital audio/video production. A forum for further study of methods, procedures, and results attainable with
video editing software, advanced editing techniques, digital compositing, and tilting software. Prereq.: ART 3792 or permission of instructor. 3 s.h.

3796. Ideation. This course focuses on learning about and practicing creative strategies that improve communication of content and ideas. While emphasis will be on strategies related to digital culture, outcomes can be in digital or non-digital mediums. This course is studio based with additional emphasis on reading, writing and discussion of related topics. Prereq.: ART 2691. 3 s.h.

3797. Web as Art. An introduction to web authoring within art context emphasizing the development of a creative and critical artistic practice while covering practical technical skills in web authoring. Prereq.: ART 2691. 3 s.h.

4800. Studio Problems. Advanced, independent study in any two- or three-dimensional studio discipline. Prereq.: Senior standing and/or permission of instructor. May be repeated for a maximum of 9 s.h. 1-3 s.h.

4801. Interdisciplinary Studies in the Visual Arts. Interdisciplinary courses developing areas of self-interest using the most suitable range of visual strategies, media and methods of artistic production. Students select faculty from different visual disciplines to form team of two mentors. Directed readings, structured research initiatives and individual projects. Experience in selected disciplines required. Prereq.: ART 3703. 3 s.h.

4802. Senior Project. A studio concentration intended as preparation and production of work for the Senior Show graduation requirement. Prereq.: Senior status and permission of instructor. 3 s.h.

4803. Senior Seminar. Capstone course for studio majors integrating writing, oral, and critical reasoning skills specific to the student’s discipline within the larger framework of the visual arts. Prereq.: Senior standing in Art. 3 s.h.

4805. Urban Internship in Art. This internship opportunity is open to any qualified studio art, art history or art education students. Interns work in galleries, art centers or an approved community art entity. Competitive and based on GPA, interview and portfolio. May be repeated in different locations up to three times. Prereq.: Senior standing. 3 s.h.

4814. Senior Project: Spatial Arts. Students prepare for their senior exhibition. Development, selection and installation of work determined through critiques by faculty. Career options for the professional artist explored. Portfolio and resume preparation, artist statements, gallery representation graduate study and other professional issues are considered. Prereq.: ART 4834. 3 s.h.

4824. Advanced Printmaking. Advanced study to include individual technical and conceptual research, refinement of technique utilizing a variety of printmaking processes, development of personal imagery through a portfolio of work. Emphasis on invention and concept development. Prereq.: ART 3725 or ART 3726. Repeatable to 9 credit hours. 3 s.h.

4829. Senior Project: Printmaking. The preparation, selection and development of a body of work in the printmaking discipline. Career options for the professional artist explored. Portfolio and resume preparation, artist’s statement, gallery representation, graduate study and other professional issues are considered. Prereq.: ART 4834. 3 s.h.

4834. Advanced Spatial Arts Studio. Advanced students work on individual projects determined through discussions with and critiques by faculty. Emphasis is on personal aesthetic development, mainstream art issues, interdisciplinary approaches, and refinement of technical skills. Directed readings, writings, group discussions. Prereq.: ART 3713, 3733, or permission of instructor. 3 s.h.

4837. Professional Practices in Middle School. An exploration of middle school multiarts teaching strategies including observation, presentation, assessment and lesson planning. Direct observation included. Prereq.: ART 3737. 3 s.h.


4839. Seminar in Art Education. Discussions of problems of the prospective teacher which involve plant facilities, tools, and supplies. Planning individual exhibits on site and on campus. Assembly of comprehensive portfolio and portfolio review. Required of all art education students and must be taken concurrently with student teaching. Prereq.: ART 4838. 1 s.h.

4851. Advanced Painting 1. Concentration on individualized content, direction, style, and technique. Prereq.: ART 3751. 3 s.h.

4852. Advanced Painting 2. An extension of individualized content, direction, style, and technique. Prereq.: ART 4851. 3 s.h.

4853. Advanced Painting 3. A further extension of individualized content, direction, style, and technique. Prereq.: ART 4852. 3 s.h.

4854. Senior Project: Painting. Advanced self-directed study in painting leading to the creation of a specific body of work supported by written documentation. Work from this project must relate to the Senior Show. Prereq.: ART 4853. 3 s.h.

4861. Publication Design. The use of type and visual elements in publication formats including newspaper design, newsletters, magazines, annual reports, book design and specialty publications. Prereq.: ART 3761. 3 s.h.

4863. Corporate Identity Systems. The development of logos and their applications within an identity system. How corporate signatures are the fulcrum
of an identity program and how its systemic usage impacts on the corporate image. Prereq.: ART 3761. 3 s.h.

4864. Package Design. The application of graphic design concepts to three-dimensional problems in the creation of packaging design. Students will consider form, visual impact, and environmental concerns related to the creation of packaging. Prereq.: 3761. 3 s.h.

4865. Advertising Graphics. The use of graphic elements in conjunction with type to produce advertisements for many different venues. Prereq.: ART 3761 or permission of instructor. 3 s.h.

4866. Graphic Design Practicum. Students will work with faculty members, and a real world client to produce promotional materials from concept to print. This course will offer a full service design firm-to-client experience that will allow the student to engage in all levels of the creative/production process. Permission of instructor. 3 s.h.

4867. Graphic Design Internship. An application of graphic design theory and practices within a professional work experience. Students are selected on the basis of preparation, portfolio, GPA, and competitive interview. Enrollment is contingent upon the availability of internship positions. Prereq.: ART 3768. 3 s.h.

4868. Graphic Design Practicum. Students will work with faculty members, and a real world client to produce promotional materials from concept to print. This course will offer a full service design firm-to-client experience that will allow the student to engage in all levels of the creative/production process. Permission of instructor. 3 s.h.

4869. Advanced Interactive Design. Continued investigation of interactivity/screen design. Students will engage in developing a more specific and individualized body of work in the area of web design or interactive screen-based publications. Prereq.: ART 3765 and ART 3769 or permission of instructor. 3 s.h.

4873. Advanced Photography. Advanced study of fine art photography exploring conceptual development and creative expression through individual projects. Course content focuses on project development, refinement of technical skills, reading and writing assignments. May be repeated a total of three times. Prereq: Passing of ART 3703 or permission of instructor. 3 s.h.

4874. Photography Internship. Application of photographic knowledge and skills in the professional work environment. Admission based on preparation, portfolio, GPA, competitive interview, and the availability of internship locations. Prereq.: ART 3776. 3 s.h.

4880. Special Topics in Art History. Study in one of the many areas of art history. May be taken for up to three times for credit if the topic is not repeated. Prereq.: ART 1541, 1542, or consent of instructor. 3 s.h.

4883. Introduction to Museum Practices. An introduction to the field of museology. Lecture topics include museum history, architecture, the building and care of art collections, exhibitions, security and current trends. The facilities, collection and staff of The Butler Institute of American Art are a resource for the class as are other area museums. Prereq.: 9 s.h. of art history and junior standing. 3 s.h.

4884. Museum Internship. Practical experience in the museum working with the professional staff of The Butler Institute of American Art and/or other museums of the region. Students observe and assist in virtually every phase of museum operations from care of the collections through exhibition design and implementation. May be repeated up to three times. Prereq.: ART 4883. 3 s.h.

4885. Museum Registration Methods/Collections Management. This course will provide a practical basis for understanding registration procedure as it applies to all phases of a museum’s collection-management policy. Course topics include documentation, collections management, processes, administration, risk management, ethical and legal issues. Prereq.: ART 4883. 3 s.h.

4889. Seminar in Art History. A seminar on problems in art history. Topics will be drawn from all periods and media. Prereq.: Senior standing, 6 s.h. of art history, or consent of instructor. May be repeated with different topics up to 9 s.h. 3 s.h.

4891. Multimedia Design. Exploration of non-linear digital presentation involving compilation of still and moving images, live video, text, and sound. An overview of multimedia in the fields of web design, interactive programming and onscreen visual communication. Prereq.: ART 2691. 3 s.h.

4893. Advanced Study in New Media. A project-based advanced study in the field of new and emerging technology focusing on the digital contents creation and delivery with the choice of selected new media. (May be repeated up to 6 s.h.) Prereq.: ART 2691. 3 s.h.

5840. Topics in Ancient Art. The art and architecture of the ancient cultures of the Mediterranean region and the Near East. Topics vary by semester, and include Egypt, the Ancient Near East, Greece, and Rome. May be taken twice if content is different. Prereq.: Junior standing. 3 s.h.

5850. Topics in Painting and Drawing. Selected topics in advanced painting and drawing. Specific content varies by semester and includes Landscape and
Interiors; Portraiture; and Personal Narrative. May be repeated with a different topic for a total of three times. Prereq.: Art 2650 or portfolio presentation and permission of instructor. 3 s.h.

5860. Topics in Design. Selected topics in graphic design including typography, layout and computer applications. May be repeated for a total of three times with different topics. Prereq.: Permission of instructor and portfolio. 3 s.h.

5881. Twentieth Century Art to 1960. A survey of the visual arts history of the 20th century beginning with its 19th century roots. The influential artists, movements, and motivating theories will be covered against a backdrop of world events. Primary emphasis is placed upon French Impressionism, German Expressionism, Fauvism, Surrealism, and American Abstract Expressionism. Prereq.: ART 1542 or permission of instructor. 3 s.h.

5882. Twentieth Century Art from 1960. A survey of the visual arts history of the late 20th century beginning with those ideas and trends which followed Abstract Expressionism. Beginning with the late 1950s every principle artistic movement from Pop through post-Modernism will be explored against a backdrop of Post-War world events. Prereq.: ART 1542 or permission of instructor. 3 s.h.

ASTRONOMY—ASTR
Department of Physics and Astronomy

Lower-Division Courses

1504. Descriptive Astronomy. Scientific method, introduction to modern understanding of the universe, astronomy and society, humanity’s place in the universe. Astronomical observing methods, the solar system, stars and star systems, galaxies, cosmology. Recent astronomical discoveries. 3 s.h.

1504L. Astronomy Laboratory. Telescope and Planetarium laboratory work designed to supplement ASTR 1504. Measurement techniques and deductive methods to determine distance and size of astronomical objects. Three hours per week. Prereq. or concurrent: ASTR 1504. 1 s.h.

2609. Moon and Planets. A detailed discussion of the moon and planets, with particular emphasis on the geology of the moon. Prereq.: ASTR 1504 or GEOL 1505. 3 s.h.

Upper-Division Courses

3711, 3712. Astrophysics 1, 2. The application of physical principles to the study of the stars and planets; stellar distances and dimensions; stellar spectra and chemical composition; nuclear reactions and evolution of stars; the Milky Way and other galaxies; cosmology. Prereq.: PHYS 2611 and MATH 2673. Must be taken in sequence. 3+3 s.h.

4811, 4812. Observational Astronomy 1, 2. Photometric, photometric and CCD imaging techniques, spectroscopy, methods of data reduction. Some night observatory work included. Prereq.: PHYS 2611 and MATH 2673. Must be taken in sequence. 3+3 s.h.

4815. Undergraduate Astronomy Research. Research conducted under the direction of a faculty member. The grading is Traditional/PR. Prereq.: PHYS 3702 and 3704. 3 s.h.

BIOL
Department of Biological Sciences

Lower-Division Courses

1504. Human Evolution and Genetics. Mendelian genetics as it applies to humans and evolutionary history, including the genetic problems and evolutionary relationships of humankind. Not applicable to the biology major. 3 s.h.

1505. Biology and the Modern World. Biology applied to critical issues of today’s society. Focus on the scientific method as relevant to modern biology issues. Not applicable to the Biology major. 3 s.h.

1505L. Biology and the Modern World Laboratory. Student investigations in biological phenomena using a variety of laboratory approaches focused on a single theme or concept using the scientific method. Satisfies the Natural Science Laboratory requirement. Not applicable to the Biology major. 1 s.h.

1545/1545L. Allied Health Anatomy and Physiology. Explores the structure and function of the human body and its organ systems. Diseases and their relationship to various physiological systems. Four hours lecture, two hours lab. Not applicable to the Biology major. Prereq.: High school biology and chemistry, or equivalent. 5 s.h.+0 s.h.

1551. Anatomy and Physiology 1. Structure, function, and clinical applications of the integument, musculature, skeletal, and nervous systems. Targeted for students in nursing and associated health professions. Three hours of lecture. Not applicable to the Biology major. Prereq.: High school biology, CHEM 1501 or equivalent, and MATH 1501 or equivalent. 3 s.h.

1551L. Anatomy 1 Laboratory for Health Professions. Anatomical study of skeletal, muscular, and nervous systems. For students in nursing and associated health professions. Two hours of laboratory per week. Not applicable to the Biology major. BIOL 1551 must be taken either previous or concurrent. 1 s.h.

1552/1552L. Anatomy and Physiology 2. Structure, function, and clinical applications of the endocrine, cardiovascular, respiratory, renal, digestive, and reproductive systems. Targeted for students in nursing and associated health professions. Three hours
lecture, two hours lab. Not applicable to the Biology major. Prereq.: BIOL 1551. 4 s.h. +0 s.h.

1560. Microbiology for the Health Professions. Characteristics, epidemiology, and pathology of viruses, bacteria, and protozoa of medical significance. Other topics dealing with the control of microorganisms and food microbiology will be covered. Not applicable to a biology major. Two hours of lecture. Must be taken concurrent with BIOL 1560L or substitute. 2 s.h.

1560L. Microbiology Laboratory for Health Professions. Microscopy, cultivation, and identification of bacteria. Microbiology of foods. Disinfection techniques. Not applicable to a biology major. Three hours of laboratory per week. Must be taken concurrent with BIOL 1560. 1 s.h.

2601/2601L. General Biology: Molecules and Cells. The chemical and physical foundations of life, structure and function of cells and organelles, metabolism, basic molecular biology and inheritance, and principles of evolution. Three hours of lecture, three hours of lab per week. Prereq.: CHEM 1515 or concurrent enrollment in CHEM 1515. 4 s.h. +0 s.h.

2602/2602L. General Biology: Organisms and Ecology. The structure and function of plants and animals. Examination of the structure and functioning of organic communities and ecosystems. Required of all biological sciences majors. Three hours of lecture, three hours of lab per week. Prereq.: BIOL 2601 and CHEM 1515. 4 s.h. +0 s.h.

2603. Integrated Biology for BS/MD. This course is an introduction to general biology that focuses on those aspects of biology that are the fundamental basis of medicine and human biology. Prereq.: admittance to the BS/MD program. 4 s.h.

2699. Medical Applications Case Studies. Applications of biological and chemical concepts in the practice of medicine. May be repeated to a total of 3 s.h. Prereq.: Admission to the NEOMED-YSU program or consent of the department chairperson. 1 s.h.

Upper-Division Courses

3701. Biomathematics Seminar. Introduction to interdisciplinary research in Biology and Mathematics. Topics include current research by faculty and students, cross disciplinary communication, report writing, technical presentations, literature reading, laboratory techniques and safety. May be repeated once. Listed also as MATH 3701. Prereq.: MATH 1571 or BIOL 2601 or BIOL 2602. 1 s.h.

3702/3702L. Microbiology. Fundamentals of the biology of microbes. The principles of microbial structure, function, reproduction, metabolism, genetics, phylogeny, host-parasite relationships, and immunity. Fundamental technical skills acquired through laboratory experiences. Three hours lecture, three hours laboratory. Prereq.: BIOL 2601 and concurrent enrollment in BIOL 3702L. 4 s.h. +0 s.h.

3703. Clinical Immunology. Fundamentals of immunology, including both humoral and cellular immunological responses. Applications of immunological methods in medical research and patient treatment. Prereq.: BIOL 2601. Recommended: BIOL 3702. 3 s.h.

3703L. Clinical Immunology Laboratory. Laboratory work includes VDRL, ASO, febrile, latex, pregnancy, and viral tests. Techniques include flocculation, precipitation, complement fixation, and titration procedures used in a clinical laboratory. Three hours per week. Concurrent with BIOL 3703. Also listed as CLTC 3703L. 1 s.h.

3705/3705L. Introduction to Human Gross Anatomy. Overview of human structure, using a regional approach to examine the functional anatomy of the musculoskeletal, nervous, and visceral systems. Three hours lecture, two hours lab. Prereq.: BIOL 2602. 4 s.h. +0 s.h.

3710/3710L. Mammalian Anatomy. Composite study of the anatomical systems of mammals, based on the cat. One hour lecture, four hours lab. Prereq.: BIOL 2602. 3 s.h. +0 s.h.

3711. Cell Biology: Fine Structure. Theoretical and conceptual background necessary for understanding cellular structure-function relationships. Basic architecture of the cell, various organelles. The basic behavior of cells analyzed illustrating the integrative interaction of organelle systems. Prereq.: BIOL 2601. 3 s.h.

3716. Molecular Microbiology I: Nucleic Acids. Isolation and characterization of DNA and RNA from microbes with an emphasis on cloning, sequencing, structural characterization, expression, and phylogenetic analysis. Two hours lecture, six hours laboratory. Prereq.: BIOL 3702 and permission of the instructor. 4 s.h.

3717. Molecular Microbiology II. Protein Biology. Develops the analytical skills necessary to conduct molecular biology research in the area of protein analysis and proteomics. Two hours lecture and four hours laboratory per week. Prereq.: BIOL 3702. 4 s.h.

3718. Women, Science, and Technology. An overview of the role women have played in scientific and technological advances. Problems unique to women entering scientific professions will be addressed, information about scientific and technical careers and job opportunities and contacts with professionals in the community will be provided. This course does not count toward the Biology major. Cross-listed with CHEN 3718. Prereq.: ENGL 1550; one Societies and Institutions General Education course, one Natural Sciences General Education course, or substitutes. 3 s.h.

3721. Genetics. Genetic material, reproductive cycles, sex determination, mitosis, meiosis, mendelism, probability linkage, genes in populations, mutation, evolution. Prereq.: BIOL 2601. 3 s.h.
3730. Human Physiology. Concepts of human physiology that focus on the regulation of homeostatic mechanisms by the neural, endocrine, cardiovascular, respiratory, and renal systems. Four hours lecture. Prereq.: BIOL 2602. 4 s.h.

3730L. Human Physiology Laboratory. Experimental approach to the study of human physiology that explores regulation of homeostasis by the neural, endocrine, cardiovascular, respiratory, and renal systems. Three hours laboratory. Prereq. or concurrent with: BIOL 3730. 1 s.h.

3740/3740L. Plant Diversity. Examination of the diversity of plant species and their interaction with the environment; the morphology, reproduction and ecology of a wide variety of vascular and nonvascular plants. Three hours lecture, two hours lab. Prereq.: BIOL 2602. 4 s.h.+0 s.h.

3741/3741L. Animal Diversity. Examination of the diversity of animal species and their interaction with the environment; the morphology, reproduction and ecology of a wide variety of invertebrate and vertebrate phyla. Three hours lecture, two hours lab. Prereq.: BIOL 2602. 4 s.h.+0 s.h.

3745. Plant Physiology. Examination of the physiology of higher plants with emphasis on the whole plant aspects as well as on biochemical, cellular and molecular aspects of how plants function including transport and translocation of water and solutes, photosynthesis and respiration, growth and development. Prereq.: BIOL 2602. 4 s.h.+0 s.h.

3759. Evolution. Examination of fundamental evolutionary mechanisms integral to such covered topics as natural selection, drift, genetic variance maintenance, gene flow consequences, phylogenetic resolution, modes of speciation, coevolution, cooperation and mating system structure. Ecological concepts will be integrated throughout. Prereqs.: BIOL 2601 and BIOL 2602 or instructor consent. 3 s.h.

3762/3762L. Field Botany. Identification, ecology, and significance of local plants. Two hours lecture, four hours lab. Prereq.: BIOL 2602. 4 s.h.+0 s.h.

3775/3775L. Comparative Vertebrate Anatomy. Comparison of morphology of vertebrates, emphasizing evolutionary development of organ systems. Two hours lecture, three hours lab. Prereq.: BIOL 2602. 3 s.h.+0 s.h.

3780/3780L. General Ecology. Examination of ecological principles affecting species distributions, interactions and biodiversity; dynamics of populations, communities and ecosystems; life history evolution; origin, maintenance and loss of genetic variation; mechanisms of speciation and extinction; experimental design and analysis. Three hours lecture, four hours lab. Prereq.: BIOL 2602. 5 s.h.

3789. Technology and Society. A critical exploration of how societal needs affect the creation of technologies and how technology affects society. An interdisciplinary approach in examining the complex interactions between humans and their tools. Prereq.: BIOL 2601 or ENGR 1550 or SOC 1500, and junior standing. Listed also as SOC 3789 and CEEN 3711. 3 s.h.

4800/4800L. Bioinformatics. Fundamentals of the theories and applications of bioinformatics. Topics include the tools and databases used to analyze DNA and protein sequences and the evolutionary relationships between sequences from different organisms. Three hours of lecture, two hours of lab per week. Prereq.: BIOL 3721. 4 s.h.+0 s.h.

4801/4801L. Environmental Microbiology. The occurrence, detection, and control of microbes, including bacteria and viruses, in food, water, and the environment. Two hours lecture, four hours lab. Prereq.: BIOL 3702. 4 s.h.+0 s.h.

4805/4805L. Ichthyology. Ecology, evolution, and taxonomy of fishes, especially those of Midwestern United States. Two hours lecture, two hours lab. Prereq.: BIOL 3741. 3 s.h.+0 s.h.

4811/4811L. Comparative Biomechanics. Overview of biomechanical principles involved with the structure and function of animals. Topics include mechanical properties of biomaterials, comparative muscle architecture and physiology, and locomotor mechanisms of human walking and running. Three hours lecture, two hours lab. Prereq.: BIOL 2602 or BIOL 3705, and PHYS 1501 or 2610. 4 s.h.+0 s.h.

4819/4819L. Taxonomy of Flowering Plants. Phytogenetics, systematics, geographical distribution, and evolutionary development of herbaceous plants; taxonomic systems based on morphology and biochemistry. Laboratory exercises include the writing of a genus revision. Two hours lecture, four hours lab. Prereq.: BIOL 3740 or consent of instructor. 4 s.h.+0 s.h.

4822. Principles of Pharmacology. Overview of drugs used for the diagnosis, prevention, and treatment of disease. Topics include mechanisms of action, therapeutic and adverse drug effects, and clinical uses for each drug category. Prereq.: BIOL 2630. 3 s.h.

4823. Cancer Biology. This course will present the student with the comprehensive body of knowledge concerning cancer biology. It will draw upon all areas of biological sciences; from environmental causal factors to the molecular mechanisms underlying tumor cell formation and development of malignant tumors. The scientific basis of therapies will be explored. Prereq.: Junior standing. 2 s.h.

4829. Microbial Physiology. This course synthesizes material covered in introductory microbiology and cell and molecular biology. Topics include biomolecule synthesis, molecular biology, bacterial genetics, gene expression, energy production photosynthesis, bacteriophages and microbial stress response. Prereq.: BIOL 3702 or 3711. 3 s.h.
4830/4830L. Functional Neuroanatomy. An examination of the structure, function, integration, and cellular control of the brain and spinal cord. Three hours lecture, two hours lab. Prereq.: BIOL 3730. 4 s.h. + 0 s.h.

4834/4834L. Advanced Systems Physiology 1. Examination of advanced human physiology through a detailed study of selected body systems. Systems examined may include the neuromuscular, cardiovascular, and renal systems, exchange dynamics among body fluid compartments, and acid-base balance. Three hours lecture, three hours lab. Prereq.: BIOL 3730. 4 s.h. + 0 s.h.

4835/4835L. Advanced Systems Physiology 2. Examination of advanced human physiology through a detailed study of selected body systems. Systems examined may include the respiratory and gastrointestinal systems, metabolism and temperature regulation. Three hours lecture, three hours lab. Prereq.: BIOL 3730. 4 s.h. + 0 s.h.

4836/4836L. Cell Biology: Molecular Mechanisms. The relationship of molecular structure to cellular function. Concepts will be presented integrating the biochemical dynamics of bio-membrane systems including receptors, bioenergetics, and the physiochemical environment. Three hours of lecture. Prereq.: BIOL 3711 or consent of instructor. 3 s.h. + 0 s.h.

4837. Cell Biology: Protein Biology Laboratory. The relationship of nucleic acid structure and protein structure will be studied in hands on series of laboratory experiments. Concepts presented will integrate the use of modern molecular biology techniques with contemporary approaches to current problems in biology. Three hours of laboratory. Prereq.: BIOL 3711 or consent of instructor. 1 s.h.

4839. Selected Topics in Physiology. Advanced study of topics in physiology not covered in depth in other physiology courses. May be repeated twice up to 2 s.h. Prereq.: BIOL 3730. 1 s.h.

4841/4841L. Animal Parasitology. Biological implications of parasitism. Diagnosis, morphology, and life histories of the parasites of humans and domestic animals. One hour lecture, four hours lab. Prereq.: BIOL 3702. 3 s.h. + 0 s.h.

4848. Biology of Fungi. Examination of fungal and fungal-like organisms with emphasis placed upon their taxonomy, phylogenetic relationships, structure, function, physiology, genetics, and ecology. Exploration of their role in agriculture, medicine, and scientific research. Prereq.: BIOL 2602 or graduate standing. 3 s.h.

4849. Medical Mycology. Survey of infectious diseases caused by fungi including their etiology, epidemiology, histopathology, diagnosis, and treatment. Host-parasite interactions and the environmental and molecular factors that contribute to establishment of fungal disease in humans and animals. Prereq.: BIOL 2602. 3 s.h.

4850. Problems in Biology. Special biological problems for which materials and equipment are available and for which the student is qualified. Prereq.: Senior standing or consent of the chairperson. 1-3 s.h.

4861. Senior Biology Capstone Experience. A capstone experience for the major in Biological Sciences (B.A. or B.S. degree). Prereq.: Senior status in Biological Sciences, completion of at least one 3700 and 4800 level laboratory course. 2 s.h.

4866/4866L. Dendrology. Identification, ecology, and significance of local plants. Two hours lecture, four hours lab. Prereq.: BIOL 3740 or 3762. 4 s.h. + 0 s.h.

4871/4871L. Entomology. Introduction to the morphology, physiology, development, and control of insects. Survey of insect orders and families. Two hours lecture, four hours lab. Prereq.: BIOL 3741. 4 s.h. + 0 s.h.

4878. Conservation Biology. A socioeconomic, political and ecological approach to issues associated with the maintenance and value of biodiversity and ecosystem services; consequences of anthropogenic climate change, fragmentation, overharvesting, extinction, and invasion of non-native species; biofuels; ecological restoration, nature reserve design and sustainability. Three hours lecture. Prereq.: BIOL 3759 or BIOL 3780 or permission of instructor. 3 s.h.

4882. Biomathematics Research. Interdisciplinary and individualized study of a topic in biology and mathematics. Student project mentored jointly by faculty in biology and mathematics. May be repeated once. Grading is Traditional/PR. Listed also as MATH 4882. Prereq.: MATH/BIOL 3701, senior status and permission of the department chairperson. 1-2 s.h.

4890. Molecular Genetics. Examination of DNA structure, DNA replication, transcription, translation, RNA processing, and gene control in both prokaryotes and eukaryotes. Prereq.: BIOL 3711 or 3721. 3 s.h.

4890L. Molecular Genetics Laboratory. Introduction to basic molecular techniques such as transformation, use of restriction enzymes, agarose gel electrophoresis, and polymerase chain reaction (PCR). Three hours lab. Prereq.: BIOL 4890 or concurrent. 1 s.h.

4898. Research in Physiology. A comprehensive laboratory experience under the supervision of a faculty mentor. Course may be repeated once for a total of 6 s.h. Prereq.: BIOL 3730, CHEM 3720, and acceptance into the Certificate in Anatomy and Physiology program. 3 s.h.

4899. Internships in the Biological Sciences. Internships integrate theory and practice through supervised learning experiences. Internships are available in any area of the biological/biomedical sciences, including field research and analytical, clinical, or research laboratories. Students submit a proposal of the internship, maintain a journal of experiences, and
submit a final project paper. Prereq.: Junior or senior standing in Biological Sciences and permission of the chairperson.

5804. Aquatic Biology. Ecological, physical, and chemical aspects of aquatic ecosystems. Study of the interaction between organisms and their environment. Prereq.: BIOL 3780. 3 s.h.

5806. Field Ecology. Field study involving quantitative methods for the collection, analysis, and interpretation of ecological data in populations and communities. Pre-field trip lectures, specified experiments, independent study, a written report, and an oral presentation of the independent study project. Required off-campus travel. Field conditions may be rigorous and/or primitive. Prereq.: BIOL 3780, 4 s.h.

5809. Concepts of Developmental Biology. The underlying cellular and molecular mechanisms of embryonic development. Cellular interactions as they relate to developmental processes. Prereq.: BIOL 3711. 3 s.h.

5811/5811L. Ornithology. Structure, physiology, behavior, ecology, and evolution of birds. Natural history of common bird species and important bird groups, especially those in Ohio. Basic methods and skills for field study of birds. Three hours lecture, three hours lab. Prereq.: BIOL 3741. 4 s.h. + 0 s.h.

5813/5813L. Vertebrate Histology. The microscopic study of mammalian tissues and organs. Three hours lecture, two hours lab. Prereq.: BIOL 3711 or 3730. 4 s.h. + 0 s.h.

5823. Advanced Eukaryotic Genetics. Mechanisms and control of eukaryotic DNA replication, current advances in understanding the genetics basis of cancer and other genetic diseases, problems and benefits of the various eukaryotic genome projects (human and others), gene therapy and genetic engineering in animals and plants. Prereq.: BIOL 3721 and 4890. 3 s.h.

5824/5824L. Behavioral Neuroscience. Explores the biological basis of human experience and behavior. Topics include basic neuroanatomy and neuropharmacology, emotions, learning and memory, sleep and biological rhythms, reproductive behavior, and communication. Three hours lecture, three hours lab. Prereq.: BIOL 3730. 4 s.h. + 0 s.h.


5832. Principles of Neurobiology. Topics include cell and molecular biology of the neuron, properties of excitable membranes, functional neuroanatomy, integrated motor control, sensory signal transduction, developmental neurobiology, mechanisms of disease processes, and higher cortical function. Prereq.: BIOL 3730. 4 s.h.

5833. Mammalian Endocrinology. Detailed examination of the hormones of the hypothalamus, pituitary, thyroid, adrenal pancreas, gonads, and other organs with putative endocrine function. Focus on the physiological functions of hormones and their mechanisms of action with emphasis on the human. Prereq.: BIOL 3730. 3 s.h.

5840. Advanced Microbiology. Molecular mechanisms for virulence of pathogenic organisms. Prereq.: BIOL 3702 or equivalent. 3 s.h.

5844. Physiology of Reproduction. Current concepts of reproductive processes and their physiological control in mammalian systems. Prereq.: BIOL 3730. 3 s.h.

5853. Biometry. Application of fundamental theory and procedures to the statistical analysis of biological data. Prereq.: 20 s.h. of Biological Sciences. 3 s.h.

5861. Animal Behavior. Detailed examination of a variety of topics necessary for understanding animal behavior. Historical approaches to animal behavior, evolution and behavior genetics, physiology of behavior, behavioral ecology, and social organization and mating systems. Prereq.: BIOL 3741 or permission of instructor. 3 s.h.

5868/5868L. Gross Anatomy I. Regional study of the human body with emphasis on functional and topographic anatomy and clinical correlations. Two hours lecture-demonstration, four hours lab. Prereq.: Admission to the YSU Physical Therapy program or permission of instructor. 4 s.h. + 0 s.h.

5869/5869L. Gross Anatomy II. Regional study of the human body with emphasis on functional and topographic anatomy and clinical correlations. Two hours lecture-demonstration, four hours lab. Prereq.: BIOL 5868. 4 s.h. + 0 s.h.

5888/5888L. Environmental Biotechnology. Lectures will cover the use of microbes for solving environmental problems. In the laboratory, teams of students will design and implement experiments in bioremediation. This course is intended for students in biology, environmental studies, chemistry, and engineering. Two hours lecture and four hours lab. Prereq.: CHEM 3719 or CEEN 3736. 4 s.h. + 0 s.h.

BUSINESS ADMINISTRATION—BUS

College of Business Administration

1500. Exploring Business. Introduction to the world of business with a focus on various functional areas and career opportunities. Development of the requirements of the business professional including team work, information gathering and communication skills. Prereq.: MATH 1501 or level 20 on math placement or better and eligible to enroll in English 1550. 3 s.h.
3715. Principles of International Business. Study of international business environment and the factors affecting the international operations of firms. Students will develop an understanding of global business opportunities, responsive strategies, and operations; apply course concepts/theories to current issues in international business, and develop an understanding of the complexities of managing cross-national cultural differences. Prerequisites: BUS 1500; 63 semester hours of course work including WCBA tool courses (ENGL 1551, MATH 1532, ECON 2610, 2630, 3790, ACCT 2602, 2603 with grades of "C" or better); overall GPA of 2.5 or higher; WCBA approved upper-division standing. 3 s.h.

3720. Nonprofit Leadership. The roles of nonprofit organizations in meeting human needs through philanthropy and focus on mission. Understanding of board development, fundraising, management, and careers in nonprofit organizations. Prereq.: ENGL 1551 and junior standing. 3 s.h.

3740. Nonprofit Leadership Community Service. Collaborative community service project with nonprofit professionals to meet specific goals. Taken in each semester of junior/senior years for certificate requirements of American Humanics. Different course theme and project each semester for service-learning experiences. Prereq.: Junior standing. 1 s.h.

3780. Financial Management and Fundraising for Nonprofit Organizations. Fiscal, budgetary, development and fundraising aspects of nonprofit organizations. Discussion, analysis, implementation of financing, budgeting, development, and fundraising theories and techniques applicable to planning, operating, and developing nonprofit organizations. Prereq.: ENGL 1551 and junior standing. 3 s.h.

4840. Nonprofit Leadership Internship. Students work at a nonprofit organization to achieve specific goals agreed upon by the student, the nonprofit organization, and the campus director of the Center for Nonprofit Leadership. The student must work at least 300 hours during the semester. The course must be taken concurrently with BUS 4841. Prereq.: Permission of campus director of the Center for Nonprofit Leadership. 3 s.h.

4841. Nonprofit Leadership Seminar. Review of the competencies associated with the American Humanics certificate to ensure that the students seeking the certificate have fulfilled all of the competencies required. The course must be taken in conjunction with the nonprofit internship required of the certificate. The seminar will meet for two hours each week. Prereq.: Permission of campus director of the Center for Nonprofit Leadership. 1 s.h.

4860. Business Internship. The student is given the opportunity to relate theory to practice in a career related on-site field experience with a participating organization. Prerequisites: 9 hours of upper division business courses. 3 s.h.

4875. International Business Field Study Tour. The student will gain an understanding of the distinctive nature of the business environment in a foreign country. The student will gain insight into the strategic and operating issues that are unique to that country and geographic region. Prerequisite: MKTG 3703, FIN 3720, and MGT 3725. 1-3 s.h.

4881. Special Topics in Business. Subject matter, credit hours and specific prerequisites to be announced in advance of each offering. Prerequisite: Junior standing or permission of instructor. 1-4 s.h.

4888. The International Business Consulting Practicum course will provide hands-on consulting experience to undergraduate business majors. Students will work with businesses in the region to carry-out projects related to international expansion plans. 3 s.h.

CHEMICAL ENGINEERING—CHEN

Department of Civil/Environmental and Chemical Engineering

Lower-Division Courses

2630. Applied Engineering 1. Physics, chemistry, and calculus applications to problems in general engineering with focus on EIT/FE exam questions, strength and properties of materials. Topics include: mechanics, dynamics, kinematics, conservation equations. Three-hour computational lab. Prereq.: PHYS 2610 or permission of instructor. 1 s.h.

2631. Applied Engineering 2. Physics, chemistry, and calculus applications to problems in general engineering with focus on EIT/FE exam questions, strength and properties of materials. Topics include: wave phenomena (light, sound), electricity (circuits), magnetism, materials, strength of materials. Three-hour computational lab. Prereq.: CHEN 2630 or permission of instructor. 1 s.h.

2650. Computer Methods in Chemical Engineering. Application of computational software packages and spreadsheets to solve chemical engineering problems. Utilization of process simulation packages. Real-time computing applications in laboratory automation. Prereq.: ENGR 1560 or consent of instructor. 2 s.h.

2681. Industrial Stoichiometry. To aid the non-chemical engineer to organize, analyze, and effectively utilize the information inherent in chemically stoichiometric relationships, as they apply to actual plant situations. Prereq.: MATH 1571, CHEM 1516. 3 s.h.

2683. Chemical Engineering Principles 1. Engineering units and dimensions. Methods of analysis and measurement. Perfect gas and real gas relationships. Material and energy balances for both non-flow and flow systems. Prereq.: MATH 1571, CHEM 1515. 3 s.h.


Upper-Division Courses


3718. Women, Science, and Technology. An overview of the role women have played in scientific and technological advances. Problems unique to women entering scientific professions will be addressed, information about scientific and technical careers and job opportunities and contacts with professionals in the community will be provided. Cross-listed with BIOL 3718. Prereq.: ENGL 1550. 3 s.h.

3721. Engineering Plastics. Preparation, characterization, manufacture, properties and applications of commercial polymers. Prereq.: CHEN 2684 and 3719; or consent of instructor. 3 s.h.

3726. Elementary Nuclear Reactor Engineering. Basic engineering science to serve as background material for nuclear reactor design. Nuclear fission as an energy source. Reactor use and classification. Comprehensive discussion of reactor design problems such as neutron distribution in the core, type of moderator, heat removal, and radiation protection. Prereq.: MATH 2673, PHYS 2610. 3 s.h.

3745. Corrosion Control Engineering. Introduction to electrochemical mechanism and theory of corrosion, engineering practice, and criteria for both anodic and cathodic control. Theory and engineering practice in the use of inhibitors. Prereq.: CHEN 2683. 3 s.h.

3771, 3772. Chemical Engineering Thermodynamics 1, 2. Development of the concepts and formalisms of thermodynamics and their applications to chemical engineering systems. Real and ideal behavior of single and multicomponent systems. Introduction to the thermodynamics of phase equilibria. Analysis and design of thermal systems. Additional topics include applications in transport phenomena and plant design. Prereq.: MATH 2673, CHEN 2684 for 3771. CHEN 3771 for CHEN 3772 3 s.h.

3785L. Transport Phenomena Laboratory. Experimental studies of transport properties and momentum, energy and mass transfer using industrial type equipment. Correlation of data and comparison with theory. Oral presentations and preparation of technical reports. Three hours laboratory. Prereq.: CHEN 3786 or concurrent. 1 s.h.

3786. Transport Phenomena 1. Mathematical formulation of conversion laws. Dimensional analysis. Mechanism and fundamentals of momentum and energy transfer with selected applications to analysis and design of chemical engineering equipment. Three hours lecture and three hours computational lab per week. Prereq.: MATH 2673 and CHEN 2684. 4 s.h.

3787. Transport Phenomena 2/Unit Operations 1. Mass transfer processes. Diffusional operations and separation processes with emphasis on evaporation, humidification and drying. Derivation of design equations from mass and energy balances, and application to equipment design. Solution of simultaneous differential equations of mass, momentum, and energy. Prereq.: CHEN 3786. 3 s.h.

3787L. Unit Operations Laboratory 1. Experiments in absorption, cascade operations, reaction kinetics, mixing and other chemical engineering operations employing industrial and pilot plant size equipment and instrumentation. Treatment of experimental data, correlations and comparison with theory. Oral presentations and preparation of technical reports. Three hour laboratory. Prereq.: CHEN 3787. 1 s.h.

4801, 4802, 4803. Chemical Engineering Projects. Chemical engineering projects under the guidance of a faculty member. Literature search, design and construction of apparatus, experimentation and preparation of a comprehensive report. Prereq.: Consent of instructor. 3 s.h.

4815. Unit Operations 2. Gas absorption and desorption, interphase mass transfer processes, liquid extraction and leaching. Physical separation processes including filtration, settling, and size reduction. Derivation of the design equations for the above processes, and applications of the design equations to equipment design. Prereq.: CHEN 3787. 3 s.h.

4815L. Unit Operations Laboratory 2. Experiments in absorption, cascade operations, reaction kinetics, mixing and other chemical engineering operations employing industrial and pilot plant size equipment and instrumentation. Treatment of experimental data, correlations and comparison with theory. Oral presentations and preparation of technical reports. Three hour laboratory. Prereq.: CHEN 4815. 1 s.h.

4822. Reinforced Polymer Structures. Survey of raw materials, manufacturing methods, and design of products utilizing reinforcing materials combined with an elastomer or polymer binder. Prereq.: CHEN 2684 or consent of instructor. 3 s.h.

4840. Biochemical Engineering Fundamentals. Design of biological reactors, bioremediation schemes,
methods for the purification and mass production of chemical species from living organisms or cultures, extraction, and fermentation. Technologies and processing of recombinant DNA, antibiotics, antibodies, vitamins, steroids, and methane are included. Essentials of microbiology, biochemistry, and genetics will precede industrial applications. Prereq.: junior standing. Prereq.: CHEN 2684 or consent of instructor.

4845. Chemical Engineering Analysis. Modeling of processes from unit operations, transport phenomena, and thermodynamics. Topics include the determination of limiting and generalized operating conditions, estimations of operating variables, and process balance of energy, mass, and momentum transfer. Prereq.: CHEN 2684 or consent of instructor.

4880, 4881. Chemical Reactor Design 1 and 2. Chemical reaction equilibria. Theoretical developments and methods of interpreting experimental data pertaining to chemical kinetics. General design principles and construction features of reactors with application of these principles to the design of specific reactors. Prereq.: CHEN 3772 for 4880. CHEN 4880 for 4881.


4887. Process and Plant Design 1. An examination of engineering economic analysis to include: cost estimation, profitability, optimum design, principles of fixed and operating costs, materials and site selection, and general and specialized design techniques. Prereq.: CHEN 3787 and unrecalculated GPA of 2.0 or better in major courses.

4888. Process and Plant Design 2. The application of chemical engineering and cost principles to the component design and selection of process equipment. The application of chemical engineering and cost principles to the design of chemical plants and processes including societal aesthetic, environmental, and safety considerations. Prereq.: CHEN 4887.

5800. Special Topics. Special topics and new developments in chemical engineering. Subject matter, credit hours, and special prerequisites to be announced in advance of each offering. Prereq.: Consent of instructor.


5810. The Business of Engineering. Industrial processing facilities, and the engineers and business people that run them. Decision-making perspectives and the technical and communication skills of each group are compared. Focus is on quality control, R&D, and efficiency.


5820. Industrial Pollution Control. Types, sources and effects of industrial and hazardous waste; principles of industrial and hazardous waste control; discussion and design of biological, physical, and chemical treatment processes. Prereq.: CHEN 2684 or consent of instructor.

5821. Fundamentals of Polymer Science. The survey of polymerization mechanisms, polymer structure-property relationships, transport properties, flammability-related plasticizers and solvents as well as design applications. Prereq.: CHEN 2684 or consent of instructor.

5830. Nuclear Reactors. Neutron interactions and scattering; moderation ratio, the steady state reactor core and four factor equation, the diffusion equation for various reactor geometries and the reflected reactor core. Prereq.: CHEN 3726 or consent of instructor.


5850. Industrial Processes. A fundamental approach to the design of industrial chemical processes. Emphasis upon flow-charting, chemical reactions, separations involved, thermodynamics, and economic considerations. Food and pharmaceutical processing is a major focus. Prereq.: CHEN 2684 or consent of instructor.

5883. Mathematical Methods in Chemical Engineering. The applications of advanced mathematics to the solution of chemical engineering problems. Topics covered include treatment and interpretation of engineering data, modeling of chemical engineering systems and formulation of ordinary and partial differential equations governing chemical engineering operations and their solutions by use of numerical and analytical techniques. Prereq.: CHEN 3786.

5886. Nuclear Reactor Design. The steady state reactor core; four-factor equation, resonance escape probabil-
ity, neutron flux distribution in various geometrics, two-group and multigroup theories. Transient reactor behavior and control; effect of delayed neutrons, fission product poisoning, nuclear fuels, nuclear heat transfer and burnout problems, reactor economy; fuel burnup and power cost. Thermal breeder and fast reactors. Neutron flux distribution measurements. Radiation detection and monitoring. Prereq.: CHEN 3726 or consent of instructor.

CHEMISTRY—CHEM
Department of Chemistry

Lower-Division Courses

1500. Chemistry in Modern Living. Introduction to basic chemical concepts, the scientific method, and the impact of chemistry on human life and society. Examples may include water treatment, air quality, plastics, drugs, cosmetics, energy resources, food, and the chemical basis of life. Not intended for Chemistry majors. 3 s.h.

1500L. Chemistry in Modern Living Laboratory. Introduction to basic laboratory techniques designed to supplement CHEM 1500. Three hours per week. Concurrent with CHEM 1500. 1 s.h.

1501. An Introduction to Chemistry. Metric units, dimensional analysis, chemical nomenclature, the mole concept, chemical stoichiometry. Emphasis on problem solving and the mathematics required for success in the study of chemistry. For students without high school chemistry and others needing preparation for CHEM 1505 or CHEM 1515. Three hours lecture, no laboratory. Prereq.: Math 1507 and Math 1508 or equivalent. Concurrent with CHEM 1510 and CHEM 1505. 3 s.h.

1505/1505L. Allied Health Chemistry 1. Introduction to the principles of chemistry including atomic structure, bonding, nomenclature, chemical calculations, chemical reactions, gas laws, solutions, acids and bases, and equilibrium. Intended for majors in allied health and other applied sciences. Two hours lecture, three hours lab-discussion. Prereq.: CHEM 1501 or equivalent, MATH 1507 and Math 1508 or equivalent. Concurrent CHEM 1505L. 3 s.h.+0 s.h.

1505R, 1506R. Recitation for Allied Health Chemistry 1, 2. Discussion and problem solving exercises to complement and enhance study in CHEM 1505 and 1506. Concurrent with CHEM 1505 and 1506. 1 s.h.

1506/1506L. Allied Health Chemistry 2. Fundamentals of organic and biological chemistry including applications to the human organism. Two hours lecture, three hours lab-discussion. Prereq.: CHEM 1505. Concurrent: CHEM 1506L. 3 s.h.+0 s.h.

1515/1515L. General Chemistry 1. An introduction to the fundamental principles of chemistry, including measurement and calculation; chemical stoichiometry; the properties of gases; atomic and molecular structure; bonding; thermochemistry; and periodic properties. Intended for majors in the natural sciences and engineering. Three hours lecture, three hours lab-discussion. Prereq.: CHEM 1501 or equivalent; MATH 1513 or equivalent. Concurrent: 1515L; 1515R if major or repeating 1515. 4 s.h.+0 s.h.

1516/1516L. General Chemistry 2. A continuation of the study of the principles of chemistry, including solution properties; acids and bases; chemical equilibrium; thermodynamics; reaction kinetics; and electrochemistry. Intended for majors in the natural sciences and engineering. Three hours lecture, three hours lab-discussion. Prereq.: CHEM 1515; Concurrent: 1516L; CHEM 1516R if major or repeating 1516. 4 s.h.+0 s.h.

2602. African and African-American Contributions to Science. Introduction to basic science concepts, the scientific method, and the impact of chemistry as a central science on society. Examples include works of African-American scientists. 3 s.h.

2604/2604L. Quantitative Analysis. Chemical equilibrium, stoichiometry, theory of errors, and volumetric and gravimetric procedures as applied to quantitative determinations. Introduction to electroanalytical, chromatographic and spectrophotometric methods. Emphasis on development of technique. Three hours lecture, six hours lab. Prereq.: CHEM 1516. 5 s.h.+0 s.h.

2650. Introduction to Undergraduate Research. Introduction to the methods of chemical research under the direction of a faculty member. May include literature search and analysis, instructional laboratory development, and/or original basic or applied research. May be repeated to a maximum of 4 s.h. Prereq. or concurrent: CHEM 1516 and approval of department chairperson. 1-2 s.h.

Upper-Division Courses

3719/3719L. Organic Chemistry 1. Organic compounds, reactions and theories. Typical preparations and procedures of analysis. Three hours lecture, three hours lab-discussion. Prereq.: CHEM 1516. 4 s.h.+0 s.h.

3720/3720L. Organic Chemistry 2. Organic compounds, reactions and theories. Typical preparations and procedures of analysis. Three hours lecture, three hours lab-discussion. Prereq.: CHEM 3719. 4 s.h.+0 s.h.


3729. Inorganic Chemistry. Fundamental principles underlying the structure, bonding, and properties of...
the elements and molecular, solid state, and coordination compounds. Prereq. or concurrent: CHEM 3739.

3739/3739L. Physical Chemistry 1. Principles and applications of thermodynamics and kinetics to chemical systems. Three hours lecture, three hours lab-discussion. Prereq.: CHEM 2604 or CHEN 3771 concurrently; PHYS 2611/2611L; MATH 1572. 4 s.h.+0 s.h.

3740/3740L. Physical Chemistry 2. Principles and applications of quantum mechanic and statistical thermodynamics to chemical systems. Three hours lecture, three hours lab-discussion. Prereq.: CHEM 3739; MATH 2673. 4 s.h.+0 s.h.

3764. Chemical Toxicology. Introduction to the clinical, forensic, industrial, and environmental aspects of chemical toxicology. Therapeutic and toxic limits of drugs. Actions, controls and treatment of poisons and environmental agents. Prereq.: CHEM 3720 and either CHEM 2604 or permission of department chair. 3 s.h.


3785L. Biochemistry Laboratory. Analysis and separation techniques of biochemistry. Three hours lab-discussion. Prereq. or concurrent: CHEM 3785. 1 s.h.

3786. Biochemistry 2. Intermediate metabolism and biochemical information pathways. Prereq.: CHEM 3785. 3 s.h.

3790. Undergraduate Seminar. Students participate in departmental seminars and present a seminar to the class. May be repeated once. Prereq. or concurrent: CHEM 2604 and 3720. 1 s.h.

4850. Chemistry Research. Research planning, design, and execution including literature survey techniques, proposal writing, and critical scientific analysis. The student gives an oral presentation of a research proposal for CHEM 4850L, or on another topic as approved by the instructor. Prereq.: CHEM 2604 or 3719 and approval of department chairperson. 1 s.h.

4850L. Chemistry Research Laboratory. Research participation under the direction of a faculty member. The student prepares an acceptable written report on the completed project. May be repeated to a maximum of 5 s.h. Prereq. or concurrent: CHEM 4850 and approval of department chairperson. 2-3 s.h.

4860. Regulatory Aspects of Industrial Chemistry. Roles and responsibilities of industrial chemists. Industrial hygiene and safety. Industrial chemical processes, their waste products, their environmental effects, and the treatment of pollutants. Governmental regulations relating to waste disposal, product safety, occupational safety, resource conservation, environmental protection, and problems of awareness and compliance. Prereq.: CHEM 2604 and 3720. 1 s.h.

4891. Special Topics. Topics selected by the faculty from fields of current research interest or of special emphasis. May be repeated with different topics. 1-3 s.h.

5804/5804L. Chemical Instrumentation. The theoretical foundations of instrumental procedures and the use of instruments in analytical work. Two hours lecture, six hours lab. Prereq.: CHEM 3740. 4 s.h.+0 s.h.

5821. Intermediate Organic Chemistry. An intermediate treatment of organic chemistry building on the principles introduced at the sophomore level. Emphasis on curved arrow notation in mechanism and the planning of organic syntheses. Structural analysis of organic compounds using NMR, IR and MS and the application of structural knowledge to questions of mechanism. Prereq.: CHEM 3720. 3 s.h.

5822/5822L. Advanced Organic Laboratory. An advanced approach to the applications of organic chemistry in the laboratory. Synthesis and purification of organic molecules using modern techniques, structure elucidation using spectroscopic techniques. Lecture discussion includes use of instrumentation, planning of practical syntheses, use of the primary chemical literature and safety in the laboratory. Two hours lecture, six hours lab. Prereq.: CHEM 3720. 4 s.h.+0 s.h.

5830. Intermediate Inorganic Chemistry. Reactions and descriptive chemistry of transition metal, organometallic, and main-group compounds. Prereq.: CHEM 3729, 3740 (may be concurrent). 2 s.h.

5831. Inorganic Chemistry Laboratory. Preparation of typical inorganic compounds and their characterization. Six hours lab-discussion. Prereq. or concurrent: CHEM 3729 and 3739. 2 s.h.

5832/5832L. Solid State Structural Methods. The determination of structures of biological, organic, and inorganic materials in the solid state. Introduction to the crystalline state, defects, diffraction of waves, powder and single crystal diffraction methods of neutron and x-ray analysis, electron microscopy, and solid state NMR. Two hours lecture, three hours lab. Prereq.: CHEM 3740 or 3737 or consent of the chairperson. 3 s.h.+0 s.h.

5836. Quantum Chemistry. Basic principles of quantum chemistry, with applications to problems in molecular structure, spectroscopy and thermodynamics. Prereq.: CHEM 3740. 3 s.h.

5861/5861L. Polymer Science 1: Polymer Chemistry and Plastics. Preparation, characterization, structure-property relationships, morphology, and uses of the major commercial polymers. Two hours lecture, three hours lab. Prereq. or concurrent: CHEM 3720 and 3739 or 3737 or consent of the chairperson. 4 s.h.+0 s.h.

5862/5862L. Polymer Science 2: Polymer Rheology, Processing, and Composites. Polymer rheology, processing methods, and materials characterization. The effects of additives and the major classes of
thermoplastic, thermoset, elastomeric, and composite materials. Two hours lecture, three hours lab. Prereq.: CHEM 5861 or consent of the chairperson.

3 s.h.+0 s.h.

5876. Enzyme Analysis. Advanced biochemistry laboratory focusing on the methods of enzyme purification and characterization. One hour lecture, two hours lab. Prereq.: CHEM 3785 or equivalent and 3785L or equivalent.

2 s.h.

**CHILD AND FAMILY—CHFM**

Department of Human Ecology

**Lower-Division Courses**

1514. Introduction to Early Childhood Education. Historical and theoretical foundations of early childhood education; overview of early childhood environments, relationships with children and families, and curricular issues. Three (3) hours lecture per week and 15 hours of field observations per semester. 3 s.h.

1530. Infants and Toddlers: Development and Care. Infant and toddler development and the design of developmentally appropriate curriculum and caregiving environments for children conception to age three. Emphasis on the caregiver-child relationship. Learning will occur through observation, reflection, classroom discussions, focused reading, and practice in infant/toddler settings. Two hours lecture and three hours guided practice. 3 s.h.

2633. Early Childhood: Integrating Development and Education. Knowledge and skills to plan curriculum and organize learning environments that are developmentally appropriate and responsive to the needs of a diverse population of children ages three to eight. Includes 10 hours of field experience. Prereq.: ENGL 1550.

3 s.h.

2650. Introduction to Assessment of Young Children. Principles of conducting developmentally appropriate assessments of behavior and development of young children; assessment purposes, strategies, and appropriate use of assessment information. Includes five hours of field experience. Prereq.: Minimum grade of C in CHFM 2633 or PSYC 3755.

3 s.h.

2664. Managing Classroom Behavior and Staff Relationships in Early Childhood Settings. Principles of effective classroom management in the early childhood classroom; emphasis on positive guidance strategies, the influence of the classroom environment on children's behavior, and establishing a collaborative professional team. Includes 10 hours of field/clinical experience. Prereq: Minimum grade of C in CHFM 1514 and minimum grade of C in CHFM 2633.

3 s.h.

2675. Integrated Curriculum for Prekindergarten. Teaching techniques used to implement an integrated early childhood curriculum in the prekindergarten classroom with emphasis on the communication curriculum (language, literacy, and literature) and the inquiry curriculum (math, science, and social studies). Includes 10 hours of field experience. Prereq.: Minimum grade of C in CHFM 1514 and minimum grade of C in CHFM 2633.

3 s.h.

**Upper-Division Courses**

3718. Family Law. Fundamental elements of family law, including premarital contracts, traditional and nontraditional marriages and families, procreation rights, legitimacy and paternity, adoption, divorce and separation, property division and support, custody and termination of parental rights, juvenile law, intra-family tort liability and domestic violence. Cross-listed with CJFS 3718. Prerequisite: SOC 1500.

3 s.h.

3731. Individual and Family Development. The family ecosystems, dynamics, and roles throughout the life span, and the impact of heritage and culture on family systems worldwide. Prereq.: PSYC 1560 and ENGL 1551.

3 s.h.

3733L. Pract. in Preprimary Set. Includes field placement in a preschool or kindergarten setting. Observe, plan, and implement developmentally appropriate activities for children ages three to eight years. Six hours practicum experience per week. One hour seminar per week. Prereq.: CHFM 2633.

3 s.h.


3 s.h.

3755. Parenting. An examination of parent-child relationships from both a developmental and contextual perspective. Topics include parenting patterns and strategies, parent-child relations as a function of development, and the role of culture and context in the negotiation of roles in parent-child interactions. Prerequisite: PSYC 1560 and SOC 1500.

3 s.h.

3770. Wellness During the Early Childhood Years. Principles of maintaining physically and psychologically safe and healthy learning environments for children; includes nutrition, safety in the classroom, stress and mental health issues, and community resources. Prereq.: Minimum grade of C in CHFM 1514 or ECE 2629 or CHFM 3731.

3 s.h.

3790. Directed Practice in PreK Education. A culminating practicum for the PreK associate degree candidates designed to provide teaching experiences with children in the early childhood years. Students will apply developmental theories and appropriate practices in settings for young children. 300 hours of field work. Prereq.: CHFM 1514, CHFM 3733L. Coreq.: CHFM 3790S.

4 s.h.

3790S. Directed Practice Seminar. Discussion of practicum experiences in assigned preschool classrooms with a focus on developmentally appropriate practices, reflective teaching, and professionalism in early childhood education. Prereq.: CHFM 1514, CHFM 3733L; Coreq.: CHFM 3790.

2 s.h.
4859. Methods and Materials in Early Childhood Settings. Methods and techniques used to implement an integrated early childhood curriculum with emphasis on social, emotional, and physical development and concept formation of young children ages 3 to 8. Listed also as ECE 3759. Prereq.: ECE 2630, CHFM 3790. 3 s.h.

5860. Coordination and Evaluation of Early Childhood Programs. Administration, organization, and operation of early childhood programs, including legal and ethical guidelines, managing resources, program development and evaluation, advocacy, and public policy in early childhood education. Includes ten hours field/clinical experience. Prereq.: Minimum grade of C in CHFM 3733L. 3 s.h.

CIVIL AND CONSTRUCTION ENGINEERING TECHNOLOGY—CCET Engineering Technology

Lower-Division Courses

2604. Properties and Strength of Materials. Introduction to the physical and chemical properties of materials and their behavior under various loads and environments. Concepts of stress and strain developed and evaluated for the application of axial, shear, torsional, and bending loads. Prereq. or concurrent: MET 1515. 3 s.h.

2614L. Materials Laboratory 1. Use and care of testing equipment, data retrieval, data reduction and report preparation. Physical testing of metals, concrete, aggregates, asphalts, soils and woods. Three hours per week. Prereq. or concurrent: CCET 2604. 1 s.h.


Upper-Division Courses

3705. Computing for Technologists. Development of computer techniques used in solutions to problems in all fields of engineering technology. Students write computer programs to solve problems with which they are familiar. Use of database management, spreadsheets. May be taken by non-CCET majors. Two hours lecture, three hours lab per week. Prereq.: junior standing or consent of instructor. 3 s.h.

3706. Structural Design. Structural design using AISC, ACI and similar codes. Selection of members and connections in accordance with manuals and code specifications. Design and AutoCAD projects required. Three hours lecture and three hours computational lab per week. Prereq.: DDT 1505, MET 1515, MATH 1513, CCET 2604. 4 s.h.

3708/3708L. Building Information Modeling. Introduction and applications of Autodesk Revit 3D CAD program. Use of Revit software to assemble a complete building information model of a building and use the model to coordinate systems between disciplines, to create material take-offs, construction documents, and presentation drawings. Two hours lecture, three hours lab per week. Prereq.: C or better in CCET 3706. 3 s.h.+0 s.h.

3709. Structural Analysis 1. Fundamental determination of member forces in trusses, beams, arches, frames and cables. Calculation of member stresses and deflections. Two hours lecture, three hours computational lab per week. Prereq.: ENTC 1505, MATH 1513, CCET 2604. 3 s.h.


3714L. Soil Mechanics Laboratory. Practice in soil identification and determination of soil properties. Use and care of basic soil testing equipment and standard test procedures. Three laboratory hours per week. Concurrent with CCET 3714. 1 s.h.

3719. Environmental Impact of Abandoned Mines. Mining methods, types of mines, information retrieval, mine stabilization, and the effects of abandoned mines on environmental and human activities, especially deep coal mines in the Mahoning Valley and adjacent areas. Two hours lecture and three hours of lab per week. Prereq. GEOL 1505 or equivalent or permission of instructor. 3 s.h.

3724. Hydraulics and Land Development. Study of hydraulics and hydrologic principles and their applications to drainage requirements, storm-water management, detention/retention basin design, erosion and sedimentation control plans and land-use planning. Use of computer software for analysis and design. Two hours lecture, three hours of computational lab per week. Prereq.: DDT 1505, ENTC 1505, MATH 1513, CCET 2604. 3 s.h.

3730. Transportation Technology. Transportation planning and highway system design. Familiarization with AASHTO design manuals; geometric design and signalization of highway segments; capacity analysis and route selection. Cost-benefit analysis for transportation projects. Prereq.: CEEN 2610 and CCET 2624. 3 s.h.

3740. Construction Management. Design and construction office planning and scheduling techniques. Intro-
duction to computer methods for program planning and updating. Financial, labor, and material resource allocation and tracking. Construction reports, contracts, specifications and general conditions. Relationships among owner, architect/engineer, and constructor. Prereq.: C or better in CCET 2617 and CCET 3711.  

4807. Project Planning & Scheduling. Application of planning, scheduling, and control system techniques for an integrated project including theory, options, legal implications, and practices. Students plan and schedule projects using CPM computer software and set up control systems for the project. Three hours lecture, one hour laboratory per week. Prereq.: C or better in both CCET 2617 and CCET 3711. 3 s.h.  

4809. Structural Analysis 2. Continuation of CCET 3709. Analysis techniques for common structures. Introduction to classical approaches to statically indeterminate structures and calculation of deflections. Use of standard computer programs such as StruCalc, SAP and SABLE. Three hours lecture, one hour computational lab per week. Prereq.: C or better in both CCET 3709 and MATH 1570. 3 s.h.  

4810. Construction Surveying. Theory and applications of advanced land surveying techniques for: route surveying and geometric design; topographic site surveys and mapping; civil engineering, utilities, and construction surveys; global positioning systems; and quantities and final surveys. Two hours lecture and three hours field surveying laboratory. Prereq.: CEEN 2610, CEEN 2610L. 3 s.h.  

4812. Concrete Design. Behavior and design of concrete elements subject to flexure, shear, axial and combined effects. Emphasis on reinforced concrete design in accordance with the ACI Code including beams, T-beams, slabs, walls, and columns. An introduction to prestressed and precast concrete design. Three hours lecture, one hour design lab per week. Prereq.: C or better in both CCET 3706 and CCET 3709. 3 s.h.  

4813. Steel Design. Loading and behavior of steel structures and design of standard rolled shapes in accordance with current LRFD and ASD specifications. Design of welded and bolted connections and an introduction to design of cold-formed steel members. Three hours lecture, one hour design lab per week. Prereq.: C or better in both CCET 3706 and CCET 3709. 3 s.h.  

4814. Foundation Design. Application of soil mechanics to the design of foundations. Topics include spread footings, drilled piers, piles, retaining walls, sheet piles walls and underground structures. Three hours lecture per week. Prereq.: CCET 3714 and CCET 3714L. 3 s.h.  

4815. Masonry Design. Design of beams, columns, shear walls and bearing walls using clay and concrete masonry units. Application of allowable stress design (ASD) and strength design (SD) in accordance with the MSJC Building Code Requirements for Masonry Structures. Additional topics include prestressed and autoclaved aerated concrete (AAC) masonry. Three hours lecture, one hour lab per week. Prereq.: CCET 2617, C or better in both CCET 3706 and CCET 3709. 3 s.h.  

4816. Timber Design. Design of beams, poles, piles, diaphragms, shear walls and fasteners using timber elements. Application of the National Design Specification for Wood Construction that incorporates a dual format using both allowable stress design (ASD) and load and resistance factor design (LRFD). Additional topics include glued-laminated members and design of mechanical connectors. Design, analysis, construction, and testing of scale models is required. Three hours lecture, one hour lab per week. Prereq.: CCET 2617, C or better in both CCET 3706 and CCET 3709. 3 s.h.  

4824. Environmental Technology. Application of environmental principles to land planning and development. Wastewater treatment processes and system design. Application of water and wastewater management to specific sites. Permitting and endangerment assessment. Three hours lecture, one hour computational lab per week. Prereq.: C or better in CCET 3724 and junior standing. 3 s.h.  

4884. Civil/Structural Facilities Design. Interdisciplinary capstone course. An overview of the requirements and design procedures for civil and structural systems. Includes the analysis and design for site development, utilities, foundation, wall systems, framing systems, floor system and the preparation of the plans, specifications and estimate package. Includes a major interdisciplinary group project. Prereq.: Senior standing in CCET or EET permission of instructor. Concurrent: EET 4880. Two hours lecture, three hours design studio. 3 s.h.  

4890. Special Topics in Civil and Construction Engineering Technology. New developments in CCET. Subject matter, special prerequisites, and credit hours to be announced in advance of each offering. May be repeated with different subject matter to a maximum of 8 s.h. Prereq.: Senior standing in CCET or consent of the instructor. 1-4 s.h.  

CIVIL/ENVIRONMENTAL ENGINEERING—CEEN  
Department of Civil/Environmental and Chemical Engineering  

Lower-Division Courses  

2601. Statics. Principles of engineering mechanics as applied to statics with vector applications to forces and moments; centroid and center of gravity; equilibrium; friction; moments of inertia: relationship between loads, stress and strain in tension, compression, torsion and bending. Prereq.: MATH 1572 and PHYS 2610 or concurrent. 3 s.h.
Upper-Division Courses

3711. Technology and Society. A critical exploration of how societal needs affect the creation of technologies and how technology affects society. The course is interdisciplinary in nature and presents various tools to examine the complex interaction between humans and their tools. Topics include: (1) technology in human history; (2) society, science, and technology development; (3) technology and social change; (4) technology, knowledge, and power; (5) technology, population, and the environment. Prereq.: Junior standing or consent of instructor. Listed also as SOC 3789, BIOE 3789. 3 s.h.

3716. Fluid Mechanics. Proportions of fluids, fluid statics, kinematics; Bernoulli equation; fluid momentum; laminar and turbulent flow through simple pipes; boundary layers; dimensional analysis and similitude. Prereq.: CEEN 2602. 3 s.h.

3716L. Fluid Mechanics Lab. Experimental verification of the principles of fluid mechanics as applied to incompressible fluid. Three hours laboratory per week. Prereq.: ENGR 1560; Concurrent with CEEN 3716. 1 s.h.

3717. Hydraulic Design. Analysis of flow in complex pipe systems; pumps; open channel flow; culverts; spillways; storm water drainage. Three hours lecture and three hours of computational laboratory per week. Prereq.: CEEN 2610 and 3716. 4 s.h.

3720. Transportation Engineering. Introductory survey of transportation topics including transportation systems, vehicular operation and control, and transportation planning techniques; introduction to design of highways, airports, and railroads; and traffic engineering. Prereq.: CEEN 2610. 3 s.h.

3736. Fundamentals of Environmental Engineering. Causes and effects of water, air and land pollution; measurements of environmental quality; environmental regulations; introduction to methods of pollution control. Prereq.: CHEM 1515, ENGR 1560. 3 s.h.

3749. Structural Analysis 1. The determination of shears, moments, and stresses in statically determinate beams, frames, and trusses. Consideration of dead, live, moving, and wind loads. Elastic deformations of simple structures. Introduction to the analysis of statically indeterminate structures using numerical and energy methods. Prereq.: CEEN 2602. 3 s.h.

3749L. Structural Analysis 1 Lab. Introduction to stiffness-based analysis of determinate and indeterminate structures. Computer analysis of various structural systems, including plane and space trusses, continuous beams, plane and space frames, plates. P-delta stability analysis of frames. Three hours computational lab per week. Prereq.: CEEN 2602; concurrent with CEEN 3749. 1 s.h.

3751. Water Quality Analysis. Introduction to physical, chemical, and biological measurements of water quality. Sample collection and laboratory analysis of natural waters, drinking water, and wastewater. Interpretation of environmental data. Two hours lecture and three hours laboratory per week. Identical to ENST 3751. Prereq.: CEEN 3736 or ENST 2600; CHEM 1515. 3 s.h.

3751L. Water Quality Analysis Lab. Laboratory experience in the analysis of natural waters, drinking water and wastewater. Emphasizes procedures for the collection and interpretation of data on current environmental problems. Three hours laboratory per week. Must be taken concurrently with CEEN 3751. 0 s.h.

4800. Special Topics. Special topics and new developments in Civil Engineering. Subject matter, credit hours, and special prerequisites to be announced in advance of each offering. Prereq.: Senior standing or consent of instructor. May be repeated to a maximum of 6 s.h. 3 s.h.

4812. Construction Management. Fundamentals of construction management: contracts, bonding, estimating, organization, finance; cost and productivity of equipment, material, and labor; and project planning and scheduling. Prereq.: CEEN 3717 or CEEN 4881. 3 s.h.

4835. Highway Design. Methods of highway route location; design methods and standards for highways, intersections, freeways, and interchanges. Includes extensive use of computer-aided design. Prereq.: CEEN 3720. 3 s.h.

4863. Integrated Design Project. Students will be required to complete a meaningful design experience that focuses attention on professional practice and is predicated on the accumulated background of curriculum components. Two hours of lecture and three hours of laboratory a week. Prereq.: CEEN 4812 and unrecalculated GPA of 2.0 or better in major courses. 3 s.h.

4879. Civil Engineering Analysis. Application of mathematical and numerical methods to the systematic analysis and development of problems in the field of Civil Engineering. Prereq.: CEEN 3749. 3 s.h.
4881. Geotechnical Engineering. Properties of soil, classification, capillarity, seepage, permeability, stresses, consolidation, shear strength; analysis and design of foundation structures, retaining walls, piles, drilled piers, sheet pile walls, special footings, stability. Prereq.: MATH 2673; CEEN 3749. 3 s.h.

4881L. Geotechnical Lab. Typical soil testing procedures and physical testing of soil samples. Prereq.: Concurrent with CEEN 4881. 1 s.h.

5820. Pavement Material and Design. Design methods for flexible, rigid and other wheel-supporting pavements to include investigation, testing and preparation of subgrade, base course and pavement materials, design of various pavement mixtures, stresses in pavements, pavement design, and strengthening existing pavements. Prereq.: CEEN 3720 and 4881. 3 s.h.

5829. Civil Engineering Materials - Concrete. A course designed to broaden the student’s understanding of Portland Cement Concrete as a construction material. Topics include the study of cement, hydration of cement, aggregates, admixtures for concrete, mix design handling and placing, curing and properties of Portland Cement Concrete. Testing of Concrete, quality control and special concretes are also included. A library research paper on a concrete-related topic of the student’s choice is required. Prereq.: CEEN 3749 or permission of instructor. 3 s.h.

5832. Natural Systems Engineering. Introduction to the features, functions and values of natural aquatic systems, and engineering approaches to analysis and restoration design. Focus on wetlands and streams. Topics include regulations, wetland delineation, constructed wetland design, basic stream geomorphology, and stream restoration design. Prereq.: CEEN 3736 or permission of instructor. 3 s.h.

5837. Environmental Engineering Design. Theory and design of unit operations and processes for treatment of drinking water and municipal wastewater. Prereq.: CEEN 3736. 3 s.h.

5849. Structural Analysis 2. Analysis of statically indeterminate beams, trusses, bents and multistory frames, utilizing concepts of strain energy, virtual work, slope-deflection, and moment distribution. Introduction to matrix methods of analysis using force and displacement methods. Prereq.: CEEN 3749. 3 s.h.

5855. Reinforced Concrete Design. An introduction to the behavior, analysis, and design of reinforced concrete members. Included are singly and doubly reinforced beams, tee-beams, slabs, short and long columns. Prereq.: CEEN 3749. 3 s.h.

5856. Steel Design. An introduction to the behavior and design of steel structures. Included is the design of rolled and built-up tension members, beams, columns, beam-columns, welded and bolted connections. Prereq.: CEEN 3749. 3 s.h.

5877. Systems Engineering and Project Management. Systems approach to engineering design; non-linear models; linear programming; dynamic programming; network analysis; project management. Prereq.: MATH 3705. 3 s.h.

5882. Foundation Engineering. Analysis and design of various foundations, including abutments, piers, piles, and footings; slope stability of embankments. Prereq.: CEEN 4881 and CEEN 5855. 3 s.h.

5883. Bridge Engineering. Analysis and design of concrete and steel bridges; specifications and code requirements; design detailing; effects of natural and man-made hazards on bridges; implications of bridge failures. Prereq.: CEEN 5855 and CEEN 5856. 3 s.h.

5884. Solid and Hazardous Waste Management. Sources, characteristics, handling and disposal options for solid waste and hazardous waste; topics include regulations, health effects, waste minimization, collection systems, landfill design, treatment and processing methods, and site assessment. Prereq.: CEEN 3736. 3 s.h.

CLINICAL LABORATORY TECHNOLOGY—CLTC

Department of Health Professions

Lower-Division Courses


1501L. Introduction to Clinical Laboratory Science Laboratory. Phlebotomy, specimen collection and processing; basic clinical laboratory exercises. Three hours lab per week. Concurrent with CLTC 1501. Prereq.: Algebra 2, high school chemistry and biology. 1 s.h.

1502. Urinalysis and Body Fluids. Theory and techniques in the analysis of urine and body fluids. Concurrent with CLTC 1502L. Prereq.: CLTC 1501/L, BIOL 2601. 2 s.h.

1502L. Urinalysis and Body Fluids Laboratory. Chemical and microscopic analysis of urine. Concurrent with CLTC 1502. Three hours lab per week. Prereq.: CLTC 1501/L, BIOL 2601. 1 s.h.

1503. Immunohematology. Fundamental theories and techniques of immunohematology and blood banking; genetic theories, problem solving, and case studies. Concurrent with CLTC 1503L and BIOL 2602. Prereq.: BIOL 2601 and CLTC 1501. 3 s.h.

1503L. Immunohematology Laboratory. ABO and RH typing, direct and indirect antiglobulin testing, compatibility testing. Three hours lab per week. Concurrent with CLTC 1503. Prereq.: CLTC 1501/L, BIOL 2601. 1 s.h.
1505. Phlebotomy. Principles and practice of blood collection by venipuncture and capillary techniques including directed clinical practice; specimen collection and preservation; infection control and universal precautions. Two hours of lecture and three hours of laboratory per week; 16 hours of clinical practice in an affiliated laboratory. Prereq.: Permission of instructor or enrollment in a healthcare major. 3 s.h.

2601. Clinical Chemistry 1. Medical laboratory applications of clinical chemistry. Concurrent with CLTC 2601L. Prereq.: CLTC 1502/L, CHEM 1515. 2 s.h.

2601L. Clinical Chemistry Laboratory. Spectrophotometric, semi-automated, and automated analysis of glucose, electrolytes, enzymes, and other chemical constituents of serum. Three hours lab per week. Concurrent with CLTC 2601. Prereq.: CLTC 1502/L, CHEM 1515. 4 s.h.

2603. Topics in Clinical Laboratory Technology. Clinical laboratory applications to molecular diagnostics, serology, virology and parasitology. Regulations, information processing, education, ethical, professional issues. Critical analysis of clinical laboratory information. Two hours lecture and six hours laboratory per week. Prereq.: CLTC 1502 and 1503 with a minimal grade of C. 3 s.h.

2609. Topics in Histotechnology. Instrumentation, processing, fixation, microtomy, staining, and special staining as relative to the histotechnician. Prereq.: Admission to Histotechnology program, CLTC 1501/L, or permission of instructor. 2 s.h.

2609L. Topics in Histotechnology Laboratory. Applications of solution preparation, staining, microtomy, and quality control in the histotechnician laboratory. Concurrent with CLTC 2609. Prereq.: CLTC 1501/L with a minimal grade of C. 1 s.h.


2612. Histotechnician Practicum 1. Histologic procedures of instrumentation, cell structure, fixatives, processing and sectioning of tissues, and general staining methods. Thirty hours of clinical experience at an assigned affiliated laboratory and six hours of laboratory in the on-campus simulated histology laboratory. Concurrent with CLTC 2611. Prereq.: CLTC 2609 and successful completion of first three semesters of histotechnician curriculum with a minimum GPA of 2.5. 11 s.h.


2687L. Microbiology for Health Care Laboratory. Medical microbiology laboratory for health care professionals. Laboratory methods in the transmission, identification, prevention, and treatment of common bacterial, viral, fungal, and parasitic pathogens with a focus on nosocomial infections. Three hours lab per week. Concurrent with BIOL 1560. Prereq.: BIOL 1545, 1551, 2601, or permission of instructor. 1 s.h.

Upper-Division Courses

3700. Clinical Chemistry 2. Instrumentation and clinical relevance of applied chemical techniques including immunoassays, therapeutic drug monitoring, enzymes, trace elements, and point-of-care technology; quality control and assurance, case studies, and problem solving in clinical chemistry. Concurrent with CLTC 3700L. Prereq.: CLTC 2601 or CHEM 1515. 3 s.h.

3700L. Clinical Chemistry 2 Laboratory. Thyroid, digoxin, B12, folic acid, antinuclear antibodies and T and B cell receptor procedures utilized in a clinical laboratory. Three hours lab per week. Concurrent with CLTC 3700. Prereq.: CLTC 2601/L or CHEM 1515. 3 s.h.

3701/L. Clinical Hematology 1. Hematopoiesis; theory and laboratory application of manual procedures in hematology including cell counts, hemoglobin, hematocrit, and differentials; introductory hemostasis and laboratory applications. Prereq.: CLTC 1501/L, BIOL 2601 with a minimal grade of C. Two hours of lecture and 3 hours of laboratory per week. 3 s.h.

3702/L. Clinical Hematology 2. Advanced theory and laboratory procedures in hematology and hemostasis, including leukemia, anemia, hematopathology and coagulation disorders; abnormal differentials and automated methods. Two hours of lecture and 3 hours of laboratory per week. Prereq.: CLTC 3701/L with a minimal grade of C. 3 s.h.

3703. Clinical Immunology. Fundamentals of antigen-antibody reactions applied to serological procedures performed in the clinical laboratory. Three hours lecture per week. Concurrent with CLTC 3703L. Identical with BIOL 3703. Prereq.: CLTC 1501/L, BIOL 2602. 3 s.h.

3703L. Clinical Immunology Laboratory. VDRL, ASO, febrile, latex, pregnancy, and viral tests; flocculation, precipitation, complement fixation, and titeration procedures for various diseases. Three hours lab per week. Concurrent with CLTC 3703. Identical with BIOL 3703L. Prereq.: CLTC 1501/L, BIOL 2602. 1 s.h.
3706. Clinical Laboratory Seminar. Internship evaluation, special topics in the clinical laboratory. Case studies in the clinical laboratory. Concurrent with CLTC 3716. 2 s.h.

3710. Interpretation of Clinical Laboratory Results. The significance of laboratory results and how they relate to gender and age. Prereq.: CLTC 2601/L or permission of instructor. 1 s.h.

3716. Clinical Internship. Thirty-six hours per week of practical application of skills in affiliate hospitals and private laboratories. Prereq.: Completion of previous five semesters of CLTC curriculum with a grade of C or better and a minimum 2.5 GPA. Concurrent with CLTC 3706. 8 s.h.

3787. Diagnostic Microbiology. Clinical applications of human pathogenic microorganisms; infections, frequency, isolation, identification, and treatment of bacteria, fungi, viruses, and parasites. Case studies, problem solving, and quality assurance in clinical microbiology. Three hours lecture per week. Prereq.: BIOL 2602. 3 s.h.

3787L. Diagnostic Microbiology Laboratory. A clinical approach to the study of bacteria, fungi, viruses, and parasites. Methods to isolate and identify clinically significant pathogens from clinical specimens; case studies in clinical microbiology. Six hours lab per week. Prereq.: BIOL 2602. Identical with BIOL 3787L. 2 s.h.

4800. Advanced Clinical Chemistry. Didactics, critical analysis, and clinical practice of clinical chemistry. 3 hours of lecture and 18 hours of clinical practice per week. Prereq.: Acceptance into a clinical internship. 6 s.h.

4801. Advanced Hematology. Didactics, critical analysis, and clinical practice of clinical hematology and hemostasis. Three hours of lecture and 24 hours of clinical practice per week. Prereq.: Acceptance into a clinical internship. 7 s.h.

4802. Immunohematology Clinical Experience. Didactics and clinical experience of blood banking, Immunohematology, and Transfusion Medicine. Three hours of lecture and 24 hours of clinical practicum per week. Prereq.: Acceptance into a clinical internship. 7 s.h.

4803. Advanced Microbiology. Didactics and clinical experience of bacteriology, mycology, virology and parasitology for the clinical laboratory scientist. Four hours of lecture and 24 hours of clinical practicum per week. Prereq.: Acceptance into a clinical internship. 8 s.h.

4804. Miscellaneous Clinical Experience. Didactic and clinical practicum including specimen collection and processing, management, education, molecular diagnostics, clinical immunology, and urinalysis and body fluids. Three hours of lecture and twelve hours of clinical practicum per week. Prereq.: Acceptance into a clinical internship. 5 s.h.

4811. Clinical Experience 1. Acceptance into a clinical affiliate. Clinical microbiology and laboratory, clinical immunology and laboratory, clinical mycology, clinical parasitology, and virology. Forty hours of clinical experience per week. Prereq.: Permission of program director. 12 s.h.

4821. Clinical Experience 2. Acceptance into a clinical affiliate. Immunohematology and laboratory, clinical hematology and laboratory, coagulations and laboratory. Forty hours of clinical experience per week. Prereq.: Permission of program director. 12 s.h.

4831. Clinical Experience 3. Acceptance into a clinical affiliate. Clinical chemistry and laboratory, urinalysis and laboratory, laboratory management, laboratory education methods, special topics in clinical laboratory science. Capstone course: senior laboratory research project and resumes completed. Forty hours of clinical experience per week. Prereq.: Permission of program director. 12 s.h.

COMMUNICATION STUDIES—CMST

Department of Communication

Lower-Division Courses

1545. Communication Foundations. Theories, strategies, and skills for competent participation in interpersonal, group, and public communication situations. Application exercises in interpersonal, group, and public communication. Prereq.: Qualified to take ENGL 1550. 3 s.h.

2600. Communication Theory. The study of significant theories of communication that reflect the diversity of communication studies and address different communication contexts: interpersonal, group, public, organizational, and mass. 3 s.h.

2610. Intercultural Communication. The study of key historical and contemporary theories that affect communication across cultural boundaries. Exercises for improving communication skills in intercultural communication situations are included. 3 s.h.

2645. Presentational Speaking. In-depth examination of the theory and practice of preparing and delivering presentations in today’s work environment. Emphasis on using technology aids during presentations. Prereq.: CMST 1545 or equivalent. 3 s.h.

2650. Rhetoric of Film. Conceptual examination and critical analyses of film including mythic, feminism, Marxist, auteur, genre, and rhetorical perspectives. Prereq.: ENGL 1551. 3 s.h.

2653. Group Communication. Small-group interaction and participation from a communication systems perspective. Includes an examination of group processes and leadership in group interaction. 3 s.h.

2656. Interpersonal Communication. An examination of the skills necessary to develop, maintain, and
evaluate one-to-one relationships. Through practical experiences from everyday life, the class examines what occurs when one person communicates with another. 3 s.h.

2657. Organizational Communication. A general survey of traditional and interpretive approaches to organizational communication as well as career applications. Explores the relationship between communication and organizational effectiveness. 3 s.h.

Upper-Division Courses

3700. Designing Communication Research. A study of the processes involved in designing both qualitative and quantitative communication research projects. Communication research design and implementation. Prereq.: 15 s.h. of Communication Studies including CMST 2600, and ENGL 1551. 3 s.h.

3717. Intro to Media Relations Campaigns. An experiential, service-learning course in designing and implementing Media Relations campaigns. Prereq.: CMST 1545. 3 s.h.

3745. Individual Studies. Student selects a special problem or issue in communication to research in detail under the direction of a faculty member, pending department committee approval. Repeatable to 6 hrs. Prereq.: Junior standing. 1-3 s.h.

3750. Gender Communication. Principal concepts and issues of gender and communication as they apply to identity, and communication within and between the genders in a variety of contexts. Prereq.: CMST 1545. 3 s.h.

3754. Argumentation. Developing critical thinking through systematic evaluation of theories, principles, and practices of argumentation. Prereq.: CMST 1530 and CMST 2600. 3 s.h.

3756. Interviewing. Theories of communication applied to interview situations with a special concern for developing student understanding of and skills needed to participate in one-to-one and panel interviews. Prereq.: CMST 1530 and CMST 2600. 3 s.h.

3757. Media Relations Writing. A lecture-lab course in writing pamphlets, advertisements, newsletters, and websites for media relations campaigns. Prereq.: ENGL 1550 and ENGL 1551. 3 s.h.

3760. Persuasion. Theory and application of rhetorical persuasion. Study of major theorists including Aristotle and Kenneth Burke. Presentation required. Prereq.: CMST 2600. 3 s.h.


4851. New Communication Media. New media histories, technologies, and cultures. Considers promising future forms, and includes issues of authorship, community, identity, interactivity, visuality, the nature and power of technology, intelligent systems, and artificial life. Prereq.: CMST 3700. 3 s.h.

4855. Interpersonal Communication Relationships. Theories of relationship development, maintenance and termination. The impact of face-to-face and mediated communication on interpersonal relationships. Prereq.: CMST 1530, 2600 and 2656 and ENGL 1551. 3 s.h.

4859. Organizational Cultures. Analysis of organizational cultures. Relationships between organizational culture and communication in modern organizations. Prereq.: CMST 1530, 2600 and 2657. 3 s.h.

4896. Internship. An application of communication theories and practice within organizational settings. Weekly meetings with faculty supervisor are required. Weekly field work is 15 hours. May be repeated to a maximum of 6 s.h. Prereq.: CMST 2657, senior standing, major in Communication Studies, and approval of Internship Proposal form. 3 s.h.

4898. Media Analysis. Application of methods of analysis to describe and critique the content of various types of media, including new media, news media, and entertainment media. Emphasis on the relationship between media content, uses, and effects. Prereq.: CMST 3700 or CMST 3799. 3 s.h.

4899. Senior Project. Synthesis of research, writing, and presentation skills through the completion of a communication research project and professional development activity. Repeatable to a maximum of 6 s.h. Prereq.: Senior standing, major in Communication Studies, 24 s.h. of Communication Studies major complete, including CMST 3700 or 3799. Grading is Traditional/PR. 3 s.h.

5852. Conflict Management and Negotiation. An in-depth analysis of the theories and variables influencing conflict management, resolution, and negotiation. Includes strategies and skills for mediation and arbitration. Prereq.: CMST 2600. 3 s.h.

5898. Seminar. A cooperative exploration of topics in communication studies. May be repeated up to 6 s.h. Prereq.: CMST 2600. 3 s.h.

COMPUTER INFORMATION SYSTEMS—CIS

Department of Computer Science and Information Systems

Upper-Division Courses

3714. Assembly Language and Architecture. Fundamentals of computer architecture and organization. Forms of data representation. Assembly language and machine language programming. The assembly process. Methods and protocols for subroutine linkage. Prereq.: CSIS 2605 or CSIS 2610. 3 s.h.

3718. Operating Systems Concepts. Concepts of computer operating systems, including memory allocation, job scheduling, process communication, and
input/output processing. Examinations of operating systems on several platforms. Prereq.: CSIS 2605 or CSIS 2610. 3 s.h.

3735. UNIX Environment. Use of the UNIX operating system or similar systems, including file management utilities, editors, compilers, and communication utilities. A comprehensive examination of programming in various shells such as Bourne, C, and Korn. Prereq.: CSIS 2605 or CSIS 2610. 3 s.h.

3741. Business Programming Project. This course provides an in-depth study of business programming. It includes the mastery of a high-level language suitable for business programming, such as COBOL, and the development of a large multi-step business application project. Three hours lecture, two hours lab. Prereq.: CSIS 2605 or CSIS 2610. 4 s.h.

4810. Special Topics. Study of special topics in computer information systems. Subject matter and credit hours will be announced in advance. May be repeated multiple times if topic is different. Prereq.: At least 3 s.h. of upper-division departmental courses, and permission of chair. 2-4 s.h.

4820. Computer Center Operations. The organization of a computer center, with emphasis on features and selection criteria of communication equipment, including mainframe, minicomputer, and microcomputer systems. Prereq.: CIS 3741 or INFO 2663, 3 s.h. of upper-division departmental courses. 3 s.h.

4840. Business System Analysis and Design. Development of communication and written skills for the analysis and design of business systems. Utilization of project management techniques for design, development, and maintenance of a departmental level system. Prereq.: CSIS 4890, CSIS 3722, CSIS 3723, and 3 additional s.h. of upper-division departmental courses. 4 s.h.

COMPUTER SCIENCE—CSCI
Department of Computer Science and Information Systems

Upper-Division Courses

3710. Introduction to Discrete Structures. Basic set theory, including functions and relations. Boolean algebra, propositional logic, regular expressions, and finite automata. Prereq.: CSIS 2610 and MATH 1571 or MATH 1585H, or Math Placement Level 9 or 90. 3 s.h.

3750. Advanced UNIX and C Programming. Use of UNIX programming environment and associated tools and utilities. Command language programming, Systems programming with ANSI C. May include UNIX internals and system administration. Prereq.: CSIS 3700. 3 s.h.

3770. Survey of Programming Languages. Survey of several programming languages. May include Ada, Modula-2, C, Lisp, and SNOBOL. Prereq.: CSIS 3701. 3 s.h.


4805. System Programming. Topics selected from aspects of systems programming, including assemblers, loaders, linkage editors, macro processors, and file management. Prereq.: CSIS 3700 and 3740. 3 s.h.

4830. Advanced Computer Graphics. A thorough investigation of graphics algorithms. Topics include hidden surface removal, parametric curves, lighting, shading, and texturing. Implementation of a graphics project required. Prereq.: CSIS 3730 and MATH 3720. 3 s.h.

4890. Computer Projects. Individualized study of a topic in computer science culminating in a written report and an oral presentation. May be repeated up to 8 s.h. Prereq.: 24 s.h. of computer science (including at least 3 s.h. of upper-division CSCI courses) applicable to the minimum requirements of a computer science major, and formal project proposal. 2-4 s.h.

5801. Software Engineering. Developing and maintaining complex software systems. Process and lifecycle models, and tools for software development (such as CASE). Specification methods, prototyping, validation and verification strategies, and version maintenance. Management of the system development process. A group project is required. Prereq.: CSIS 3701. 3 s.h.

5806. Operating Systems. Study of the various components of operating systems including kernels and monitors, currency and parallel processing, processor management, storage management, device management, I/O processing and file management. Prereq.: CSIS 3700 and 3740. 3 s.h.

5807. Compiler Design. Study of compiler design and construction, including context-free languages, lexical analysis, parsing, code generation and optimization. Prereq.: CSIS 3700 and 3740, CSCI 3710. 3 s.h.

5814. Computer Architecture. Study of high-performance sequential computer architecture. Topics include performance evaluation, instruction set design, processor implementation techniques, pipelining, vector processing, memory hierarchy design, and parallel architecture. Prereq.: CSIS 3700 and 3740. 3 s.h.

5820. Simulation. Methods for modeling discrete event systems by algorithmic approaches using simulation languages. Prereq.: CSIS 3700 and STAT 3743. 3 s.h.

5822. Database Design and Information Retrieval. Study of physical database storage, relational and object data modeling, logical database design (normalization process), and structural query languages. Prereq.: CSIS 3700 and CSCI 3710. 3 s.h.
5823. Communication Networks. Study of network structures and topologies, international standards, models, communication media and protocols, hardware and software. Prereq.: CSIS 3700 and either CSIS 3723 or 3740. 3 s.h.

5835. Artificial Intelligence. Study of the theory and applications of intelligent systems. Topics may include general problem-solving techniques, knowledge representation and expert systems, vision and perception, and natural language processing. AI systems and languages. Prereq.: CSIS 3700 and CSCI 3710. 3 s.h.

5840. Theory of Finite Automata. The structural and behavioral aspects of finite automata. Prereq.: CSCI 3710 and MATH 3720. 3 s.h.

5857. Encoding and Encryption. Securing computer and information systems through encoding and/or encryption. Private and public cryptographic methods, digital certificates and signatures, cryptovariable techniques, key management, and database security issues. Prereq.: CSIS 1560 or 2610; MATH 1548 or 1571 or Math Placement Test of 4 or 40 or higher; and at least 3 s.h. of upper-division departmental courses. 3 s.h.

5860. Programming Language Structures. Systematic approach to the study of the structures of programming languages. Formal descriptions, syntax, semantics and technical characteristics. Prereq.: CSIS 3701 and CSCI 3710. 3 s.h.

5870. Data Structures and Algorithms. Study and application of analysis and design techniques to non-numerical algorithms. Topics selected from algorithms acting on sets, trees, graphs; memory management; notions of complexity and related areas. Prereq.: CSIS 3700 and CSCI 3710. 3 s.h.

5881. Microcomputer System Architecture. State-of-the-art course on microcomputer architecture. Topics include introduction to microcomputer systems, 16 and 32 bit microprocessors, direct memory access and other I/O transfer schemes, architecture of I/O processors, introduction to computer communications. Prereq.: CSIS 3740 and 3780. 3 s.h.

5895. Special Topics. A study of special topics in computer science. Subject matter and credit hours will be announced in advance. May be repeated multiple times if topic is different. Prereq.: At least 3 s.h. of upper-division departmental courses, and permission of chair. 2-4 s.h.

**COMPUTER SCIENCE AND INFORMATION SYSTEMS—CSIS**

**Department of Computer Science and Information Systems**

**Lower-Division Courses**

1500. Computer Literacy. A survey of computer concepts and applications. Network access and electronic mail. Emphasis on software applications packages available for microcomputers, including word processing. This course is meant for students with minimal or no background in computers. Credit will not be given for both CSIS 1500 and for either CSIS 1514, CSIS 1525, or CSIS 1590. 3 s.h.


1514. Business Computer Systems. Hands-on business software, with emphasis on operating systems, word processing, database and spreadsheet applications. This course is not designed for beginning computer users. Beginning computer users should take CSIS 1500: Computer Literacy before taking this course. 3 s.h.

1525. Survey of Modern Operating Systems. An introduction to the common operating systems currently used with computers, such as DOS, Microsoft Windows, UNIX, and X-windows. Topics include setting up the user’s work environment, file manipulation, and other commands. Not applicable to the CIS or CSCI major. This course is not designed for beginning computer users. Beginning computer users should take CSIS 1500: Computer Literacy before taking this course. 3 s.h.

1550. Survey of Language Topics. Introductory language course with emphasis on writing structured programs in a particular computer language. The language topic and special prerequisites are announced in advance. Not applicable to the CIS or CSCI major. Prereq.: Permission of chair. 3 s.h.

1560. Basic Programming. An introduction to computer programming using a visual object-oriented programming tool. Topics include control structures, loops, functions, methods, recursion, array processing, and events. Students will learn to design and implement virtual worlds. 3 s.h.

1570. Web Graphics Programming. Computer programming in a graphical/web-based language such as JavaScript. Modular program design, control structures, and data types and objects. Application to dynamic web pages, graphics, and animation. 3 s.h.

1580. Technical Presentation and Communication. Tools and techniques for presentation of information in a computer-based environment. Introduction to slide making, graphics, and multimedia software. Methods for gathering information and determining requirements, and for designing and critiquing presentations. Prereq.: CSIS 1500. 3 s.h.

1590. Survey of Computer Science and Information Systems. Concepts, theory, and contemporary issues underlying the computing sciences. Introduction to computer applications, the YSU computing environment, the use of communication and information net-
works, and basic problem solving techniques using computers. This course is not designed for beginning computer users. Beginning computer users should take CSIS 1500: Computer Literacy before taking this course. Prereq.: MATH 1507 or at least Level 30 on the Mathematics Placement Test. 3 s.h.

1595. Fundamentals of Programming and Problem-Solving 1. Introduction to concepts, principles, and skills of programming using a high-level programming language. Topics include programming language characteristics, an integrated development environment, algorithms and pseudocode, variables, operators, conditional statements, looping statements, functions, arrays, testing, debugging, documentation and program style. Two hours lecture and two hours lab. Credit will not be given for both CSIS 1595 and CSIS 2610. Prereq.: CSIS 1590 or MATH 1507 or Level 40 on Math Placement Test. 3 s.h.

2602. Programming in C. Programming concepts and techniques, with emphasis on scientific and engineering applications. An accelerated survey of the C programming language and an introduction to the UNIX programming environment. Not applicable to the CIS or CSCI major. Prereq.: CSIS 1500 and MATH 1513 or Math Placement Level 5 or 50 or higher. 3 s.h.

2605. Fundamentals of Programming and Problem-Solving 2. Theory and application of programming principles, data and information structures, simple linked lists, searching, and sorting, software development life cycle. Practice using these concepts in an object-oriented programming language. Two hours lecture and two hours lab. Credit will not be given for both CSIS 2605 and CSIS 2610. Prereq.: CSIS 1595. Prereq. or concurrent: MATH 1513 or MATH 1552 or Level 50 on Math Placement Test. 3 s.h.

2610. Programming and Problem-Solving. Problem-solving methods and algorithms using a high-level programming language. Designing, coding, debugging, and documenting programs using techniques of good programming style. Three hours lecture, two hours lab. Credit will not be given for both CSIS 2605 and CSIS 2610. Prereq.: MATH 1513 or Level 50 on Math Placement Test. 4 s.h.

2615. Information Structures for Information Technology. Study and application of information structure concepts such as lists, trees, multilevel lists, files, and data-method integration. Practice using these concepts in a 3D animation environment using an object-oriented programming language in the background. Emphasis on algorithm design, object utilization, and storyboarding. Prereq.: CSIS 1590, and either CSIS 2605 or CSIS 2610. 3 s.h.

2655. Personal Cyber Security. PC system security including data assurance, standards and legal issues, and methods and procedures for guarding against potential software attack. Not applicable to the CIS, CSCI, or INFO major. Credit will not be given for 2655 if a student already received credit for CSIS 3755 or its equivalent. 3 s.h.

2660. Foundations of Electronic Commerce. Framework of electronic commerce, including e-commerce architecture, infrastructure, technologies, tools, and strategies. Topics include security, environmental, and implementation issues. Includes web site analysis, hardware/software issues, mini-cases, and introduction to site development. Prereq.: CSIS 1590. 3 s.h.

2699. Computer Science and Information Systems Internship. Classroom theory applied to on-the-job professional experience related to the student’s major. Work for a minimum of 12 hours per week at an approved site, complete a related project, and attend seminars. May be repeated once with the permission of coordinator. Prereq.: Sophomore in good standing and permission of internship coordinator. 1-3 s.h.

Upper-Division Courses

3700. Data Structures and Objects. Program design, style and expression, testing and debugging for larger programs. Introductory concepts of object oriented programming, including classes, methods, encapsulation, and abstract data types. Theory and application of data structures, including linked structures, trees, networks, and graphs. Credit will not be given for both CSIS 2617 and CSIS 3700. Three hours lecture, two hours lab. Prereq.: CSIS 2605 or CSIS 2610. 4 s.h.

3701. Advanced Object-oriented Programming. Object-oriented design and programming, including classes, inheritance, polymorphism, and exception handling. Introductory software engineering techniques for program development, specification, documentation, verification, and user interface design. Prereq.: CSIS 2605 or 2610. 3 s.h.


3722. Development of Databases. The basic structure, design, development, implementation, and modification of databases for use in management of information systems. Prereq.: CSIS 1590. 3 s.h.

3723. Networking Concepts and Administration. Overview of electronic communications concepts and technologies, with emphasis on Local Area Networks. Network topologies, design, administration, installed applications, and performance monitoring. Privacy, ethical and legal concerns. Prereq.: CSIS 2605 or 2610. 3 s.h.

3726. Visual/Object-Oriented Programming. Use of one or more visual programming languages in conjunction with the concepts of object-oriented programming. Development of interactive programs
using a graphical user interface. Database and Internet
programming. Three hours lecture, two hours lab.
Prereq.: CSIS 2605 or CSIS 2610. 4 s.h.

raster graphics, including scan conversion, two-
and three-dimensional clipping and windowing,
transformations, and viewing in 3D. Algorithms and
more advanced topics. Prereq.: CSIS 3700 and MATH
1572. 3 s.h.

3731. User Interface Design. The design, implementa-
tion, and evaluation of human-computer interfaces.
Emphasis on practical applications of guidelines to
modern multimedia and graphical user interfaces.
Prereq.: CSIS 3701, or CSIS 3726; or CSIS 1560 and
INFO 3775. 3 s.h.

3732. Intranet Database Implementation. Design and
implementation of 3NF PC-based databases up-
loaded to intranet Web sites. Remote database design,
development, and updating using SQL within an ap-
dlication development software package. Validating
database integrity. Includes site development and
projects. Prereq.: CSIS 3722 and either CSIS 2605 or
CSIS 2610. 3 s.h.

3740. Computer Organization. Basic hardware com-
ponents, structure, and implementation of computer
systems. Assembly language and instruction set
architecture. Combinational and sequential digital
logic. CPU and control unit design. Prereq.: CSIS
2605 or CSIS 2610. 4 s.h.

3755. Information Assurance. Confidentiality, in-
tegrity, and authenticity of information. Methods
of controlling access to electronic data, enforcing
security policies, protecting against malicious attacks
(including web site attacks), intrusion detection, and
disaster recovery. Prereq.: CSIS 1590. 3 s.h.

3756. Security Design. Operating system security
concepts, techniques and applications including MS
Windows and LINUX/UNIX platforms. Includes a
hands-on design project. Prereq.: Either CSCI 5806
or CSIS 3755 and either CSIS 1525 or CIS 3718.
3 s.h.

3757. Computer Forensics. Professional computer
forensics, including methods and investigative
techniques for the discovery and recovery of digital
images and information at all levels, from PCs to
large information systems. Chain of evidence and
investigative techniques for cybercrime detection.
Prereq.: CSIS 3755. 3 s.h.

3760. Electronic Commerce Programming. Program-
manship for client/server systems related to
electronic commerce, including server-side languages such as
Perl and Client-side languages such as JavaScript.
Topics include form validation and parsing, database
access and manipulation, and design, networking,
and security issues. Prereq.: CSIS 2605 or CSIS
2610. 3 s.h.

3761. Electronic Commerce Strategies. Advanced
concepts for development and maintenance of
electronic commerce web sites. Topics include e-
commerce paradigms, software and programming,
and infrastructure issues. Site design, evaluation,
deployment, and administration issues, including
prototyping and SDLC issues. Building web-based
training components. Includes IT project. Prereq.: 
CSIS 2660 and OIS 2663. 3 s.h.

3782. Cisco Networking Academy I. Current and
emerging networking concepts and technology.
Topics include networking standards, terminology,
and protocols; LANs and WANs, the OSI and TCP/ IP
models, network topology and design, physical and
logical addressing, subnet masking, router config-
uration and programming. Includes structured
cabling project. Three hours lecture and three hours
lab. Prereq.: CSIS 1590, and either CSIS 2605 or
CSIS 2610. By permit only. 4 s.h.

3783. Cisco Networking Academy II. Advanced
networking concepts and technology. Topics include
LAN switching, VLAN design and implementation,
IGRP, Access Control Lists, Novell IPX, Token Ring,
Network Management, WAN design, WAN protocols
(PPP, Frame Relay, ISDN), CCNA certification review.
LAN design project. Three hours lecture and three
hours lab. Prereq.: CSIS 3782. 4 s.h.

4804. Programming in Operations Research Ap-
lications. Basic operations research techniques and
programming. Linear programming, queuing, math-
ematical modeling, and network analysis. Prereq.: 
CIS 2640 and 3 s.h. of upper-division departmental
courses. 3 s.h.

4819. Parallel and Distributed Computing. Survey
of current development of parallel processing with
emphasis on parallel programming. Topics include
parallel architecture, interconnection networks for
inter-processor communication, parallel sorting/
searching algorithms, parallel constructs for parallel
programming paradigms, and implementation of
the algorithms in a parallel programming language.
Prereq.: CSIS 3700 and 3740. 3 s.h.

4822. Database Applications. Design and develop-
ment of applications using database languages.
Prereq.: CSIS 3722. 3 s.h.

4823. Data Communications Networking. Study of
present methods for design and evaluation of
information networks, LAN and WAN. Includes
queuing, routing, security, reliability, error detection
and correction, and distributed processing. Prereq.: 
CSIS 3723. 3 s.h.

4831. Virtual Reality Systems. An investigation into
the use, design, implementation, and evaluation of
virtual reality interfaces. Experiences with VR
systems using both 2D projections and stereoscopic
display and other systems. Students work in multi-
disciplinary groups. Prereq.: CSIS 3730. 3 s.h.

4870. Web Communications Capstone. A project
course requiring the integration of website develop-
ment tools and techniques, database development, ef-
fective writing for the web, and audience analysis, to
produce a website of substantial depth and breadth.
4893. Computer Science and Information Systems Advanced Internship. An industrial/academic experience in information systems/technology. Employment for 15 to 20 hours per week. May be repeated once with the permission of internship supervisor. Prereq.: 16 s.h. of department courses (at least 3 s.h. upper-division) and permission of department internship supervisor. 2-4 s.h.

5824. Applied Artificial Intelligence. Study of artificial intelligence software related to decision making. Topics may include robotic control, expert systems, automated knowledge acquisition, or logic programming. Prereq.: CSIS 3700 and 3 s.h. of upper-division departmental courses, or CSCI 6901. 3 s.h.

5828. Computer Network Security. Overview of security issues that arise from computer networks, including the spectrum of security activities, methods, methodologies, and procedures. Intrusion detection, firewalls, threats and vulnerabilities, denial of service attacks, viruses and worms, encryption, and forensics. Prereq.: CSIS 3723 or equivalent. 3 s.h.

5837. Artificial Intelligence in Game Design. Artificial intelligence techniques for designing and programming intelligent non-player characters for a variety of different types of game genres. Finite and fuzzy state machines, terrain analysis and path planning, board games, language understanding, and learning. Prereq.: CSIS 3700, CSIS 3726 or CSCI 6901. 3 s.h.

5838. Graphics and Animation for Gaming. Design and implementation of animated characters in 3D computer games. Surface creation and effects; skeletal and facial rigging; motion and animation; basic game physics. Use of 3D animation software and scripting languages for game engine programming. Prereq.: CSIS 2605 or CSIS 2610 and at least 3 s.h. of upper division CSIS courses, or CSCI 6901. 3 s.h.

5883. Remote Access and Multilayer Switched Networks. Advanced WAN connectivity, including Frame Relay, ATM, ISDN, DSL, and modems; IP address scaling techniques; advanced access control; core issues in network design and management, focusing on multilayer switched networks and emerging multi-service networks. Will incorporate CCNP Cisco Academy curriculum. Three hours lecture, three hours lab. Prereq.: CSIS 3783. 4 s.h.

5884. Building Scalable Networks and Advanced Internetwork Troubleshooting. Designing scalable networks; advanced routing protocols; VLSM and route aggregation; management and diagnostic tools; troubleshooting tools and methodology for TCP/IP, Novell, and AppleTalk connectivity, VLANs, routers, and switches; Frame Relay and ISDN connectivity. Will incorporate CCNP Cisco Academy curriculum. Three hours lecture, three hours lab. Prereq.: CSIS 3783. 4 s.h.

COUNSELING—COUN Department of Counseling

1587. Introduction to Health and Wellness in Contemporary Society. Provides an introduction to the wellness model integrating physical, mental, and emotional well-being. Using current research, students explore decision-making models examining ethical, theoretical, multicultural, and practical concerns in developing their own wellness strategies. 3 s.h.

1588. Exploring Leadership: Theory and Practice. Introduction to the study of leadership through theoretical and practical applications. Through group interaction, discussions, and change projects, students will develop their leadership knowledge while acquiring skills to solve leadership challenges within diverse organizations. The course will provide students with intellectual and interpersonal opportunities to practice the process of becoming effective leaders. 3 s.h.

1589. Success in Career and Life Planning. The course will facilitate the development of career and life planning skills. This course is designed for, but not restricted to, entering and undeclared students. This course will emphasize identifying strengths, clarifying values, exploring career options, developing effective decision-making skills, and learning life skills related to health, finances, relationships, and community responsibility. 3 s.h.

2650. Foundations of Helping Skills for Allied Health Professionals. Skill development in learning how to foster helping relationships and increase communication skills with individual, family, or group-related patient needs in a health care setting. Emphasis on ethical, cultural, socioeconomic, and special needs in allied health care settings. Includes an experiential skill video training component. 3 s.h.

2651. Foundations of Helping Skills for Human Ecology Professionals. The course will facilitate the development of helping skills with individual, family and/or groups. Emphasis is on ethical, cultural, socioeconomic, and special needs in human service settings. Courses will include overview of counseling skills and theories that will assist students to address client care needs. 2 s.h.

5821, 5822. Seminar in Guidance and Counseling. Study of selected topics chosen by staff, e.g. career guidance, counseling process, and other contemporary issues in school personnel work. Prereq.: Upper-division standing. 1-3 s.h.

5823. Career Education and Career Guidance. Study of public school career education and career guidance programs; the career education continuum, legislation relating to vocational programs, historical development, and principles of vocational education and vocational guidance. Also a survey of economic services: distributive education, human resources, programs, and placement. Prereq.: Upper-division standing. 2 s.h.
5825. Group Processes in the School. An introduction to group activities applicable to the needs of students in the school setting. Includes the study of group processes and group dynamics for social and personal problem solving as well as in the general area of individual and group behavior. Also a study of programs that provide for counselor-teacher cooperation in the development of groups in the classroom. Prereq.: Upper-division standing. 3 s.h.

5879. Talented Students and Their Families. A study of consulting and referral practices related to the developmental, social and personal difficulties often experienced by gifted/talented students and their families. Includes a field study component. Prereq.: Upper-division standing. 3 s.h.

5888. Introduction to Health and Wellness Counseling. Provides an introduction to basic counseling principles with special focus on those factors encountered in the provision of health and wellness-related services. Prereq.: Upper-division standing. 3 s.h.

5889. Counseling Workshop. Selected topics related to prevention and intervention approaches in school and community settings. Designed primarily as continuing professional education, this course is not included in counseling degree programs. Prereq.: Upper-division standing. 1-3 s.h.

5898. Orientation and Ethical Issues in Community Counseling. This course provides students with an introduction to the field of professional counseling and the foundations of community counseling. The course addresses the following topics: history, philosophy, cultural dynamics, advocacy, consultation, technology applications, and trends in professional and community counseling. The counseling profession's ethical standards are also addressed with an emphasis on the ACA code of ethics and counselor ethical decision making processes. Requirements differ for undergraduate and graduate students. 3 s.h.

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CRIMINAL JUSTICE—CJFS

Department of Criminal Justice

Lower-Division Courses

1500. Introduction to Criminal Justice. Overview of the American criminal justice process with emphasis on its constituent foundations, its constitutional limits, and the rights of the individual from arrest through sentencing and release. 3 s.h.

1510. Survey of Forensic Sciences. Overview of history, evolution, and current status. Discussion of training, education, certification, accreditation, and legal issues. Designed to be accessible to students without a science background and provide an introduction to forensic science for those considering further studies. 3 s.h.

2601. Policing. The evolution, structure, and function of modern police organizations; the role of police in a democratic society; the impact of social, political, and economic influences; contemporary practices and controversies. Prereq.: CJFS 1500. 3 s.h.

2602. Criminal Courts. Structure and function of criminal courts in American society, perceptions of national commissions; organization, administration, and caseflow relationships with appropriate social agencies. Prereq.: CJFS 1500 or permission of instructor. 3 s.h.

2603. Corrections. Development and description of the American correctional systems' history and philosophy; the constitutional foundations of its control, and the rights of those within it. Overview of treatment approaches. Prereq.: CJFS 1500. 3 s.h.

Upper-Division Courses

3700. Forensic Fire Investigation. Principles of fire science including fire detection, suppression, investigation. Special emphasis on concepts of fire progression, cause and origin determinations, and arson investigation. Prereq.: CJFS 1510. 3 s.h.

3702. Correctional Strategies. Contemporary theory, practice, and research findings in the administration of juvenile and adult corrections. Community-based programs, including probation/parole/post-release control; institutional resources examined within the perspectives of prevention, control, and rehabilitation of the criminal offender. Concurrent with 3702L. Must be a Criminal Justice major or have permission of chairperson. Prereq.: CJFS 2603. 4 s.h.

3702L. Correctional Strategies Laboratory. Contact, observation, and on-site examination and comparison of community programs and institutional facilities. On-site 6 hours per week for 7 weeks (students are divided into two groups). Concurrent with CJFS 3702. Must be a Criminal Justice major or have permission of chairperson. Prereq.: CJFS 2603. 2 s.h.

3710. Social Statistics. Measurement and interpretation of social data by use of descriptive techniques. Cross-listed with SOC 3701. Prereq.: CJFS 1500. 3 s.h.

3712. Criminal Justice Research. Analysis of the major components of social research, including research design, sampling, measurement, data collection, analysis, and interpretation of findings. Prereq.: CJFS 3710 or STAT 2601 or equivalent. 3 s.h.

3714L. Forensic Science: Crime Scene Investigation Laboratory. Laboratory section designed to teach the practical skills employed by criminalists collecting evidence at a crime scene. Students will gain experience using tools, techniques and procedures required to recognize and collect evidence by completing practical exercises. Concurrent with CJFS 3714. Prereq.: CJFS 1510 and sophomore standing. 2 s.h.
3715. Criminal Justice Management Concepts. Modern criminal justice management theory; organizational behavior, organizational development, personnel management, executive decision making, supervision problems. Must be a Criminal Justice major or have permission of chairperson. Prereq.: CJFS 2601 or 2602 or 2603.

3716. Forensic Science Evidence Analysis. Serves as an introduction to the techniques, instrumentation and procedures used in the examination and analysis of physical evidence in a forensic laboratory setting and legal aspects regarding the use of laboratory reports in the investigation process. Concurrent with CJFS 3716L. Prereq.: CJFS 3714, CJFS 3714L. 2 s.h.

3716L. Forensic Science Evidence Analysis Laboratory. Laboratory section designed to familiarize students with instrumentation that is commonly used in the examination and analysis of physical evidence. Students will gain experience with the tools, techniques and procedures used for examining physical evidence through practical exercises. Concurrent with CJFS 3716. Prereq.: CJFS 3714, CJFS 3714L. 1 s.h.

3718. Family Law. Fundamental elements of family law, including premarital contracts, traditional and nontraditional marriages and families, procreation rights, legitimacy and paternity, adoption, divorce and separation, property division and support, custody and termination of parental rights, juvenile law, intra-family tort liability and domestic violence. Cross-listed with CI1FM 3718. Prerequisite: SOC 1560. 3 s.h.

3719. Criminal Law. Development, theories, and purposes of criminal law; elements of a crime, parties to a crime. Prereq.: CJFS 2602. 3 s.h.

3720. Legal Research. In-depth study and legal research of case law, statutes, rules and regulations at the federal and state levels. Emphasis on how to find and use primary and secondary authority, how to conduct legal research, in-depth legal writing in areas such as torts, contracts, real estate, and criminal law. Prereq.: CJFS 2602 or permission. 3 s.h.

3721. Evidence. Admissibility of evidence, the hearsay rule and its exceptions, opinion evidence, circumstantial evidence, documentary evidence, presumptions, corpus delicti, and evidentiary privileges. Must be a Criminal Justice or Forensic Science major. Prereq.: CJFS 2602. 3 s.h.

3735. Crime and Delinquency. Study of the social context of crime in society, including a review of historical theories offered in explanation of criminal behavior. Review of social and psychological factors underlying delinquency, touching on treatment and preventive measures. Prereq.: PSYC 1560 or SOC 1500 or CJFS 3736. 3 s.h.

3736. Criminal Victimization. Dynamics of the victim-offender relationships within the Criminal Justice System. Review of advocacy programs including information on victim compensation/assistance programs. Examination of society's attitudes towards victims. Review of current laws advocacy for compensation of crime victims. Prereq.: PSYC 1560 or SOC 1500 or CJFS 1500. 3 s.h.

3740. Criminal Justice Information Systems. Information theory and practice applied to criminal justice agencies; automated systems in policing, courts, and corrections at the federal, state, and local levels; problems and constitutional constraints. Microcomputer and Internet assignments. Prereq.: CJFS 1500. 3 s.h.

3751. Prevention Strategies. Concepts and strategies of crime prevention, the protection of assets in the public and private sectors. Must be CJFS major, or have permission of chairperson. Prereq.: CJFS 2601. 3 s.h.

3752. Race, Ethnicity and Crime in America. A critical analysis of current research and theories of racial and ethnic discrimination within the American criminal justice system. The discussion will center on issues relating to: patterns of criminal behavior and victimization, police practices, court processing and sentencing, the death penalty, and correctional programs. Prereq.: CJFS 1500, SOC 1500, or PSYC 1560. 3 s.h.

3765. Human Relations. Methods of coping with conflicts arising from law violation intervention; programs for improving interpersonal relations between police and the community. Prereq.: SOC 1500 and PSYC 1560 plus 9 s.h. in CJFS. 3 s.h.

3777. POTA-Law Enforcement. Training academy at YSU consisting of 550 classroom hours. Academy consists of 12 semester hours of credit, which can be taken full-time in one semester or part-time across two consecutive semesters. Full-time is 5 days a week, 8 hours a day for 15 weeks (12 s.h.). Part-time is 5 days a week 4 hours in the evening for 30 weeks (6 s.h. + 6 s.h.). Upon completion, students receive eligibility from the Ohio Peace Officer Training Commission for certification. Prereq.: Senior standing, completion of the appropriate track courses, and permission from the Academy coordinator. 6-12 s.h.

3799. Directed Individual Study. Individual study or field research of a special topic related to the criminal justice field. Application must be made to the department prior to registration. May be repeated once for a maximum of 6 s.h. Prereq.: Senior standing and 15 s.h. of CJFS and approval of instructor. 1-5 s.h.

4800. Senior Seminar. Overview of the criminal justice system in the United States. Review of constitutional issues, discussion of contemporary issues. Serves as the criminal justice generalist track senior capstone course. Portfolios and resumes prepared, assessment exam. Must be a Criminal Justice major or have permission of chairperson. Prereq.: Senior standing. 3 s.h.

4803. Correctional Case Management and Treatment. Theory and techniques of counseling and interviewing the correctional client including case management. Simulated field and clinical situations to provide experience in interviewing and report writing.
Serves as the corrections track senior capstone course. Portfolios are resumes prepared, assessment exam. Must be a Criminal Justice major or have permission of chairperson. Prereq.: CJFS 3702. 3 s.h.

4807. Criminal Justice Internship. Field experiences in an appropriate criminal justice agency under the direction of qualified and experienced professionals. Grading is CR/NC. May be repeated once for a maximum of 12 s.h. Prereq.: Senior standing in CJFS and specific emphasis area courses per department guidelines. 3-12 s.h.

4848. Loss Prevention and Assets Protection Administration. Security standards, policy, and regulations at the state and federal levels as they impact on the security operations. Administrative decisions regarding security program. Plant protection, safety and security; credit and insurance investigative procedures. Serves as the loss prevention/assets protection track capstone course. Portfolios and resumes prepared, assessment exam. Prereq.: CJFS 3751 and senior standing in criminal justice or permission of chairperson. 3 s.h.

4850. Special Topics in Criminal Justice. Controversial issues in criminal justice. Topics are announced prior to enrollment. Prereq.: Senior standing or permission of instructor. 3-5 s.h.

4851. Women and Justice. Examines the historical development and current women’s issues as they related to the justice system. Women’s roles in the legal system, prisons (as staff and offenders), victims and perpetrators of violence, policing society and organized crime. Female juvenile delinquency and controversial topics such as abortion and capital punishment. Prereq.: Senior standing or permission of the chair. 3 s.h.

4870. Law Enforcement Administration. Detailed examination of the administration of line and staff services of law enforcement agencies and the role of technology in administration. Serves as the law enforcement track senior capstone course. Portfolios and resumes prepared, assessment exam. Must be a Criminal Justice major or have permission of chairperson. Prereq.: CJFS 3715 and senior standing. 3 s.h.

4890. Judicial Administration. Court management examined in light of structure, judicial responsibility, and inherent power of courts. Case flow, case management, automation, and judicial staffing. Serves as the legal processes track senior capstone course. Portfolios and resumes prepared, assessment exam. Prereq.: CJFS 3715 and CJFS 3719 and senior standing in criminal justice or permission of chairperson. 3 s.h.

5802. Corrections Law and Liability. Analysis and examination of legal mandates and restrictions affecting the field of corrections. History of the development of offender rights, current issues surrounding offender rights, and future concerns in this area. Jail and prison standards, accreditation standards, case law, and liability concerns. Prereq.: CJFS 3702 or approval of instructor. 3 s.h.

5814. Forensic Science and the Criminal Justice System. Review of the impact of forensic science on the criminal justice system; discussion of future applications, constitutional considerations, and the significance of physical evidence. Emphasis on management responsibilities with respect to the criminalistics laboratory. Prereq.: CJFS 3714 and CJFS 3714L. 3 s.h.

5820. Advanced Legal Research. Advanced techniques in conducting legal research using standard reference tools as well as automated on-line services and the Internet. Analysis of findings of legal issues related to criminal justice, report and memorandum writing utilizing the Harvard University System of Citations, legal forms and terminology. Prereq.: CJFS 3720 or approval of instructor. 3 s.h.

5825. Criminal Procedures and Constitutional Issues. Constitutional foundations of the American criminal justice process with special emphasis on recent Supreme Court decisions. Legal and practical applications of the laws of arrest, criminal procedure, search and seizure, court structures, and federal civil rights. Prereq.: CJFS 3719 and must be a criminal justice major or have permission of chairperson. 3 s.h.

5831. Violence in America. Analysis of violence in America including official and unofficial statistics, types and levels of violence, research findings, and profiles of offenders. Case analysis of domestic violence, juvenile violence, gangs, and other forms of violence. Prereq.: CJFS 3735. 3 s.h.

5865. Gathering and Using Information in Criminal Justice. Specialized communication skills to prepare criminal justice practitioners in information-gathering techniques, written presentation techniques, verbal and nonverbal communication skills within constitutional guidelines. Prereq.: CJFS 3712 or 3765. 3 s.h.

5875. Juvenile Justice System. In-depth analysis of the specialized agencies and procedures developed to deal with problems of juveniles from a historical and philosophical perspective. Consideration of the juvenile court, community-based programs, institutionalization. Prereq.: Senior standing. 3 s.h.

5892. Comparative and International Criminal Justice Systems. An examination of how countries’ criminal justice systems are shaped and molded by elements of culture, religion, and political ideology of the area. Emphasis will be placed on comparing and contrasting the selected countries’ criminal justice systems with those found in the United States of America. Prereq.: Senior standing or permission of the chair. 3 s.h.
DANCE—DNCE
Department of Theater and Dance

Lower-Division Courses

1540. Modern Dance 1. Elementary techniques of body movement. Rhythmic fundamentals and Improvisation. 1 s.h.

1541. Modern Dance 2. Intermediate modern dance techniques, composition, and improvisation. May be repeated up to six credit hours. Prereq.: DNCE 1540 or permission of instructor. 2 s.h.

1542. Dance Composition. Basic principles related to the form and structure of dance composition. Prereq.: DNCE 1541 or permission of instructor. 1 s.h.

1550. Wellness for Actors and Dancers. Conditioning, relaxation, and injury prevention techniques related to the needs of dancers and actors. Prereq.: 2 hours credit in any jazz, ballet, or modern dance technique classes or permission of instructor. 1 s.h.

1565 Topics in Dance. Selected topics in the practice, theory or scholarship of dance. May be repeated if the topic is different. 1-2 s.h.

1570. Tap and Jazz 1. Principles and practices of the basic techniques of tap dance, soft shoe, jazz, and the fundamental forms of dance movement found in musical theater. 1 s.h.

1571. Tap and Jazz 2. Further refinement and development of jazz and tap skills. This course may be repeated up to six credit hours. Prereq.: DNCE 1570 or permission of instructor. 2 s.h.


1573. Ballet 2. Expands on vocabulary and established patterns of balletic movement. This course may be repeated up to six credit hours. Prereq.: DNCE 1572 or permission of instructor. 2 s.h.

2606. Creative Dance for Children. Skills and methods development, and the learning process as it applies to teaching children’s dance and creative movement. Prereq.: Sophomore standing or permission of the instructor. 1 s.h.

2662. Practicum in Theater and Dance. Practical application of theater or dance skills through participation in special programming of the department, or specified studio/laboratory activities. Expected participation should amount to a minimum of thirty hours per semester. May be repeated for a maximum of 5 s.h. Prereq.: THTR 1561 or 1569 or special permission. Cross-listed with THTR 2662. 1 s.h.

2680. Tap Dance 3. Intermediate/advanced tap skills, with emphasis on speed, clarity of sound, and improvisation. May be repeated for a maximum of 2 credit hours. Prereq.: DNCE or permission of the instructor. 1 s.h.

Upper Division Courses

3730. Music for Dance. Designed to provide the dance student with basic musical knowledge and skills necessary for quality dance performance, production, and accompaniment. Prereq.: Minimum of 6 hours coursework in DNCE. 1 s.h.

3751. Modern Dance 3. Intermediate/advanced techniques in modern dance designed to develop professional performance quality. May be repeated up to six credit hours. Prereq.: DNCE 1541 or consent of the instructor. 2 s.h.

3757. Choreography for Musical Theater. The study of dance, movement, and staging for the musical theater, culminating in student choreographed/staged works from a variety of musical theater productions. Prereq.: HPES 1540 or THTR 1540 or DNCE 1540 and HPES 1570 or THTR 1570 or DNCE 1570 or HPES 1572 or THTR 1572 or DNCE 1572. 2 s.h.

3770. Jazz Dance 3. Intermediate/advanced level class building upon a strong foundation in jazz dance. Refinement of technical and artistic proficiency. May be repeated for a maximum of 6 credit hours. Prereq.: DNCE 1571 or permission of the instructor. 2 s.h.

3781. Ballet 3. Intermediate/advanced course building upon skills acquired in Ballet 1 and 2. Designed to enhance technique and artistry. May be repeated for a maximum of six credit hours. Prereq.: DNCE 1573 or consent of the instructor. 2 s.h.

4871. Jazz Dance 4. Refinement of skills and artistic qualities essential for the performance of jazz dance repertory at a pre-professional level. May be repeated for a maximum of 6 credit hours. Prereq.: DNCE 3770 or permission of the instructor. 2 s.h.

4881. Ballet 4. Advanced-level movement skills and terminology. Skills increase in speed, complexity, and duration. This course may be repeated for a maximum of 6 credit hours. Prereq.: DNCE 3781 or permission of instructor. 2 s.h.

4885. Dance Kinesiology. Anatomy and kinesiology for the dancer, common injuries in dance and their care and prevention, study of physiological support systems, as well as applied knowledge of one’s body potential and limitations in dance. Prereq.: DNCE 1530, junior/senior standing or consent of instructor. 3 s.h.

4892. Pedagogy of Dance Technique. The theory and practice of sound dance teaching methods. An outside field experience in teaching dance will be required. Prereq.: Completion of minimum of 2 hours of dance technique in each of the following forms: Modern, Ballet and Jazz (satisfied by the completion
of course work in those areas or by permission of the instructor), plus DNCE 1550, 2606, 3730 and 4885. Senior standing.

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DENTAL HYGIENE—DHYG
Department of Health Professions

1514L. Clinical Dental Hygiene Remediation. This course is designed to improve the dental hygiene student’s clinical skills, and to develop the basic competencies essential for performing invasive dental hygiene procedures. The student’s individual clinical deficiencies will be addressed, along with patient management and time utilization. This course may be repeated one time. Four hours of clinic per week for twelve weeks. Prereq.: Unsatisfactory progress be repeated one time. Four hours of clinic per week for twelve weeks. Prereq.: Unsatisfactory progress

1535. General and Oral Pathology. The cause and nature of disease, together with anatomical and functional changes. Observation and progression of disease in the human as related to diagnosis and treatment planning. Special emphasis is given to oral pathology. Prereq.: DHYG 1521. 2 s.h.

2601. Dental Hygiene 1. An introduction to providing dental hygiene care. Theories and principles of patient assessment, prevention of disease transmission, instrumentation, instrument sharpening, and coronal polishing. Application of risk assessment as it relates to the treatment plan through case studies. Prereq.: Admission to the Dental Hygiene Program. 3 s.h.

2602. Dental Hygiene 2. Discussion of appropriate preventive dental agents and devices to improve various dental conditions and implementation techniques. Development of individualized patient education instruction and a tobacco cessation program as part of the dental hygiene care plan. Prereq.: DHYG 2601L. 2 s.h.

2620. Head and Neck Anatomy. A study of the anatomy of the head and neck, oral structures and tooth morphology. Prereq.: Admission to the Dental Hygiene program. 1 s.h.

2623. Pharmacology for the Dental Hygienist. Importance of pharmacological aspects of those drugs and drug groups with which the dentist and hygienist are directly and indirectly concerned. Prereq.: DHYG 1512L. 2 s.h.

2630. Management of Medical/Dental Emergencies. Instruction in the prevention, recognition, and management of medical emergencies in the dental office. Emphasis on case studies to develop critical thinking and decision-making skills in patient management. Prereq.: Admission to the Dental Hygiene Program. 2 s.h.

2640. Oral Histology. A study of the tissues of the human body and embryological development. Prereq.: DHYG 2620. 2 s.h.


3703L. Clinical Dental Hygiene 3. Clinic application of dental hygiene techniques on student partners and clinic patients. Emphasis on applied preventive measures and patient education. Nine hours of clinic per week. Prereq.: DHYG 2602L. 3 s.h.

3704. Dental Hygiene 4. Concepts of nutrition science as they relate to the evaluation and education of dental hygiene patients with emphasis on caries risk assessment. Prereq.: DHYG 3703. 3 s.h.


3750. Oral Pathology. The cause and nature of disease, together with anatomical, histological and functional changes. Observation and evaluation of the patients’ systemic and oral health status as it relates to treatment planning. Special emphasis is given to oral pathology and case studies. Prereq.: DHYG 2640. 2 s.h.


3760L. Dental Radiology Lab. The techniques necessary to expose, develop, and mount dental films with emphasis in radiographic interpretation. Three hours of lab per week. Prereq.: DHYG 2602L. 1 s.h.

3770. Periodontology. The study of prevention, diagnosis, and treatment of diseases affecting the gingival and supporting structures of the teeth, as well as implant placement and maintenance. Emphasis is
on acquisition of knowledge of the histopathology of disease and the biologic basis for periodontal therapy. Prereq.: DHYG 2640. 3 s.h.

3780. Pharmacology. Importance of pharmacological aspects of those drugs and drug groups with which the dentist and dental hygienist are directly and indirectly concerned. Application of pharmacology in treatment planning. Prereq.: DHYG 2630. 2 s.h.

3790. Local Anesthesia and Pain Control for Dental Hygienists. Instruction in the anatomy, physiology, pharmacology, and administration of local anesthesia and other pain control methods. Prereq.: DHYG 3703L or permission of the Program Director. 2 s.h.

3790L. Local Anesthesia and Pain Control Clinic. Application of the techniques of local anesthetic administration and pain control on anatomical models and clinical partners. Three hours of clinic per week. Prereq.: DHYG 3703L or permission of the Program Director. 1 s.h.

4805. Dental Hygiene 5. The role of the dental hygienist in providing care for special needs patients by recognizing the necessary treatment plan modifications due to physical, mental, medical, and social factors. Prereq.: DHYG 3704. 3 s.h.

4805L. Clinical Dental Hygiene 5. Advanced clinical application of dental hygiene techniques with emphasis on patient management and radiographic assessment resulting in an individualized and comprehensive treatment plan for periodontal patients. Twelve hours of clinic per week. Prereq.: DHYG 3704L. 4 s.h.

4806. Dental Hygiene 6. A study of dental specialties enhancing students’ knowledge, and understanding. Indications for referral, specialized instruments, diagnostic tests, and specific oral hygiene instructions will be discussed. Prereq.: DHYG 4805. 3 s.h.

4806L. Clinical Dental Hygiene 6. Continued application of dental hygiene techniques with emphasis on professionalism and competency in private practice. Twelve hours of clinic per week. Prereq.: DHYG 4805L. 4 s.h.


4830L. Dental Materials Lab. Clinical application of selected dental materials and four-handed dentistry enhancing the students’ understanding of dental procedures. Technical procedures and delegated responsibilities will be completed on manikins, and student partners. Prereq.: DHYG 3704L. 1 s.h.

4840. Directed Dental Hygiene Research. Development of research skills including problem identification, development of a hypothesis, research design, data collection, analysis, and interpretation. Approved dental hygiene topics will be completed as a group under faculty supervision. Prereq.: AHLT 4806. 2 s.h.

4850. Dental Public Health. An introduction to public health dentistry, a study of the epidemiology of dental disease, writing grant proposals, and implementation of health promotion theories. Preventing and controlling dental disease through organized community efforts is addressed. Prereq.: DHYG 4805. 3 s.h.

4850L. Community Clinics. Oral health care services provided by senior dental hygiene students at community sites. Culturally competent care to underserved populations is the primary course emphasis. Forty-five hours of community clinical experience throughout the semester. Prereq.: DHYG 4805L. 1 s.h.

4860. Ethics and Practice Concepts. The historical, professional, legal, and ethical aspects of dental hygiene. Study of practice management topics relevant to the changing roles of hygienists with emphasis on quality care in a patient centered practice. Prereq.: DHYG 4805. 2 s.h.

DRAFTING AND DESIGN TECHNOLOGY—DDT

Engineering Technology

1503. AutoCAD I. Basic instruction in the use of AutoCAD computer-aided drafting system. Includes primary 2D skills including dimensioning, blocks, external reference and plotting, Customization methods and an introduction to application programming. One and one-half hours lecture, one and one-half hours lab per week. Grading is A, B, C, NC. Prereq.: Math 1504 or at least Level 40 on the Mathematics Placement test. Concurrent with DDT 1504. 2 s.h.

1504. Drafting and Plan Reading. Drafting basics including plan, section, and elevation views; orthographic projections; line types and weights; drafting scales; dimensioning; tolerances; grading and contours, and construction layout for the civil, mechanical, and electrical technology disciplines. Development of skills in the interpretation and preparation of plans used for civil, mechanical, and electrical construction and fabrication. One and one-half hours lecture, one and one-half hours laboratory per week. Grading is a, B, C, NC. Prereq.: Math 1504 or at least Level 40 on the Mathematics Placement test. Concurrent with DDT 1503. 2 s.h.

1505. CAD Technology I. Basic instruction in the use of AUTOCAD computer-aided drafting system. Includes primary 2D skills including dimensioning, blocks, external reference and plotting, Customization methods and an introduction to application programming. Three hours lecture, three hours lab per week. Prereq.: High school drafting or equivalent. 4 s.h.
2606. CAD—Solid Modeling. Parametric solid modeling and other 3D techniques. Customization techniques and use of an application programming language within the CAD software. Three hours lecture, three hours lab per week. Prereq.: DDT 1503 or DDT 1505. 4 s.h.

2607. CAD—Microstation. Introduction and applications of Bentley Microstation CAD program. 2D and complex elements, dimensioning, patterning, plotting and development of basemaps. One hour lecture, three hours lab per week. Prereq.: DDT 1503 or DDT 1505. 2 s.h.

2608. Machine Elements. Design and drafting of machine elements common to mechanical equipment, including bending, torsion, and bearing concepts. Application and interpretation of GD & T. Two hours lecture, three hours lab per week. Prereq.: CCET 2604. 3 s.h.

2609. Industrial Technology. Materials planning and handling, applications of quality assurance, post-production control. Introduction to ergonomics and manufacturing standards. Two hours lecture, three hours lab per week. Prereq.: MET 2630. 3 s.h.

2610. Manufacturing Elements. Mechanical power transmission, mechanisms and linkages. Hydrostatics, system losses, interpretation and analysis of hydraulic and pneumatic schematics. Two hours lecture, three hours lab per week. Prereq.: PHYS 1501. 3 s.h.

2690. Special Topics in DDT. Special topics/new developments in drafting and design technology. Subject matter, special prerequisites, and credit hours to be announced in advance of each offering. May be repeated with different subject matter to a maximum of 8 s.h. Prereq.: Consent of the instructor. 1-4 s.h.

**EARLY CHILDHOOD EDUCATION—EMCE**

**Department of Teacher Education**

4815. Seminar in Elementary School Science. Critical study of current developments in objectives, methods, materials, and evaluation in science education as they affect the elementary science program. Includes discussions, field trips, demonstrations and laboratory work. Prereq.: Admission to COE upper-division status. 2 s.h.

5811. Early Childhood Generalist: Math and Science. By exploring math and science teaching practice for grades 4-5, the candidates will review teaching methods of math and science, master the contents stated in the Ohio Academic Standards, find and design math and science programs and lessons and strengthen the assessment methods for the classroom instruction. Prereq.: Upper division status. 3 s.h.

5812. Integrated Language Arts and Social Studies for 4th and 5th Grades. Candidates will learn language arts and social studies teaching methods, design integrated lessons, incorporate state and national standards, and utilize assessment methods for grades 4-5. Prereq.: Upper division status. 3 s.h.

5816. Diagnosis and Remediation of Elementary School Mathematics. In-depth study of diagnosis and remediation as they affect the elementary school mathematics program. Includes discussions, field trips, demonstrations and laboratory work. Prereq.: Admission to COE upper-division status. 2 s.h.

5854. Middle School Theory and Practice. Students will analyze and reflect on major concepts, research, and theories about the physical, cognitive, emotional, moral, and social development of students in grades 4-9 and research information concerning the historic, philosophical, and organizational components of middle level schools, including program assessment and evaluation of learning environments. 3 s.h.

5888. Topical Seminar. Examination of issues related to the teaching of reading not covered in depth in other courses. Prereq.: Admission to upper-division status in COE or admission to the School of Graduate studies. 1-3 s.h.

**EARLY CHILDHOOD EDUCATION—ECE**

**Department of Teacher Education**

2629. Teaching Young Children: Best Practices in Early Childhood Education. Gives teacher candidates a research-based inquiry into early childhood education and promotes the acquisition of knowledge, skills, and dispositions that will facilitate best practices within the field. 10 field/clinical hours, 3 s.h.

3713. Teaching of Mathematics: Early Years. Using NCTM/NAEYC/NCATE and Ohio Model guidelines as the framework, focus on identifying and modeling developmentally appropriate strategies used for problem solving, communicating, and reasoning in early childhood mathematics. Learning to use mathematical connections to stimulate diverse students' development of math concepts and skills and create learning environment combining mathematics pedagogy/methodology in an early grades classroom. Prereq.: BCOE upper-division status and approval of chair. Coreq.: ECE 3715, 3780, and 4814. 3 s.h.

3715. Teaching Science: Early Years. Using NSTA/NCATE and Ohio Model guidelines as the framework, focus on establishing and maintaining learning environments that provide diverse students with a holistic, interdisciplinary understanding of science. Topics include teaching for meaningful science understanding, planning and providing an effective and supportive learning environment, planning and implementing curriculum and lessons appropriate for children in their early years, selection and use of instructional aids and resources, assessment, and

3760. Cross-Curricular Applications and Classroom Management/Guidance. Synthesis and application of developmental theories and appropriate practices and methods in classrooms for young children, including curriculum integration, quality classroom environments, and classroom management/guidance. (10 hours of focused field placement.) Prereq.: BCOE upper-division status. 3 s.h.

3780. Social Studies for Young Children. Methods of teaching social studies to young learners (PreK-3) including exploration of a variety of effective teaching and assessment behaviors related to diverse learner needs. Use of key concepts, application of tools of social studies to foster social development and encourage independent problem solving, investigate the use of technology, create instructional resources; collaboratively plan, teach, and evaluate lessons in inclusive instructional settings; keep a reflective learning log. Prereq.: BCOE upper-division status and approval of chair. Coreq.: ECE 3713, 3715, and 4814. 3 s.h.

4811. Supervised Student Teaching: Pre-Kindergarten. Student teaching consists of a 10-week assignment in a preschool. Grading is CR/NC. Prereq.: CHFM 2664, ECE 2630, SPED 2631. 1-12 s.h.

4814. Language Arts Methods in the Early Years (Ages 3-8). Teaching oral and written communication through consideration of listening, speaking, reading, viewing, and related skill areas in the elementary school. Prereq.: BCOE upper-division status and approval of chair. Coreq.: ECE 3713, 3715, and 4810. 3 s.h.

4841. Supervised Student Teaching: Early Childhood. A 16-week assignment in a kindergarten-grade 3 setting. Grading is CR/NC. Prereq.: BCOE upper-division status, passing scores on PRAXIS II content and PLT tests, criminal background check, and completion of early childhood program excluding student teaching and student teaching seminar. Coreq.: ECE 4842. 1-10 s.h.

4842. Student Teaching Seminar in Early Childhood Education. Development of an effective and developmentally appropriate K-3 classroom environment including: teacher work sample, daily lessons, classroom management, reflective teaching and growing as a professional in the field of early childhood education. Coreq.: ECE 4841. 2 s.h.

4859. Pre-Kindergarten Teaching Methods and Materials. Methods and techniques used to implement the pre-kindergarten curriculum with emphasis on communication and creative arts, social, emotional, and physical development, and concept formation. Required for prekindergarten validation of other teaching certificates. Prereq.: SPED 2631, ECE 3759. 3 s.h.

**ECONOMICS—ECON**

**Department of Economics**

**Lower-Division Courses**

1501. *Economics in Action*. An introduction to the United States’ economic system and institutions through the examination of current economic problems. Not applicable for a major or minor in economics. Credit will not be given for 1501 if a student has already received credit for ECON 2610 or its equivalent. 3 s.h.

1502. *Panic and Prosperity, U.S. Economic Policy Since the Great Depression*. Examines the crises and successes of the American economy since 1929, and how the economic policies of different presidential administrations affected the lives of U.S. citizens. Not applicable towards a major or minor in economics. 3 s.h.

1503. *Rich and Poor: Diversity and Disparity in the U.S. Workplace*. Examines how labor markets determine the distribution of income and the dramatic changes in the composition of the American labor force. Explores such issues as the widening gap between low and upper income groups, the characteristics of the poor, affirmative action, the glass ceiling, the mommy track, and family-friendly working environments. Not applicable towards a major or minor in economics. Prereq.: ECON 1501 or GERO 1501. 3 s.h.

1504. *Economics of Aging*. An introduction to the economic consequences of an aging population and the economic status of the aged. Topics include income adequacy in old age, retirement decisions, retirement income planning, social security income, employer-sponsored pensions, and financing health care. Not applicable towards a major or minor in economics. Prereq.: ECON 1501 or GERO 1501. 3 s.h.

2610. *Principles 1: Microeconomics*. Introduction to the theory of markets, including the behavior of consumers and the conduct of private and public business enterprise. Effects of monopoly and competition on private and social welfare. The role of government in promoting the economic welfare of consumers, workers, and minorities. Prereq.: MATH 1501, or a level 20 or higher on the math placement exam. 3 s.h.

2630. *Principles 2: Macroeconomics*. Studies of growth, inflation, and unemployment at the national level and the performance of the U.S. economy in the global setting. The impacts of national economic policies on individual and social welfare. An extensive discussion and evaluation of the U.S. banking system and its effects on individuals and businesses. Prereq.: ECON 2610. 3 s.h.

3701. *Money and Banking*. Organization and operation of commercial banking in the United States; central banking under the Federal Reserve System; basic theory. Monetary policy as a determinant of national income. Prereq.: ECON 2630. 3 s.h.
3702. **Public Finance.** The development and present status of public finance; federal, state and local expenditures and taxation; theories of tax incidence, axioms of taxation, theories in justification and government spending; tax reform. Study of the techniques of fiscal policy with emphasis on its role as a determinant of the level of national income. Prereq.: ECON 2610. 3 s.h.

3703. **Behavioral Economics.** Uses insights from economics and psychology to explain why normally rational people make poor choices in their lives, be it in terms of money, health, education or long-term happiness. This introductory course explores the sources of poor economic choices and examines ways to improve them. Prereq.: ECON 2610 or PSYCH 1560. 3 s.h.

3705. **Environmental and Resource Economics.** Application of economic theory to environmental problems, analysis of policy alternatives for pollution abatement, and the conservation of exhaustible resources. Determination of efficient management of local and national pollution levels, including air, water, and toxic substances. Possible economic consequences associated with global warming. Prereq.: ECON 1501 or 2610. 3 s.h.

3710. **Intermediate Microeconomic Theory.** A systematic analysis of the theory of demand and the theory of the firm: production input and output choices, and some basic concepts of linear programming. An intensive analysis of the theory of the firm: competitive pricing, monopoly pricing, pricing in imperfect competition; and the theory of rent, profits, interest and wages. Prereq.: ECON 2610, and either MATH 1549, 1552, 1570, or 1571. 3 s.h.

3712. **Intermediate Macroeconomic Theory.** The construction of national income and production accounts and the basic determinant of income, output, and employment. Determination of the level of employment, interest, and money through the classical versus Keynesian aggregate economics. Prereq.: ECON 2630 and either MATH 1549, 1552, 1570, or 1571. 3 s.h.

3720. **Comparative Economic Systems.** An examination of the recent world-wide trend toward free market economy, giving particular attention to basic processes such as resource allocation and product distribution. Frequent references are made to the failure of Socialism in the USSR and the new approach in Russia, Eastern Europe and China toward market economies. Prereq.: ECON 1501 or 2630. 3 s.h.

3724. **Public Budgeting.** Study of the politics, theories, and techniques of public budgeting. Includes the process of budget preparation, adoption and execution. Topics include debt management and capital budgets. (This course is cross-listed with Political Science 3724.) Prereq.: POL 3720. 3 s.h.

3790. **Statistics for Business and Economics.** Introduction to statistical methods in data analysis and forecasting. Topics include descriptive statistics, probability, hypothesis testing, regression analysis, ANOVA and time series analysis. Practical application of statistical procedures is incorporated into regularly scheduled computer workshops. Prereq.: MATH 1549, 1552, 1570, or 1571. 5 s.h.

4810. **Managerial Economics.** An application of economic analysis to business problems. Emphasis upon executive decisions for the allocation of resources. Prereq.: ECON 2610. 3 s.h.

4843. **Economics of Poverty, Discrimination and Transfer Programs.** Causes of poverty and income inequality and the analysis of the policy options for reducing poverty. Quantification of the dimensions of poverty, the evaluation of the effectiveness of training programs, the effects of antipoverty programs on the behavior of recipients, and the affirmative action debate. Prereq.: ECON 2610. 3 s.h.

4855. **Health Economics.** Application of basic principles to the study of the health care industry. Topics include the supply and demand of medical care, the effects of private and public insurance on the health care industry, trends in health care costs, public policies to equalize access to medical care and the dilemma caused by the improvement in life-sustaining technology. Prereq.: ECON 2610. 3 s.h.

4860. **Selected Topics in Economics.** Advanced study of selected topics in economic analysis and issues in economic policy. May be repeated once with different topic. Prereq.: Econ 2610 and Econ 2630. 3 s.h.

4870. **Economic Internship.** The practical application of economic knowledge and statistical skills in the workplace. Students assist professionals in various kinds of industrial, financial, and public service organizations. Prereq.: By permit only, minimum GPA 2.5. 1-3 s.h.

4880. **Analysis of Economic Problems.** The application and extension of the student's skills in economic analysis and statistical techniques to economic issues. The course covers sources of data, exploratory data techniques, matching of data and statistical tests, interpretation and presentation of the results. Students demonstrate their command of research techniques by the completion of a research paper and its oral presentation. Topics to be determined. Prereq.: ECON 3710, 3712, and either 3790 or the previously offered 3780. 3 s.h.

4898. **Graduate Study in Selected Economic Topics.** For undergraduates taking courses in the MA in Economics program for credit towards an undergraduate degree. Credit earned cannot be later applied to a graduate degree. The student must meet the criteria for undergraduate students taking graduate coursework listed in the Graduate Bulletin. May be repeated with different graduate courses. Prereq.: A minimum of 20 hours of coursework in economics at the 2600 level and above, permission of the chair, junior standing. 3 s.h.

4899. **Individual Study in Economics.** Individual study of a topic, area, or problem requiring in-depth reading, and a written project. May be repeated once with a different topic, area, or problem. Prereq.: Junior or senior standing, by permit only. 1-4 s.h.
5801. Economics of Industrial Organization. A systematic analysis of the structure, conduct, and performance of American industry. A qualitative analysis plus a comprehensive review of theoretical models of the market, firm behavior, and performance. Prereq.: ECON 2610. 3 s.h.

5806. History of Economic Thought. Designed to provide students with an understanding of the development of economic ideas to include: Mercantilism, Physiocrats, the English Classical School, Utilitarianism, early Social Thought, Karl Marx, the German Historical School, Institutionals and the Keynesian School. Prereq.: ECON 2630. 3 s.h.

5809. Current Problems in Money, Banking, and Financial Markets. The financial market system, including money and capital markets. Current problems associated with trends in theory and practice. Theories of the interest rate and monetarism. Prereq.: ECON 3701 or consent of instructor. 3 s.h.

5811. International Trade. Theories of international trade and specialization; free trade vs. protectionism; tariff and non-tariff barriers to international trade; international balance of payments and its components; the role of multinational enterprises in the contemporary trade pattern; regional economic integrations and world trade; U.S. commercial policies. Prereq.: ECON 2630. 3 s.h.

5812. International Finance. Theories of foreign exchange and capital movements, international payments, analysis of spot and forward foreign exchange markets, foreign exchange market arbitrage, speculation, and risk hedging. The Bretton Woods agreement and the contemporary international monetary system. The rise of international organizations and multinational enterprises in the international economy. Prereq.: ECON 2630. 3 s.h.

5822. Urban and Regional Economics. Economic analysis of the problems of urbanized areas and the causes of the growth or decline in economic activity in small-area economics. Topics include benefit-cost analysis, economic base analysis, input-output applications, and the theory of location and agglomeration. Prereq.: ECON 2610. 3 s.h.

5824. Applied Time Series Analysis of Economic and Business Data. An in-depth analysis of time series models and their applications to problems in economics and business. Emphasis on forecasting. Extensive use of standard computer programs. Prereq.: ECON 2610 and either ECON 3790 or the previously offered 3780 or STAT 5817. 3 s.h.

5831. Labor Markets and the Economics of Unions. Economic theory and analysis of labor as an input in the resource market; principles, labor problems, public policy; theories of the development of the labor movement; economic objectives of trade unions; problems in public control. Prereq.: ECON 2610. 3 s.h.

5853. Applied Econometrics. The practice of econometrics with emphasis on model construction, estimation, and interpretation of results. Applications in the private and public sectors involve the use of computers and economic software. Prereq.: ECON 2630 and either 3790 or the previously offered 3780. 3 s.h.

5856. Topics in Quantitative Economics. Application of different tools of mathematical economics, computational economics, and econometrics in conjunction with economic theory to model economic problems of firms, consumers, financial institutions, and public sectors. Specific content of the course will vary with the instructor. May be repeated once with a different topic. Prereq.: ECON 3790 or the previously offered 3780. 3 s.h.

EDUCATIONAL TECHNOLOGY—EDTC

Department of Teacher Education

3771. Technology for Teaching. Introduction to the issues, pedagogies, and skills associated with the use of technology in the educational process. Experiences with computers and educational technology include computer productivity software, information retrieval sources, creation of instructional materials, selection/evaluation of hardware and software, telecommunications, Internet, and introductory multimedia. Emphasis on use and assessment of computers and media as educational tools. Required of all candidates for teaching certificates. Two hours lecture, two hours lab. Prereq.: Admission to upper-division status in COE. 3 s.h.

5899. Integration of Instructional Computing. Planning for and integrating computing into classroom instruction and the utilization of a variety of hardware, systems, and peripherals in educational environments. Review and use of educational software in, and develop software integration projects for curricular areas, including instructional uses of productivity software, the Internet, telecommunications, desktop publishing, desktop video, multimedia, and record keeping. Prereq.: EDTC 3771. 3 s.h.

ELECTRICAL AND COMPUTER ENGINEERING—ECEN

Department of Electrical and Computer Engineering

Lower-Division Courses

1521. Basic Digital and Computer Circuits. Introduction to digital and computer design concepts: number systems, switching algebra, logic gates, and truth tables. Combinatorial and sequential design techniques. Comparators, multiplexers, coders and decoders, flip-flops, registers, counters, and their practical applications. 3 s.h.
1521L. Basic Digital and Computer Circuits Laboratory. Laboratory exercises to accompany ECEN 1521. Design and testing of combinatorial and sequential logic circuits. Experiments with computer hardware. Prereq. or concurrent: ECEN 1521. 1 s.h.

1555H. Honors Computer Engineering. The personal computer, its components, and the role it plays in control applications, instrumentation, and engineering design. Basic experiments using digital circuits, microprocessors, integrated circuits, and design software integrated into a project with the personal computer and instrumentation. Prereq. or concurrent: ENGL 1550H and admission to the Honors Program, or permission of instructor and Director of Honors Program. 3 s.h.

1560. Electrical Engineering Computing. Problem solving techniques for the fields of electrical and computer engineering; procedural program development using the C/C++ programming language. Fundamentals of engineering drawing using AutoCAD commercial software packages. One hour lecture, three hours lab. Prereq.: MATH 1571 or concurrent high school technical drawing proficiency or ENGR 1555. ENGR 1555 may be taken concurrently. 2 s.h.

2610. Computer Tools for Electrical and Computer Engineering. Introduction to software packages and resources such as MATLAB, PSpice, and Quartus II for analysis and design of circuits and systems. Prereq. or Concurrent: ECEN 2632 and ECEN 2611. 1 s.h.

2611. Instrumentation and Computation Lab 1. Laboratory experiments and computer exercises to accompany ECEN 2632. Laboratory experimentation and basic instrumentation. Computer-aided analysis and simulation. Prereq. or concurrent ECEN 2632. 1 s.h.

2612. Instrumentation and Computation Lab 2. Laboratory experiments and computer exercises to accompany ECEN 2633. Laboratory experimentation and basic instrumentation. Computer-aided analysis and simulation. Prereq.: ECEN 2611. Prereq. or concurrent: ECEN 2633. 1 s.h.

2614. Basics of Electrical Engineering. Introduction to electrical circuit elements and laws; DC and AC analysis. Introduction to digital devices and circuits with applications. Applications of electromagnetics. Intended for non-electrical engineering majors. Prereq.: MATH 1571. 3 s.h.


Upper-Division Courses

3710. Signals and Systems. Operation and analysis of communication, control, and computer systems at the signal level. Computer aided design tools and methods to analyze signals and systems. Continuous and discrete-time transforms. Noise analysis, signal detections, line codes, and multiplexing. Prereq.: ECEN 2633, ECEN 1521 and MATH 3705. 3 s.h.

3711 Intermediate Laboratory 1. Laboratory experiments and computer exercises in the areas of digital and analog electronics and logic and computer circuits. Designed to accompany the co-requisite courses. Prereq.: ECEN 2612. Prereq. or concurrent: ECEN 3733 and 3771. 1 s.h.

3712. Intermediate Laboratory 2. Laboratory experiments and computer exercises in the areas of digital and analog electronics, logic and computer circuits, and electromagnetics. Designed to accompany the co-requisite courses. Prereq.: ECEN 3711. Prereq. or concurrent: ECEN 3742 and either ECEN 3772 or 3734. 1 s.h.

3717. Sensor Fundamentals. Basic principles of sensors such as electro-chemical, -mechanical, -optical, and -thermal transducers. Signal conditioning and smart sensors. Applications to process control and environmental systems. Prereq.: MATH 3705, and either PHYS 2611 or ECEN 2632. 3 s.h.

3730. Microprocessors and Microcontrollers. Organization and structured assembly language programming. Digital controller devices and their relationships to processors and physical environments. Two hours lecture and three hours laboratory per week. Prereq.: ECEN 3733. 3 s.h.


3734. Computer Design. Systematic methodologies for digital computer hardware and software designs. VLSI circuits. SOPC, CPLD, and FPGA designs. Hardware description languages. Prereq.: ECEN 3733. 3 s.h.

3741. Electromagnetic Fields 1. Maxwell’s equations. Static electric and magnetic fields. Magnetic materials and forces, dielectrics, conductance, capacitance,
and inductance. Poisson’s and Laplace’s equations. Prereq.: ECEN 2633 or concurrent MATH 3705.


3771. Digital and Analog Circuits 1. Terminal characteristics of electronic devices such as diodes, BJTs (bipolar junction transistors), FETs (field effect transistors), and operational amplifiers. The design of digital circuits with these devices. Basic bias and small-signal models for analog amplifiers. Computer-aided design and analysis. Prereq.: ECEN 2633. 3 s.h.

3772. Digital and Analog Circuits 2. Continuation of ECEN 3771. Bias and signal modeling for amplifier design. Large-signal, small-signal and DC amplifiers. Single-stage, multistage and power amplifiers. Frequency response. Applications with op amps such as amplifiers, comparators, filters, and oscillators. Computer-aided design and analysis. Prereq.: ECEN 3771. 3 s.h.

4803/4803L. Linear Control Systems. System modeling, responses and performance measures. Stability analysis by root locus, Bode, and Nyquist plots. Computer-aided control system design. Compensator design. Three hours lecture, three hours laboratory per week. Prereq.: ECEN 2633, 3712, MATH 3705, MECH 2620. 4 s.h. 0 s.h.

4811. Senior Laboratory. Laboratory experiments and computer exercises in the areas of applied electromagnetics, energy conversion. Designed to accompany the co-requisite course. Prereq.: ECEN 3712. Prereq. or concurrent: ECEN 4844. 1 s.h.

4844. Electromagnetic Energy Conversion. An examination of lumped electromagnetic parameters with development of theoretical, experimental, and design parameters for electrical energy conversion devices such as transformers, motors, and generators. Typical and special applications. Prereq.: ECEN 3741 or concurrent: MECH 2620. 3 s.h.

4851. VLSI System Design. Basic MOSFET models. Layout of inverters, NAND, NOR, PLA, PAL and ROMs. CMOS process and design rules. VLSI system design methodology and computer EDA tools such as PSpice and layout editors. Prereq.: ECEN 3771, ECEN 3733. 3 s.h.

4852. Neural Networks and Robotics. Principles for control applications and robotics, direct inverse control, neural networks, and fuzzy set theory. Applications including adaptive control, neural networks for motion control and path planning in robotics. Prereq.: ECEN 3733. 3 s.h.


4856. Embedded System Design. Fundamentals of small-scale and medium-scale embedded systems. Design techniques for processors, timers, input device interfacing, interrupt controllers, and drive circuits. Real-time operating system programming tools. Hardware-software co-designs. Three hours lecture, three hours laboratory. Prereq.: ECEN 3733. 4 s.h.

4881. Modern Control System Design. Advanced control system analysis and design. LQR, pole placement, state observer design. Introduction to system identification and adaptive controllers. MATLAB simulation and real-time implementation of controllers. Three hours lecture, three hours laboratory per week. Prereq.: ECEN 4803. 4 s.h.

4899. Senior Design Project. An electrical/computer engineering design problem is chosen or assigned; students work in teams. Proposals are presented which describe the design problem and approaches to it. The final design is presented in written and oral forms. This capstone course is intended to mimic a typical industrial or research project and includes ethical and economical considerations with the engineering work. Three hour lecture/discussion, three hours of laboratory per week. Prereq.: ECEN 4811 and 27 s.h. of ECEN courses. 4 s.h.

5800. Special Topics. Special topics, new developments in Electrical Engineering. Subject matter, special prerequisites, and credit hours to be announced in advance of each offering. May be repeated with different subject matter to a maximum of 6 s.h. Prereq.: Senior standing in Electrical and Computer Engineering. 1-3 s.h.

5807. Advanced Digital and Analog Circuits. Chip circuitry for devices such as BJT, CMOS, and ECL-based digital logic chips. Switching devices such as SCRs, triacs, and timers. Switching power supplies. Power amplifiers. Applications and specifications of off-the-shelf IC devices. Computer-aided design and analysis. Prereq.: ECEN 3772. 3 s.h.

5808. Advanced Signals and Systems. Communication and control system modeling and simulations; signal analysis in continuous-time, discrete-time and frequency domains. Advanced communication system applications. Prereq.: ECEN 3710 and MATH 3705. 3 s.h.
5816. Theory and Fabrication of Solid-State Devices. An introductory study of physical theory, design, and fabrication of discrete devices and integrated circuits. Electronic properties of semiconductors such as carrier concentration, energy gap, mobility, lifetime. Techniques of fabrication such as oxidation, diffusion, alloying ion implantation, metallization, masking. Prereq.: ECEN 3741 and ECEN 3771. 3 s.h.

5817. Sensor Design and Application. Designs and applications for measurement and control; includes electro-chemical, -mechanical, -optical, and -thermal transducers. Signal conditioning and smart sensors. Prereq.: ECEN 3771 or ECEN 3717. 3 s.h.

5830. Digital Signal Processing. Discrete time signals and systems; discrete, fast, and inverse Fourier transforms. Digital filter analysis and design, digital signal processing applications. Two hours lecture, three hours laboratory. Prereq.: ECEN 3710. 3 s.h.

5835. Computer Architecture with VHDL. Use of hardware description languages to design computer components and systems. Arithmetic and logic units, control units, VHDL models for memories and buses, interfacing, transfer design. Survey of modern computer systems. Prereq.: ECEN 3734. 4 s.h.

5840. Electric Power Systems. Modeling of power system components. Power flow, faults, protection systems, and stability problems. Special projects and laboratory experiments including CAD applications for analysis, design, and simulation of power system networks. Three hours lecture, three hours laboratory per week. Prereq. or concurrent: ECEN 4844. 4 s.h.

5850. Communications Applications. Applicable technologies and “real-world” communication components and systems. Design and analysis tools. Emerging technologies, “killer apps”, networking, data acquisition, and convergence. Prereq.: ECEN 3710 or ECEN 5808. 3 s.h.

5860. Energy Radiation and Propagation. Examination of dipole, loop aperture, reflector, lens, surface wave, traveling wave, and other antennas; array theory; radiation resistance, directivity, and input impedance. Investigation of theoretical and practical applications of fiber optics. Prereq.: ECEN 3742 and 21 s.h. of ECEN courses. 3 s.h.

5879. Computer-Aided Design. The design, analysis, and modeling of linear and nonlinear networks and systems using a simulation and modeling computer program. Development and use of library models of devices, subcircuits, and subsystems. Prereq.: ECEN 2611 and 21 s.h. of ECEN courses. 3 s.h.

5890. Power Electronics. SCRs, rectifier circuits, commutation techniques, AC controllers, converters, and inverters. Special projects and laboratory experiments including computer applications for analysis, design, and simulation of power electronics network. Three hours lecture, three hours laboratory per week. Prereq.: ECEN 3771 and 21 s.h. of ECEN courses. 4 s.h.

ELECTRICAL ENGINEERING TECHNOLOGY—EET Engineering Technology

Lower-Division Courses


1501L. Circuit Theory 1 Lab. Use of electrical components to construct circuits and use of electrical instrumentation including meters and oscilloscopes to analyze DC resistive series/parallel networks and basic RC & RL transient circuits. Computer circuit analysis with PSPICE. Three hours per week. Concurrent with EET 1501. 1 s.h.

1502. Circuit Theory 2. Study of AC sinusoidal waveforms, phasor representations, phasor algebra and phasor diagrams. Solution of steady state single phase series/parallel networks including network theorems, power and power factor, resonant circuits, filters, mutual inductance, transformers and balanced three-phase systems. Prereq.: C or better in EET 1501 & EET 1501L. Concurrent with EET 1502L. 3 s.h.

1502L. Circuit Theory 2 Lab. Measure effective values of AC currents and voltages, observe waveforms with oscilloscopes, verify impedance concepts and phasor diagrams for AC series/parallel networks and resonant circuits. Computer circuit analysis with PSPICE. Three hours per week. Concurrent with EET 1502. 1 s.h.

2605. Electronics 1. Physical basis of semiconductor materials, diodes, rectifier circuits, Zener diode regulators, clippers, clamps, special purpose diodes. Bipolar junction transistors (BJT) characteristics, bias circuits, equivalent circuit models, amplifiers and field effect transistor (FET) characteristics. Prereq.: EET 1502, 1502L. Concurrent with EET 2605L. 3 s.h.

2605L. Electronics 1 Laboratory. Use of meters, oscilloscope, transistor curve tracer for experiments on diode characteristics, rectifier circuits, clippers, clamps, Zener regulators, BJT and FET characteristics, BJT bias circuits and amplifiers. Computer circuit analysis with PSPICE. Three hours per week. Concurrent with EET 2605. 1 s.h.

2620. Digital Electronics. An introductory study of number systems and conversions, codes, Boolean algebra, and logic gates. Includes Boolean function simplification, truth tables, Karnaugh maps, and combination circuits. Prereq.: C or better in EET 1501 and EET 1501L; or CSIS 1590. Concurrent with EET 2620L. 2 s.h.
2620L. Digital Electronics Lab. Experiments utilizing digital integrated circuits to implement various logic functions discussed in EET 2620. Three hours per week. Concurrent with EET 2620. 1 s.h.

2650. Personal Computer Hardware. Fundamentals of assembly, troubleshooting, and repair of personal computers. Hardware topics include power supplies, motherboard, memory, keyboards, monitors, floppy drives, hard drives, and peripherals. Upgrading of PC hardware. Two hours lecture, three hours lab per week. Prereq. or concurrent: ENTC 1505 or consent of instructor. 3 s.h.

2651. Digital Communication Systems 1. Introduction to telecommunications; noise types and measurements; amplitude, frequency and pulse modulation and encoding techniques; transmission codes; terminals; serial interfaces using RS 232, RS 499, RS 422A and 423A; loop standards; UART and UART interface. Two hours lecture, three hours lab per week. Prereq.: C or better in EET 1501 & EET 1501L. 3 s.h.

2652. Digital Communication Systems 2. Continuation of EET 2651. Includes the telephone set and subscriber loop interface; telephone network. Modems; synchronous protocols; error detection correction; control. Two hours lecture, three hours lab per week. Prereq.: EET 2651. 3 s.h.

2653. Fiber Optics. Light propagation in fiber; connections, attenuation, and signal distortion; splicing and analysis of coupling losses; optical transmitters and receivers for analog and digital signals. Two hours lecture, three hours lab per week. Prereq.: C or better in EET 1501 & EET 1501L. 3 s.h.

2670. Process Instrumentation. Introduction to the principles and practice of measurement and control of temperature, pressure, flow, level, and other process variables commonly encountered in industrial systems. Includes characteristics, installation, and troubleshooting of process transducers, sensors, and detectors. Three hours lecture, three hours lab per week. Prereq. or concurrent: EET 2605/L. 4 s.h.

2671. Computer Instrumentation and Control. Use of personal computers as a data acquisition and control device in industrial processes. Specification, installation, troubleshooting or various I/O cards. Development of PC-based data acquisition and control system using commercially available software. Three hours lecture, three hours lab per week. Prereq.: EET 2670/L. 4 s.h.

2680. Digital Broadcasting 1. Introduction to communication systems; signal modulation techniques; analog, digital, and mixed systems; digital processing principles; filters and transforms; sampling; sound, light, and image portrayal; digital television; FCC rules. Three hours lecture, three hours lab per week. Prereq.: EET 1502, 1502L, PHYS 1501, 1501L, EET 2620, 2602L, Prereq. concurrent with EET 2605, 2605L. 4 s.h.

2681. Digital Broadcasting 2. Transmission media; MPEG data compression; digital coding; storage devices; production-related interfaces; digital television broadcasting; multiplexing; error correction; wiring practices; shielding and grounding techniques; FCC rules. Three hours lecture, three hours lab per week. Prereq.: EET 2680, or concurrent with EET 2606, 2606L. 4 s.h.

3706. Electronics 2. Field effect transistor (FET) bias circuits and amplifiers, thyristor circuits, frequency effects (Bode plots), differential amplifiers, linear and non-linear op amp circuits, active filters, oscillators and regulated power supplies. Prereq.: C or better in EET 2605 & 2605L. Concurrent with EET 3706L. 3 s.h.

3706L. Electronics 2 Laboratory. Experiments involving field effect transistors (FETs), integrated circuits (ICs), operational amplifiers, frequency effects on gain, oscillator circuits and regulated power supplies. Computer circuit analysis with PSPICE. Three hours per week. Concurrent with EET 3706. 1 s.h.

3710. Electrical Machines. Construction, operating principles and characteristics, efficiency and control of DC motors, generators, and specialized machines. AC single and 3-phase transformers, alternators, induction and synchronous motor principles, characteristics, efficiency and control. Prereq.: EET 1502, EET 1520L. Concurrent with 3710L. 3 s.h.

3710L. Electrical Machines Lab. Experiments with DC motors and generators and AC transformers, alternators, induction and synchronous motors to observe operation, efficiency, control and machine characteristics. Three hours per week. Concurrent with EET 3710. 1 s.h.

3712. Programmable Logic Controllers. Development of ladder logic programming and application to programmable logic controllers (PLCs). Examination of input/output (I/O) device characteristics and interfacing including both digital and analog I/O. Installation, maintenance and safety practices for PLCs. Prereq.: EET 1502, EET 1502L; C or better in EET 2620 & EET 2620L. Concurrent with EET 3712L. 3 s.h.

3712L. PLC Laboratory. Exercises in ladder logic programming for programmable logic controllers (PLCs) using concepts developed in EET 3712. Input/Output (I/O) concepts related to PLCs. Three hours per week. Concurrent with EET 3712. 1 s.h.

Upper-Division Courses

3725. Electromechanical Systems. AC/DC circuit analysis techniques including network theorems, PSPICE computer circuit analysis and laboratory experiences with applications to AC/DC machinery, electronics, digital circuits and control systems. Three hours lecture, three hours lab per week. Prereq.: C or better in MATH 1570. 4 s.h.
3730. Logic Systems Design. The characteristics and applications of integrated circuit logic families and various memory devices. Emphasis on the design of digital systems with SSI, MSI, and LSI as system components. Prereq.: C or better in EET 2620, EET 2620L; EET 2605, & EET 2605L. Concurrent with EET 3730L. 3 s.h.

3730L. Logic Systems Design Lab. Laboratory exercises dealing with applications of concepts developed in EET 3730. Three hours per week. Concurrent with EET 3730. 0 s.h.

3735/3735L. Microprocessor Architecture and Programming. An introduction to microprocessor architecture, memory organization, and input/output addressing. Emphasis on machine/assembly language programming to teach concepts of buses, machine cycles, and internal data flow. Two hours lecture and three hours of lab per week. Prereq.: C or better in EET 2620 & EET 2620L; or CSIS 1590. 3 s.h.+0 s.h.

3745. Microprocessor Systems 2. Continuation of EET 2645 with emphasis on advanced programming techniques, memory mapping, I/O ports, and basic I/O interfacing. Prereq.: EET 3735, EET 3735L. Concurrent with EET 3745L. 3 s.h.

3745L. Microprocessor Systems 2 Lab. Laboratory exercises utilizing a microcomputer to provide practical applications of concepts developed in EET 3745. Three hours per week. Concurrent with 3745. 0 s.h.


3760L. Variable Speed Drives Lab. Exercises in variable speed drive applications, demonstrating the concepts developed in EET 3760. Concurrent with 3760. 0 s.h.

3780. Communication Systems. Audio signals, noise, untuned and RF amplifiers, amplitude, frequency, pulse modulation, transmission lines, antennas, and multiplexing of communication channels. Prereq.: EET 1502, EET 1520L. Concurrent with EET 3780L. 3 s.h.

3780L. Communication Systems Lab. Laboratory exercises dealing with application of concepts developed in EET 3780. Three hours per week. Concurrent with EET 3780. 0 s.h.

4810. Electrical System Design. The design and layout of electrical systems for power, light, heat, signals, and communications in commercial, industrial, and residential buildings. Two hours lecture, three hours of lab per week. Prereq.: EET 3710, EET 3710L. 3 s.h.

4820. Power System Protection and Control. An introduction to electrical power system protection and control utilizing intelligent smart grid technologies. Topics include power system analysis, real time data acquisition and control, synchrophasor measurements, communications, and application of microprocessor-based protective relaying. Two hours lecture per week. Concurrent with EET 4820L. Prereq.: C or better in EET 3710, EET 3710L and EET 3712 and EET 3712L. 3 s.h.

4820L. Power System Protection and Control Lab. Establishing communications, programming, and testing of various microprocessor based power system protective relays, including time-overcurrent, bus, differential, motor, distributed generation, and transformer relays. Three hours lab per week. Concurrent with EET 4820. Prereq.: C or better in EET 3710 and EET 3710L and EET 3712 and EET 3712L. 0 s.h.

4845. Microprocessor Systems 3. Continuation of EET 3745 with emphasis on real data acquisition, A/D and D/A conversions, and industrial applications. Prereq.: EET 3730, EET 3730L, EET 3745, EET 3745L. Concurrent with EET 4845L. 3 s.h.

4845L. Microprocessor Systems 3 Lab. Laboratory exercises utilizing a microcomputer to provide practical applications of concepts developed in EET 4845. Three hours per week. Concurrent with 4845. 0 s.h.

4850. Integrated Circuit Applications. Introduction to integrated circuits technology and typical application. Prereq.: EET 3706, EET 3706L. Concurrent with EET 4850L. 3 s.h.

4850L. Integrated Circuit Applications Lab. Laboratory exercises dealing with the application of concepts developed in EET 4850. Three hours per week. Concurrent with EET 4850. 0 s.h.


4880. Electrical and Mechanical Facilities Design. Multidisciplinary study of building systems; HVAC, plumbing, electrical power, lighting, and communication systems. Computational labs and group projects for each topic. Prereq.: Senior standing and permission of the CCET or EET student's program advisor. Concurrent: CCET 4884. Two hours lecture and three hours computational lab. 3 s.h.

4890. Special Topics in EET. Special topics/new developments in electrical engineering technology. Subject matter, special prerequisites, and credit hours to be announced in advance of each offering. May be repeated with different subject matter to a maximum of 8 s.h. Prereq.: Senior standing in EET or consent of the instructor. 1-4 s.h.

**ELECTRIC UTILITY TECHNOLOGY—EUT**

**Engineering Technology**

1500. Electrical Fundamentals. Introduction to direct and alternating current circuits. Study of resistance, capacitance, inductance, Ohm's and Kirchoff's Laws
applied to circuits. Three hours lecture per week. Concurrent with EUT 1500L. Prereq.: ENTC 1500 and MATH 1501 or at least level 3 on the Mathematics Placement Test. 3 s.h.

1500L. Electrical Fundamentals Lab. Lab component of EUT 1500. Provides hands-on instruction in the use of electrical test equipment including digital multimeters, power supplies, oscilloscopes, etc. Three hours per week. Concurrent with EUT 1500. Prereq.: ENTC 1500 and MATH 1501 or at least level 3 on the Mathematics Placement Test. 1 s.h.

1502. Power Plant Fundamentals. Introduction to power plant systems including boiler, turbine, generator, condenser, pumps, and auxiliary equipment. Emphasizes use of schematics and diagrams in discussing plant systems. Includes plant safety training. Four hours lecture per week. Prereq.: MATH 1501 or Level 3 on MPT and eligible to enroll in ENGL 1550. Concurrent: EUT 1502L. Prereq. or concurrent: ENTC 1500. 4 s.h.

1502L. Power Plant Fundamentals Lab. Lab component to accompany EUT 1502. Provides introduction to power generating plant systems and equipment including boiler, turbine, generator, condenser, pumps, and auxiliary equipment. Emphasizes the use of schematics and diagrams in discussing plant systems. Three hours laboratory per week. Concurrent with EUT 1502. 1 s.h.

1503. Power Plant Mechanical Equipment. Introduction to various mechanical equipment found in power plants including pumps, fans, blowers, valves, heat exchangers and power transmission equipment. Mechanical concepts of force and torque. Basic types of bearings, seals, and lubrication. Mechanical assembly drawings and diagrams. Three hours lecture per week. Concurrent with EUT 1503L. Prereq.: ENTC 1500 and EUT 1502/L, and MATH 1501. 3 s.h.

1503L. Power Plant Mechanical Equipment Lab. Lab component to accompany EUT 1503. Provides hands-on activities related to pumps, fans, blowers, valves, heat exchangers, bearings, seals, lubrication, and power transmission equipment. Three hours lab per week. Concurrent with EUT 1503. Prereq.: ENTC 1500, EUT 1502/L, and MATH 1501. 1 s.h.

1504. Maintenance Fundamentals 1. Introduction to blueprint reading and technical diagrams, use of hand tools and power tools, safety and health, development of troubleshooting skills, chemical hazards, and material safety data sheets. Three hours lecture, and three hours lab per week. Prereq. or concurrent: ENTC 1500. 4 s.h.

1505. Maintenance Fundamentals 2. Introduction to piping systems, basic hydraulics and pneumatics, hydraulic and pneumatic troubleshooting, rigging and equipment installation, welding principals, oxy-acetylene cutting and welding. Three hours lecture, three hours lab per week. Prereq.: EUT 1502 and EUT 1504; Concurrent or Prereq.: EUT 1503. 4 s.h.


2601. Electrical Codes and Standards. National Electrical Code and National Electrical Safety Code as applied to overhead and underground electric utility distribution systems. Pole guying, overhead conductor sag and tension, cable pulling, and clearances. Four hours lecture per week. Prereq.: EUT 2600. 4 s.h.

2604. Power Plant Electrical Equipment. Study of three-phase power systems including motors, generators, transformers, and switchgear. NEC and NESC Code requirements, automatic and manual motor controls, variable speed drives, circuit protection. Three hours lecture per week. Concurrent with EUT 2604L. Prereq.: EUT 1500 and EUT 1500L. 3 s.h.


2605L. Intermediate Power Plant Systems Lab. Lab component to accompany EUT 2605. Provides hands-on and computational methods to dynamic analysis of boiler system, feedwater, superheat, and reheat systems, heat transfer in pre-heaters, turbine, condenser, and pumps. Three hours lecture per week. Concurrent with EUT 2605L. Prereq.: EUT 1503, and EUT 1503L. 1 s.h.

2606. Power Plant Operator Practice. Discusses the operation of large utility power plants including start-up and shut-down of all major systems, disturbance response, and safe operation of plant systems. Three hours lecture per week. Concurrent and EUT 2605/L. Prereq.: EUT 1503 and EUT 1503/L. 3 s.h.

2607. Power Plant Instrumentation and Control. Introduces basic principles of process instrumentation and control systems. Measurement parameters such as flow, pressure, level, temperature, and pH. Includes coverage of programmable logic controllers, and distributed control systems. Three hours lecture per week. Concurrent with EUT 2607L. Prereq: EUT 2604/L and EUT 2605/L. 3 s.h.
2607L. Power Plant Instrumentation & Control Lab. Lab component to accompany EUT 2607. Provides hands-on activities related to process instrumentation and control systems. Three hours per week. Concurrent with EUT 2607. Prereq.: EUT 2604L and EUT 2605L.

1 s.h.

2608. Advanced Power Plant Systems. Continuation of EUT 2605. Examines on-line boiler control concepts, including combustion, feedwater, header pressure, oxygen content, power demand, and other processes as applied to utility boilers and process heat supply boilers. Also examines pollution control systems, gas turbines and diesel generators. Three hours lecture per week. Concurrent with EUT 2607L and EUT 2608L. Prereq: EUT 2605L.

3 s.h.

2608L. Advanced Power Plant Systems Lab. Lab component to accompany EUT 2608. Provides hands-on activities related to on-line boiler control concepts, pollution control systems, gas turbines and diesel generators. Three hours per week. Concurrent with EUT 2607L and EUT 2608L. Prereq: EUT 2605L.

1 s.h.

2610. Industrial Electronics. Introduction to semiconductors, power supplies, amplifiers, oscillators, and digital logic systems commonly encountered in an industrial setting. Three hours lecture, three hours lab per week. Prereq.: EUT 1500.

4 s.h.

2611. Electrical Systems 1. Introduction to power distribution systems commonly found in electric utility generating plants and large commercial and industrial facilities. Topics include service equipment, medium and low voltage switchgear, conductors, conduit and cable tray, fuse and breaker characteristics, motor control circuits, insulation and ground testing, and lighting fundamentals. Emphasis placed on applicable NEC and NESC Codes. Three hours lecture, three hours lab per week. Prereq.: EUT 1500, EUT 1503.

4 s.h.

2612. Electrical Systems 2. Discussion, demonstration, and practice of manufacturer's operation and maintenance procedures for a variety of electrical equipment found in electric utility generating plants including soot blowers, coal feeders and pulverizers, precipitators, motors, transformers, and ignitors. Three hours lecture, three hours lab per week. Prereq.: EUT 2611.

4 s.h.

2620. Instrumentation and Control Systems 1. Computer, I/O devices, maintaining and troubleshooting computer systems, and programmable logic controllers. Instruction in pipelining and tubing required for IC systems. Three hours lecture, three hours lab per week. Prereq.: EUT 1500.

4 s.h.

2621. Instrumentation and Control Systems 2. Discussion, demonstration, and practice of manufacturer's operation and maintenance procedures for a variety of instrumentation and control equipment found in electric utility generating plants including boiler controls, turbine supervisory controls, emission controls, distributed control systems, and PLCs. Three hours lecture, three hours lab per week. Prereq.: EUT 2620.

4 s.h.

2630. Machine Shop and Welding. Introduction to machine-shop practices including work layout and shop safety, lathes, milling machines, grinding, and machine-shop job analysis. Arc welding operations including SMAW, GMAW, GTAW, pipe welding, hard facing will also be covered. Three hours lecture, three hours lab per week. Prereq.: EUT 1505.

4 s.h.

2631. Mechanical Systems 1. Introduction to mechanical drive maintenance, mechanical and fluid drive systems, bearing and shaft seal maintenance, pump installation and maintenance, maintenance pipelining, tubing and hose system maintenance, valve maintenance and piping system protection, and bulk handling conveyor systems. Three hours lecture, three hours lab per week. Prereq.: EUT 1505, Concurrent or Prereq.: EUT 2630.

4 s.h.

2632. Mechanical Systems 2. Discussion, demonstration, and practice of manufacturer's operation and maintenance procedures for a variety of mechanical equipment found in electric utility generating plants including soot blowers, coal pulverizers and ball mills, mill exhauster fans, and bearing maintenance. Three hours lecture, three hours lab per week. Prereq.: EUT 2631.

4 s.h.

2633. Vibration, Alignment and NDT. Advanced coverage of alignment, vibration analysis, balancing, and non-destructive testing (NDT) of rotating equipment including pumps, fans, turbines, generators, and motors. Three hours lecture, three hours lab per week. Prereq.: EUT 2631.

4 s.h.

2690. Electric Utility Lab 1. Provides the skill required to work on secondary circuits, transmission support systems, transformers, and services. OSHA regulations and rigging safety awareness. Twenty contact hours per week. Prereq.: Acceptance into EUT program.

6 s.h.

2691. Electric Utility Lab 2. Provides the skill required to install three phase primary conductors, transformers, cable components; operate line fuses, reclosers, power banks, capacitors, and voltage regulators. Twenty contact hours per week. Prereq.: EUT 2690.

6 s.h.

2692. Electric Utility Lab 3. Provides the skill required to install primary URD equipment, and subtransmission structures. Live line maintenance techniques. Troubleshooting of URD primary and secondary circuits. Twenty contact hours per week. Prereq.: EUT 2691.

6 s.h.

2693. Electric Utility Lab 4. Provides the skill required to climb transmission structures and perform intermediate tasks. Substation equipment, minimum approach distances, and substation safety. Twenty contact hours per week. Prereq.: EUT 2692.

6 s.h.

2699. Electric Utility Co-op. Compensated and evaluated work experience with local utility company. Forty contact hours per week. Prereq.: EUT 2691, permission of program coordinator.

2 s.h.
EMERGENCY MEDICAL SERVICES — EMS
Department of Health Professions

1500. Emergency Medical Technician. Provides the basic knowledge and skills to be an Emergency Medical Technician. Meets all National Highway and Safety administration National Emergency Medical Services Education Standards and the State of Ohio Approved Emergency Medical Services Curriculum Standards for the Emergency Medical Technician. Must be taken concurrently with 1500L and 1500C. 4 s.h.

1500C. Emergency Medical Technician Clinical and Field Internship. Clinical and Field Internship experience necessary to acquire the skills required to be an Emergency Medical Technician. Meets all national and state curriculum standards for the EMT. Must be taken concurrently with EMS 1500 and EMS 1500L. Ten hours per week after week 12. 1 s.h.

1500L. Emergency Medical Technician—Laboratory. Laboratory experience necessary to acquire skills required to be an Emergency Medical Technician. Meets all National and State curriculum standards for the EMT. Six hour lab. Must be taken concurrently with EMS 1500 and EMS 1500C. 2 s.h.

1501. Introduction to Prehospital Medicine. Introduction to the roles, responsibilities, EMS systems, and medical and legal considerations of the EMS profession. Prereq.: Admission to the EMS program. 1 s.h.

1502. General Pathophysiology for the Paramedic. Study of general lifespan development of the body, how pathophysiologic changes affect it. Provides a foundational basis for viewing the body as a system, understanding its functions, anticipated reaction to injury, illness and intervention. Prereq.: Admission to EMS program or permission of instructor. 3 s.h.

1503. Patient Assessment and Airway Management. Intensive course designed to prepare the student in the methodology of advanced patient assessment, and the relevance of clinical signs and symptoms identified. Airway anatomy, equipment, procedures as they pertain to advanced airway management. Prereq.: Admission to EMS program or permission of instructor. 3 s.h.

1504. Principles of Trauma. Study of traumatic emergencies normally encountered prehospitally with emphasis on pathophysiology, etiology, symptomatology, and management. Prereq.: Admission to EMS program or permission of Program Director. 3 s.h.

1505. Emergency Medical Techniques 1 Lab. Includes simulated emergency traumatic situations and actual patient contact emphasizing physical assessment, patient interviewing, and management techniques. Meets 3 hours per week. Must be taken concurrently with EMS 1501, 1502, 1503, and 1504. (1 s.h.) Prereq.: Admission to the EMS program or special permission of program director. 1 s.h.

1506. Emergency Medical Services Clinical 1. Clinical experiences in the emergency department and in the operating room allowing the student to work on various skills necessary for the paramedic. Total of 90 clinical hours. Must be taken concurrently with EMS 1503 & 1505. Prereq.: Admission to EMS program or permission of instructor. 1 s.h.

1507. Cardiovascular Emergencies. Intense study of the etiology, pathophysiology, symptomatology, and management principles for cardiovascular emergencies. Includes electrophysiologic principles of EKG interpretation. Must be taken concurrently with EMS 1508. Prereq.: Admission to EMS program or permission of instructor. 3 s.h.

1508. Cardiovascular Techniques Lab. Performance of fundamental techniques employed in the management of cardiovascular emergencies. Three hours lab per week. Must be taken concurrently with EMS 1507. Prereq.: EMS 1502, 1503, and 1504. 1 s.h.

1512. Medical Conditions and Management Techniques. Study of pathophysiology, symptomatology, etiology, and management techniques of commonly encountered medical emergencies. Must be taken concurrently with EMS 1513. Prereq.: EMS 1502, 1503, 1504. 3 s.h.

1513. Emergency Medical Techniques 2 Lab. Simulated situations and actual patient contact emphasizing performance of emergency medical techniques utilized to manage common medical emergencies. Must be taken concurrently with EMS 1512. Prereq.: EMS 1505. 1 s.h.

1514. Emergency Medical Services Operations. Introduction to common rescue tools and techniques utilized in basic victim disentanglement and extrication. Prereq.: Admission to EMS program or permission of instructor. 1 s.h.

1515. Clinical Experience 2. Hospital clinical experience to include rotations through the following: Adult emergency department, critical and intensive care units. Total of 95 hours. Must be taken concurrently with EMS 1508 and 1513. Prereq.: EMS 1506. 1 s.h.

1516. Prehospital Field Experience 1. Field experience with an approved advanced life support unit under the direct supervision of a selected paramedic field preceptor. Total of 200 hours. To be taken concurrently with EMS 1507 and 1512. Prereq.: EMS 1504. 1 s.h.

2600. Emergency Medical Services Special Populations. Study of etiology, pathophysiology, symptomatology and management of special needs patients. Includes gynecology, obstetrics, neonatology, pediatrics, geriatrics, behavioral, abuse/assault, infectious and communicable diseases, and chronic care. Must be taken concurrently with EMS 2601. Prereq.: EMS 1507 and 1512 or permission of instructor. 3 s.h.
2601. Emergency Medical Techniques 3 Lab. Techniques necessary to effectively manage conditions in EMS 2600. Three hour lab. Must be taken concurrently with EMS 2600 and 2605. Prereq.: Admission to the EMS program or permission by program director. 1 s.h.

2603. Clinical Experience 3. Precepted hospital clinical in the adult emergency department with an assigned emergency room physician. Total of 70 hours. Must be taken concurrently with EMS 2605. Prereq.: EMS 1515. 1 s.h.

2604. Prehospital Field Experience 2. Performance of advanced life support procedures under the direct supervision of a selected paramedic field preceptor. Total of 150 hours. Prereq.: EMS 1516. 1 s.h.

2605. Pulmonary Emergencies. Intense study of the etiology, pathophysiology, symptomatology, and management principles of pulmonary emergencies. Must be taken concurrently with EMS 2601. Prereq.: EMS 1507 and 1512. 3 s.h.

2606. EMS Special Certifications. Provides the Paramedic with certifications beneficial to prehospital care. These certifications are nationally recognized and commonly sought after by paramedics, and desired by employers. Include PALS, PHTLS, NRP, and EMPACT. To be taken concurrently with EMS 2601. Prereq.: Admission to EMS program or special permission of instructor. 1 s.h.

2607. EMS Special Certifications Lab. Focus on skills and competencies required for PALS, PHTLS, NRP. To be taken concurrently with EMS 2606. Prereq.: Admission to the EMS program or special permission by the program director. 1 s.h.

2608. Clinical Experience IV. Hospital clinical experience to include rotations through the following departments: triage, pediatric emergency department, obstetric/gynecological, neonatal, well-baby clinic, psychiatric. Total of 95 hours. Prereq.: EMS 2600. 2 s.h.

2609. EMS Prehospital Field Internship. Capstone Precepted Field Internship with an emphasis on Team Leadership Skills. A minimum of 30 Team Leads and at least 200 hours with assigned field preceptor are required. Prereq.: EMS 2604. 2 s.h.

2613. Critical Care Paramedic. In-depth study of the underlying abnormalities and physiologic disturbances resulting from traumatic injuries and medical illnesses as it relates to emergency medical care. Includes analysis of case studies. Must be taken concurrently with EMS 2614. Prereq.: EMS 2608, 2609, or permission of instructor. 3 s.h.

2614. Critical Care Paramedic Laboratory. Designed to prepare the student as a competent care provider in the transport of critical patients by ground or air unit. Topics include 12-leads, IABPs, RSI, lab data, EtCO2 monitoring, and advance pharmacology. Must be taken concurrently with EMS 2613. Prereq.: NREMT and permission of instructor. 1 s.h.

2631. Advanced Clinical and Field Internship Experience. Field internship in a variety of advanced life-support units to expose the student to hospital-based, public third service, private, and fire service EMS. Includes a field component involving wilderness rescue and emergency medicine. Must be taken concurrently with EMS 2613. 2 s.h.

EMERGENCY MEDICAL TECHNOLOGY—EMTC

Department of Health Professions

2610. Pathophysiology for Critical Care Paramedicine. In-depth study of the underlying abnormalities and physiologic disturbances resulting from traumatic injuries and medical illnesses as it relates to emergency medical care. Includes analysis of case studies. Must be taken concurrently with EMTC 2611. Prereq.: NREMT-P and permission of instructor. 2 s.h.

2611. Assessment and Management Techniques for Critical Care Paramedicine. Designed to prepare the student as a competent care provider in the transport of critical patients by ground or air unit. Topics include 12-leads, IABPs, RSI, lab data, EtCO2 monitoring, and advanced pharmacology. Must be taken concurrently with EMTC 2610. Prereq.: NREMT-P and permission of instructor. 4 s.h.

2620. Research Methodology for EMS. Introduction to research problems and hypotheses, research design, sampling designs, data collection methods, and data analysis. Critiques of emergency medicine research and development of a research problem and design. Prereq.: EMTC 2610 and 2611. 2 s.h.

2630. Multiskilled EMS Practitioner. Principles, concepts, clinical knowledge, and skills necessary to prepare the multiskilled EMS practitioner. Prereq.: EMTC 2610 and 2611. 2 s.h.

2631. Advanced Clinical and Field Internship Experience. Field internship in a variety of advanced life-support units to expose the student to hospital-based, public third service, private, and fire service EMS. Includes a field component involving wilderness rescue and emergency medicine. Must be taken concurrently with EMS 2613. 2 s.h.

ENGINEERING—ENGR

College of Engineering and Engineering Technology

1500. Engineering Orientation. Introduction to engineering careers and the different engineering disciplines. Academic success strategies and university resources to support student success. Prereq.: Eligibility to take MATH 1513 or higher level math course. 1 s.h.

1550. Engineering Concepts. Introduction to the basic skills needed in engineering including engineering computing and an introduction to the engi-
neering design process utilizing science, technology, engineering, and mathematics (STEM) fundamentals. One hour lecture and three hours laboratory per week. Prereq.: Eligibility to take MATH 1513 or higher level math course. 2 s.h.

1555. Engineering Drawing & Visualization. Development of visualization and sketching skills and drafting convention including standard views and dimensioning. Three hours laboratory per week. To be taken prior to or concurrently with ENGR 1560 for those lacking high school drawing proficiency. Grading is A, B, C, NC. Does not count toward a degree. 1 s.h.

1560. Engineering Computing. Computing skills required in engineering. Structured programming. Engineering problems and open ended design projects are solved in teams with results professionally presented. 1.5 hours lecture, 1.5 hours lab. Prereq.: ENGR 1550, MATH 1571 or concurrent. 2 s.h.

3719. Environmental Impact of Abandoned Mines. Mining methods, types of mines, information retrieval, mine stabilization, and the effects of abandoned mines on environmental and human activities, especially deep coal mines in the Mahoning Valley and adjacent areas. Two hours lecture and three hours of lab per week. Prereq.: GEOL 1505 or equivalent or permission of instructor. 3 s.h.

3798. Co-op Assignment 1. Cooperative educational experiences while enrolled in the College. Students may be assigned to public, corporate or governmental organizations during alternate or parallel work periods for practical learning and training in the major field of study. Consult department for rules and regulations. Prereq.: Junior standing, Engineering major, selection of employer, and approval of student’s program. 1 s.h.

4898. Co-op Assignment 2. Cooperative educational experiences while enrolled in the College. Students may be assigned to public, corporate or governmental organizations during alternate or parallel work periods for practical learning and training in the major field of study. Consult department for rules and regulations. Prereq.: Senior standing, Engineering major, selection of employer, and approval of student’s program. May be repeated. 1 s.h.

ENGINEERING TECHNOLOGY—ENTC

1500. Technical Skills Development. A course designed to develop the technical, analytical and problem solving skills of students planning to enter an engineering or technical course of study. Three (3) hours of lecture and three (3) hours lab per week. Grading is A, B, C, NC. Prereq. or concurrent: MATH 1501. 4 s.h.

1505. Engineering Technology Concepts. The role of the technician, technologist, engineer and scientist in the technology team; a study of basic mathematical, scientific, and communicative techniques as applied to the work of engineering technologists; ethical, global, and societal issues facing the engineering technology professional. Three hours lecture, three hours lab per week. Grading is A, B, C, NC. Prereq.: MATH 1504 or at least Level 40 on the Mathematics Placement Test or grade of B in both ENTC 1500 and MATH 1501. 4 s.h.

2615. Design Project. The student undertakes a project designed to utilize principle methods studied in previous courses. The subject of the project is determined jointly by the student and instructor and developed formally by the student. The course is normally taken during the final stages of the student’s program. Prereq.: Consent of instructor. 3 s.h.

3799. Professional Practice in Engineering Technology. This course provides students with cooperative education experiences in various engineering technology disciplines. To receive credit for the course, the student is expected to work at the assignment a minimum of 400 hours, submit a report of activities, and obtain approval of the department Professional Practice Committee. Course may be repeated up to a maximum of 3 s.h. toward the BSAS. Students are considered full-time even though only 1 s.h. is given for each course. Grading: PR, CR, NC. Prereq.: Consent of department chairperson. 1 s.h.

4895. Independent Engineering Technology Project. Individual study under direction of a faculty member. Written and oral report required. May be repeated for a maximum of 4 s.h. Prereq.: Junior standing, consent of instructor, and prior approval of the project by the IETP committee of engineering technology faculty. 1-4 s.h.

ENGLISH—ENGL

Department of English

English-as-a-Second-Language

1509. Academic English for Non-native Speakers. Development of writing and reading comprehension skills in English through outlining, summary, and response. Emphasis on vocabulary, main idea, detail, and conclusion in assigned reading and writing. Entrance on basis of English-as-a-Second-Language placement test. Must be taken until a grade of C or better is achieved. May be repeated once with a different topic. Does not count toward a degree. Grading is ABC/NC. 3 s.h.

1512. English Conversation for Non-native Speakers. Development of conversation skills. Focus on oral-aural fluency, idiomaticity, extracting and organizing information, and situation-oriented communication strategies. Emphasis on meaningful topics relevant to the students’ pursuit of their academic goals. Entrance on basis of English-as-a-Second-Language placement test. Does not count toward a degree. Grading is ABC/NC. 1 s.h.
Lower-Division Courses

1539. Fundamentals of College Writing. Intensive individualized instruction in written communication and college-level reading practices in a computer-assisted environment. Open to students based on their Composition and Reading Placement Test results; does not count toward the graduation requirement in composition. Grading for English 1539 is ABC/NC. **Does not count toward the graduation requirement in composition and does not count toward a degree.** 4 s.h.

1540. Introduction to College Writing. Practice in adapting college-level writing conventions, organizational strategies, and revision and editing techniques to a variety of writing tasks. Focus on responding to written texts in ways that demonstrate expressive, analytical, and evaluative thinking. Students divide their time between regular classrooms and computer classrooms, where they have the opportunity to acquire and develop basic word-processing and electronic communication skills. Does not count toward the graduation requirement in composition. Open to students on the basis of Composition and Reading Test results. Grading is ABC/NC. **Does not count toward the graduation requirement in composition and does not count toward a degree.** 3 s.h.

1550. Writing 1. Strategies for writing as a means of critical inquiry, with focus on writing processes and on the roles of writer, audience, and purpose as they affect writing. Students divide their time between regular classrooms and computer classrooms, where they have the opportunity to acquire and develop basic word-processing and electronic communication skills. Open to students on the basis of Composition and Reading Test results or successful completion of ENGL 1539 or ENGL 1540. Grading is ABC/NC. 3 s.h.

1550H. Honors Writing 1. Strategies for writing as a means of critical inquiry, with focus on writing processes and on the roles of writer, audience, and purpose as they affect writing. Students divide their time between regular classrooms and computer classrooms, where they have the opportunity to acquire and develop basic word-processing and electronic communication skills. Prereq.: Completion of ENGL 1550 with grade C or better. 3 s.h.

1551H. Honors Writing 2. Research on a topic of some depth, conducted independently and focused on a single project that results in a substantial investigative paper. Students divide their time between regular classrooms and computer classrooms, where they have the opportunity to perform research on the World Wide Web. Prereq.: ENGL 1550 or Composition and Reading Test results. Grading is ABC/NC. 3 s.h.

1560. Language, Ethnicity, and Gender. Basic understanding of relations between ethnicity, gender, and speech style, distinguishing linguistics, sociolinguistics, and women's issues. Examination of topics such as language, socialization, oral vs written language, language and class membership and intra-ethnicity variation in Urban Vernacular English. Listed also as FNGL 1560. 3 s.h.

1570. Introduction to Literature. Primarily British or American works in a variety of genres, chosen to illuminate a central topic, are read and discussed critically to promote understanding and enjoyment of reading. Focused on one of four topics: Nature and the Environment, The Good Life, Science and Technology, or Social Justice. 3 s.h.

2601. Intermediate Writing for Teachers. A course to increase proficiency in critical reading and writing. Designed specifically for students entering the College of Education; reading, discussions and writing assignments emphasize current issues in Education. Assignments allow students to practice, collaboratively and individually, the kinds of writing used in teaching. Does not count toward the English major. Prereq.: Completion of ENGL 1551 with grade C or better. 3 s.h.
2617. Women in Literature. Examination of works by and about women, drawn primarily from American and English writers. 3 s.h.

2618. American Literature and Diversity. Writers and works in relation to the diversity of American culture, politics, lifestyles, and social movements. 3 s.h.

2620. African Literature. Survey of pre-colonial, colonial, post-colonial, and modern African literature, with emphasis on experiences, styles, and themes of African writers. The effects of African literature on cultural discourse throughout the world. Prereq.: Completion of ENGL 1551 with grade C or better. 3 s.h.

2622. News Reporting 1. Study of news reporting and writing, with emphasis on journalistic and AP style, development of news judgment, interviewing, and storytelling through traditional and new media. Coursework may require travel for reporting projects. Crosslisted with JOUR 2622. Prereq.: Completion of ENGL 1551 with grade C or better. 3 s.h.

2623. Literature, Work, and Class. Analysis of literary representations of work and class, with special attention to working class authors, subjects, and styles. Focuses on social and historical influences, as well as the impact of social changes and new knowledge upon working-class literature. 3 s.h.

2624. Imaging and Design of News. Focus on the use of photographs, graphics, tables, charts, and other visual products to tell news stories. Includes study of basic visual literacy, design principles and technology. Coursework may require travel for reporting projects. Crosslisted as JOUR 2624. 3 s.h.

2626. American Journalism. The development of journalism in America, the role of the news media and its effects on American society and special consideration of journalism as a tool of diversity and as a literary tradition. Crosslisted with JOUR 2626. Prereq.: Completion of ENGL 1550 with a C or better. 3 s.h.

2631. Mythology in Literature. Introductory study of myths, chiefly classical, with some attention to their origins and cultural significance, and of literary works, both classical and modern, in which myths are used. 3 s.h.

2632. Introduction to Photojournalism. The basics of photojournalism, including composition, lighting, editing, news judgment, history and ethics. Listed also as JOUR 2632. 3 s.h.

2646. Introduction to Fiction Writing. Examination and application of narrative techniques and conventions designed to introduce the basic elements of writing fiction. Prereq.: Completion of ENGL 1551 with grade C or better. 3 s.h.

2647. Introduction to Poetry Writing. Examination and application of poetic techniques and conventions designed to introduce the basic elements of writing poetry. Prereq.: Completion of ENGL 1551 with grade C or better. 3 s.h.

2651. Introduction to Language. Introduction to language principally for prospective teachers, with emphasis on the nature and function of language and its history, variations, and acquisition. Prereq.: Completion of ENGL 1551 with grade C or better. 3 s.h.

2665. Introduction to Film Study. Introduction to film as a medium of artistic expression. Technical aspects of film and the relationship of film to other media and to society. 3 s.h.
3713. American Literature 2. 1865 to present. Examine works from a range of American authors and genres—drama, fiction, poetry, short stories, and non-fiction essays—within their cultural, historical, and literary contexts. Prereq.: ENGL 3700 or concurrent with ENGL 3700. 3 s.h.

3716. Introduction to Magazine Journalism. Focus on forces driving the magazine industry. Study of business models, freelancing, and writing for specialized audiences; includes basic feature writing and imaging techniques. Listed also as JOUR 3716. Prereq.: JOUR/ENGL 2622 or JOUR/ENGL 2624. 3 s.h.

3717. Editorial and Opinion Writing. Techniques, approaches and practice in writing reviews, editorials, and opinion columns. Exercises in criticisms of the arts, editorial research, and editorial style. Listed also as JOUR 3717. Prereq.: JOUR 2622 or ENGL 2622. 3 s.h.

3720L. Magazine Journalism Workshop. Working for campus publications to apply news gathering and reporting skills. Emphasis on organizational culture of magazines. Coursework may require travel for reporting projects. May be repeated for up to 3 s.h. Listed also as JOUR 3720L. Prereq.: JOUR 3716 or ENGL 3716 or consent of instructor. 1 s.h.

3721L. Journalism Workshop. Application of the principles of news reporting skills in student media. May be repeated once. Listed also as JOUR 3721L. Prereq.: ENGL 2622 or JOUR 2622. 3 s.h.

3722L. Radio News Workshop. Production of news and feature stories to be aired on radio; development of interview and media production skills for news. Coursework may require travel for reporting projects. Listed also as JOUR 3722L. Prereq.: JOUR 2622 or ENGL 2622. 3 s.h.

3723. Advanced Journalism Editing and Design. Application of visual literacy and editing skills. Emphasis on editorial decision making, journalistic style editing, quantitative reasoning, fact-checking, and practice of traditional and multimedia design techniques. Listed also as JOUR 3723. Prereqs.: JOUR 2622 or ENGL 2622; and JOUR 2624 or ENGL 2624. 3 s.h.

3732. Images of Women. An examination through language, literature, folklore, film and myth of the ways in which the meanings and representations of women have been constructed and implemented in Western culture. Introduces key concepts and theoretical frameworks drawn from current scholarship about women. Prereq.: Completion of ENGL 1551 with grade C or better. 3 s.h.

3738. Selected Topics in World Literature. A comparative examination of a genre, historical period, or literary movement. May be repeated once with different topic. Prereq.: Completion of ENGL 1551 with grade C or better. 3 s.h.

3739. Writing for Middle School Teachers. Designed to strengthen proficiency in writing, with emphasis on issues related to the teaching of English in middle school. Limited to students seeking middle childhood licensure with a concentration in Language Arts. Prereq.: Admission to upper division status in the Beeghly College of Education. 3 s.h.

3740. Advanced Writing. Designed to strengthen proficiency in essay writing, with emphasis on the development of ideas, analysis of style, clarity of thought and expression, editing, and proofreading. Prereq.: Completion of ENGL 1551 with grade C or better. 3 s.h.

3741. Advanced Writing for Teachers. Designed to strengthen proficiency in writing, with emphasis on issues relating to the teaching of English. Limited to students seeking English or Integrated Language Arts certificates. Prereq.: Admission to upper-division status in the College of Education. 3 s.h.

3743. Professional and Technical Communication. Intermediate composition course to introduce essential elements of professional and technical communication: audience and task analysis; techniques of gathering, interpreting, and presenting information; appropriate conventions, styles, and formats; elements of collaborative, global, and electronic communication; and application of computer technology to document design and production. Prereq.: Completion of ENGL 1551 with grade C or better. 3 s.h.

3744. Proposal and Report Writing. Application of rhetorical strategies and principles of design to the preparation of texts in two specific professional communication genres: the proposal and the report. Prereq.: ENGL 3743. 3 s.h.

3745. Writing for Online Environments. Practice in writing electronic documents, including web pages, interactive forms, and online portfolios. Prereq.: ENGL 2622 or 3743. 3 s.h.

3746. Fiction Writing Workshop. Supervised workshop in which students develop their individual narrative skills, styles, and talents. May be repeated once. Prereq.: ENGL 2646. 3 s.h.

3747. Poetry Writing Workshop. Supervised workshop in which students develop their individual poetic skills, styles, and talents. May be repeated once. Prereq.: ENGL 2647. 3 s.h.

3748. Screenwriting. Examination and application of storytelling concepts, theme and character development, structure, page design, and formatting. Students will develop their own story, treatment, and screenplay. May be repeated once. Prereq.: Completion of ENGL 1551 with grade C or better. 3 s.h.

ENGL 3749. Writing the Youth Novel. Examination and application of elements associated with novels for young readers. Students will develop their own narrative skills, styles, and talents in a supervised workshop. May be repeated once. Prereq.: ENGL 2646. 3 s.h.

3750. Language and Culture. Language structure as an instrument in human behavior and social institutions with emphasis on cross-cultural and intercultural communication. Prereq.: Completion of ENGL 1551 with grade C or better. 3 s.h.
3751. Readings in Professional Writing and Editing. Study of nonfiction works relevant to the theory and practice of professional writers and editors. Prereq.: ENGL 3743 with C or better. 3 s.h.

3755. Principles of Linguistic Study. Survey of elements of linguistic structure, methods of analysis and description, theoretical models, and the role of language in human affairs. Prereq.: Completion of ENGL 1551 with grade C or better. 3 s.h.

3757. Development of the English Language. Sounds, vocabulary, grammar, and usage, from old to contemporary English. Prereq.: Completion of ENGL 1551 with grade C or better. 3 s.h.

3758. Projects in Working Class Reporting. Collaboration with the Center for Working Class Studies. Emphasis on using journalistic techniques to cover issues important to working-class people. Coursework may require travel for projects. Listed also as JOUR 3758. Prereq.: ENGL 1551. 3 s.h.

3759. Sports Journalism. Techniques of sport reporting with emphasis on game reporting, sports features, columns, photography and new media storytelling. Coursework may require travel for reporting projects. Listed also as JOUR 3759. Prereqs.: JOUR 2622 or ENGL 2622 or consent of instructor. 3 s.h.

3760. News Reporting II. Focus is on advanced news reporting and storytelling skills. Includes in-depth coverage of feature writing, investigative, and enterprise journalism. Coursework may require travel for reporting projects. Listed also as JOUR 3760. Prereq.: JOUR 2622 or ENGL 2622. 3 s.h.

3761. New Media Journalism. Focus on new trends and techniques of electronic news organizations. Emphasis on storytelling using multimedia and non-linear methods of delivery. Coursework may require travel for reporting projects. Listed also as JOUR 3761. Prereqs.: JOUR 2622 or ENGL 2622; and JOUR 2624 or ENGL 2624. 3 s.h.

3762. Political Reporting. Development of skills necessary to report, write, record, and publish stories about the American political system. Coursework may require travel for reporting projects. Listed also as JOUR 3762. Prereqs.: JOUR 2622 or ENLG 2622. 3 s.h.

3765. Film Genres. Study of a particular type of film, such as comedy, western, documentary, or science fiction. May be repeated once with a different topic. Prereq.: ENGL 3710, 3711, 3712, 3713 or 2665. 3 s.h.

3770. American Literature in Historical Perspective. Poetry, prose, drama, and other forms of literary expression examined within the context of a specific aspect of American social, intellectual, and cultural history. May be repeated once with different topic. Cross-listed with AMER 3770. Prereq.: ENGL 3712 or 3713. 3 s.h.

3780. American Genres. Study of a particular type of literature (e.g., short story, autobiography, or film) as it developed in the United States. May be repeated once with a different topic. Prereq.: ENGL 3712 or 3713. 3 s.h.

3790. Selected Topics in Multicultural Studies. Concentrated study of discourse in English, primarily literature, from cultures other than the dominant or majority culture of a given society. Designed to develop awareness and sensitivity to issues of difference, power, and cross-cultural perspectives, and to address and facilitate students’ multicultural literacy. May be repeated once with different topic. Prereq.: Completion of ENGL 1551 with grade C or better. 3 s.h.

4821. Advising Student Media. Study of the role and responsibilities of the media advisor in high school and college. Topics include the unique legal and ethical concerns of student media, the training of student staff, the relationship of the student press to the academic administration, and publication-management concerns. Listed also as JOUR 4821. Prereq.: JOUR 2622 or ENGL 2622 or 3741. 3 s.h.

4822. Magazine Writing and Reporting. Advanced study of writing and reporting techniques for magazine journalists. Emphasis on learning freelance skills, getting work published, and marketing yourself as a magazine writer. Coursework may require travel for reporting projects. Listed also as JOUR 4822. Prereq.: JOUR 3716 or ENGL 3716. 3 s.h.

4823. In-Depth Reporting. Emphasis on extended research, extensive interviewing and investigative reporting techniques. Coursework may require travel for reporting projects. Listed also as JOUR 4823. Prereqs.: JOUR 3721L or ENGL 3721L. 3 s.h.

4824. Press Law and Ethics. Study of First Amendment rights of the press; examination of laws concerning libel, privacy, copyright, obscenity, censorship, open meetings and open records in Ohio; discussion of press responsibilities. Listed also as JOUR 4824. Prereq.: JOUR 2622 or ENGL 2622 or JOUR 3721L. 3 s.h.

4825. Selected Topics in Journalism. Study of approaches to and special aspects of journalism not covered in depth in other journalism courses. May be repeated once with change of topic. Listed also as JOUR 4825. Prereq.: JOUR 2622 or ENGL 2622 or JOUR 3721L. 3 s.h.

4830. Major Figures in British Literature. Concentrated study of the works of a British writer who has contributed significantly to the literary tradition. May be repeated once with different topic. Prereq.: ENGL 3710 or 3711. 3 s.h.

4831. British Genres, Circles, and Movements. Study of a literary genre, a group of writers who shared a cultural context or who influenced one another’s work, or a trend or development in literature. May be repeated once with different topic. Prereq.: ENGL 3710 or 3711. 3 s.h.

4843. Advanced Professional and Technical Communication. Advanced instruction in professional writing and editing, further expanding skills developed in
Professional and Technical Communication (English 3743) through the creation and design of documents such as newsletters, instruction manuals, product documentation, and books. Prereq.: ENGL 3743.

4849. Professional and Technical Editing. Study of the skills needed to make appropriate decisions about the content, grammar, mechanics, style, organization, and format of scholarly, trade, journalistic, and other professional publications, including newsletters and electronic publications. Topics include stages in the publishing process, proofreading, hard-copy versus online editing, mechanical and substantive editing, and the use of house and press styles. Prereq.: Completion of ENGL 1551 with grade C or better. 3 s.h.

4850. Sociolinguistics. An investigation of the relationship between language and society. Includes discussion of dialects and standard language, language planning, linguistic identity, multi- and bilingualism, class, gender, ethnicity, and social interaction. Listed also as FNLG 4850. Prereq.: Completion of ENGL 1551 with grade C or better. 3 s.h.

4851. Language Acquisition. A study of research on the learning of first and second languages. Topics include developmental sequences, learner variables, critical periods and conditions for learning, and the roles of input and interaction. The course is designed for those planning to teach languages. Listed also as FNLG 4851. Prereq.: Completion of ENGL 1551 with grade C or better. 3 s.h.

4852. Linguistics of Literacy. Examination of the linguistic, social, and cultural dimensions of reading and writing and their impact on literacy acquisition and performance in language. Prereq.: ENGL 2651 and junior standing. 3 s.h.

4855. Advanced Linguistics. In-depth study of selected issues in contemporary linguistic theory. Especially recommended for students pursuing advanced studies or a minor in linguistics or planning graduate studies. Prereq.: ENGL 2651 or 3755. 3 s.h.

4856. TESOL Methods. Introduction to teaching English as a Second Language (ESL), including reading, writing, listening, and speaking. Focus on using communicative methods with non-native speakers. Prereq.: Completion of ENGL 1551 with grade C or better. 3 s.h.

4857. TESOL Practicum. Supervised teaching in English as a Second Language (ESL) program. Additionally, weekly seminar attendance required. Prereq.: Permission of chair. 3 s.h.

4858. English Grammar. Descriptions and analysis of English language structure. Prereq.: Completion of ENGL 1551 with grade C or better. 3 s.h.

4859. Selected Topics in Discourse. Study in depth of a specific topic such as stylistics, semantics, or rhetoric. May be repeated once with different topic. Prereq.: ENGL 3740, 3741, or 3755 as appropriate to topic. 3 s.h.

4860. The Medieval World. British literature from the Anglo-Saxon period to the age of Chaucer, presented in the context of the period’s history and culture. Prereq.: ENGL 3710. 3 s.h.

4862. Themes in American Literature. In-depth examination of a significant theme in American literature and culture through analysis of prose, poetry, drama, and/or film from different historical periods. Prereq.: ENGL 3712 or 3713. 3 s.h.

4864. American Literary Conversations. Study of two or more American writers whose work is related. Focuses on writers who influenced each other, who wrote during the same period, or who explored similar themes or used similar literary styles. Prereq.: ENGL 3712 or 3713. 3 s.h.

4865. Selected Topics in Film. An important aspect of or approach to film not covered in other courses. May be repeated once with different topic. Prereq.: ENGL 3710, 3711, 3712, 3713, or 2665. 3 s.h.

4870. Web Communications Capstone. A project course requiring the integration of website development tools and techniques, database development, effective writing for the web, and audience analysis, to produce a website of substantial depth and breadth. Oral and written presentations of final project. Listed also as CSIS 4870. Prereq.: Senior standing and permission of instructor. 3 s.h.

4871. The Black Experience in American Literature. Study of African-American literature that explores the intersections between race, gender, and class in America, with emphasis on black minority culture, experience, and perspective. Prereq.: ENGL 3712 or ENGL 3713. 3 s.h.

4881. Shakespeare and His World. Study of Shakespeare’s works along with an exploration of the artistic and social forces that shaped his writing. Prereq.: ENGL 3710. 3 s.h.

4882. The English Renaissance. Study of British literature from 1500 to 1660 and the social, cultural, and artistic forces that influenced it. Prereq.: ENGL 3710. 3 s.h.

4886. Restoration and Eighteenth Century British Literature. Study of British literature of the period and the social, cultural, and artistic forces that influenced it. Prereq.: ENGL 3710. 3 s.h.

4887. The Romantic Period. Study of British literature from 1776 to 1832 and the social, cultural, and artistic forces that influenced it. Prereq.: ENGL 3711. 3 s.h.

4890. Senior Seminar. Study of literature, linguistics, or criticism and theory requiring a long, critical, research-based paper. Prereq.: ENGL 3710, 3711, 3712 or 3713 and six additional courses in the major. 3 s.h.

4891. Individual Study. Exploration of a topic in English studies. An academic project or written report produced in consultation with an English instructor is required. May be repeated with different topics for a maximum of 3 s.h. Prereq.: Senior standing in English and department permit. 1-3 s.h.
4892. Nineteenth Century British Literature Studies. Nineteenth-century writers, works, and themes read in the context of the period's culture and history. Prereq.: ENGL 3711. 3 s.h.

4893. Journalism Senior Project. Capstone experience for journalism major. Individualized enterprise/investigative reporting projects with demonstration of advanced news gathering techniques. Coursework may require travel for reporting projects. Listed also as JOUR 4893. Prereqs.: Senior standing; and JOUR 3760 or ENGL 3760; and JOUR 4824 or ENGL 4824. 3 s.h.

4894. Journalism Internship. Supervised journalism work experience. Students complete 60 hours for each hour registered. Internship placement is selective. Coursework may require travel for reporting projects. May be repeated with the approval of the department chairperson for up to 6 hours. Listed also as JOUR 4894. Prereqs.: JOUR 3760 or ENGL 3760; and JOUR 3721L or ENGL 3721L; senior standing, 2.5 GPA and permit. 3 s.h.

4895. Early Twentieth Century British Studies. Literature read in the context of the period's literary movements, culture, and history. Prereq.: ENGL 3711. 3 s.h.

4896. British Literature from World War II to the Present. Literature read in the context of the period's literary movements, culture, and history. Prereq.: ENGL 3711. 3 s.h.

4897. English Internship. Supervised experience directed by an English faculty member and a designated representative of a participating organization. Enrollment is contingent upon the availability of internships. Students are selected on the basis of qualifications including GPA, courses taken, recommendations and an interview. Prereq.: 12 hours of English, junior or senior standing, and a department permit. 1-3 s.h.

4898. Professional Writing Internship. Supervised work-and-learning experiences in professional communication under the direction of a faculty member and an employee of a participating firm. Ten to 20 hours of student time each week. Enrollment is contingent upon the availability of internships. Students are selected on the basis of relevant qualifications, including GPA, courses taken, recommendations, and an interview. May be repeated with the approval of the department chairperson. Prereq.: 12 s.h. in Journalism and/or Professional Writing and Editing. 1-3 s.h.

4899. Professional Writing Senior Project. Capstone experience for the Professional Writing and Editing major. Individualized research, analysis, development, and oral presentation of a project that incorporates audience-appropriate writing, design, and/or editing in a usable high-quality product. Taken during the student's final undergraduate year. Prereq.: Senior standing and permission of a Professional Writing and Editing advisor. 3 s.h.

ENVIRONMENTAL STUDIES — ENST

Interdisciplinary

Lower-Division Courses

1500. Introduction to Environmental Science. Basic environmental science literacy for informed citizens as inhabitants and stewards of Earth. The use of science and the scientific method to understand, assess, and manage the environment to improve human health, conserve energy and resources, preserve nature, and sustain quality of life. 3 s.h.

1500L. Introduction to Environmental Science Lab. The use of the scientific method to explore various fields in environmental science including water quality, risk assessment, biodiversity and mineral uses. This field and laboratory work supplements ENST 1500. Prereq. or concurrent: ENST 1500. 1 s.h.

2600. Foundations of Environmental Studies. A survey of the principles and issues of environmental studies including basic ecology, biodiversity, hazardous and solid waste management, sustainable development, energy production and conservation, environmental ethics, air, water and soil pollution. 3 s.h.

2600L. Foundations of Environmental Studies Laboratory. Laboratory and field investigations identified in ENST 2600. Emphasis on the scientific method, problem solving and critical thinking skills in environmental assessment techniques, active exploration of environmental concerns and their solutions. Three hours per week. Three to five Saturday field trips required in lieu of some laboratory time. 1 s.h.

2650. Independent Study. The introductory study of problems or issues in Environmental Studies or a review of the literature relating to a specific environmental topic. May be repeated for different topics for a total of 6 s.h. Prereq.: Permission of the director. 1-3 s.h.

Upper-Division Courses

3700. Environmental Chemistry. Study of the fundamental chemical principles underlying common environmental problems, including water pollution, toxicology, chemical biotransformation and degradation. Chemistry of pesticides, petroleum hydrocarbons and heavy metals are also investigated. Prereq.: ENST 2600 and CHEM 1515; Concurrent with ENST 3700L. Environmental Chemistry Lab. 4 s.h.

3700L. Environmental Chemistry Lab. Students will investigate various analytical and instrumental techniques used in the examination of chemicals in environmental media (soil, water, biota). Includes proper handling, storage and precautions in the laboratory and the environment. Concurrent with ENST 3700 Environmental Chemistry. 0 s.h.

3730. Air Quality. Sources, dispersions, consequences and abatement of air pollutants emanating
from industry and transportation. Topics also include the history, legislation, standards and economics of air pollution. Prereq.: CHEM 1515.

3750. Seminar. Guest lecturers will examine current topics in environmental issues, including current research, application of technology, management strategies to reduce environmental impact, environmental ethics, policy, etc. Prereq.: ENST 2600. 1 s.h.

3751. Water Quality Analysis. Introduction to physical, chemical, and biological measurements of water quality. Sample collection and laboratory analysis of natural waters, drinking water, and wastewater. Interpretation of environmental data. Two hours lecture and three hours laboratory per week. Identical to CEEN 3751. Prereq.: CEEN 3736 OR ENST 2600; CHEM 1515. 3 s.h.

3751L. Water Quality Analysis Lab. Laboratory experience in the analysis of natural waters, drinking water and wastewater. Emphasizes procedures for the collection and interpretation of data on current environmental problems. Three hours laboratory per week. Must be taken concurrently with ENST 3751. Identical to CEEN 3751L. Prereq.: Must be taken concurrently with ENST 3751 (Note: already in course description.) 0 s.h.

3780. Environmental Research. A research project that involves problem identification, hypothesis formation, experimentation, data analysis and interpretation. The research may be either basic or applied. Prereq.: Junior standing in ENST and permission of the director. 1-4 s.h.

3781. Environmental Sampling Methods. Sampling design, including number and types of samples and procedures for taking representative samples of air, water, soil and contents of storage and shipping containers. Two hours of lecture, three hours of laboratory. Prereq.: ENST 2600 and STAT 2601 or equivalent. 3 s.h.

3790. Internship/Cooperative. Students work under the direction of a faculty supervisor in a governmental agency or in the private sector as environmental specialists. An activities log and summary report are required. The course may be repeated. Prereq.: Junior standing in ENST and permission of the director. 1-4 s.h.

4840. Topics. Independent study of special topics not included in available courses. Students do extensive reading in, and write a formal report on, a specific area of Environmental Studies. Prereq.: Junior standing or consent of instructor. 1-3 s.h.

5800. Environmental Impact Assessment. Analysis of the potential environmental effects resulting from the construction of buildings, highways, parking lots, mines, reservoirs, and waste disposal facilities. Standard procedures are taught for evaluating and reporting the environmental impact of these activities. Prereq.: ENST 5860 and senior standing. 3 s.h.

5810. Environmental Safety. The proper use of environmental monitoring instruments and personal protective gear. Participation in a series of realistic, hands-on simulation exercises that address a variety of waste clean-up situations. Class meets three hours per week. Prereq.: ENST 2600 or equivalent experience. 1 s.h.

5820. Sustainability, Climate Change, and Society. This course explores environmental, economic, and social aspects of sustainable development, with an emphasis on economy and society. Through topics such as water, food, and climate change, we examine the role of humans and institutions in sustainable development and possibilities for reconfiguring relationships between our institutions and the natural world. Prereq.: junior, senior or graduate level standing. 3 s.h.

5830. Risk Assessment. An in-depth study of human health and ecological risk assessment. Includes hazard identification, dose-response evaluation, exposure assessment, and the characterization, limitations, management, communication, and perceptions of risk. Standard procedures to conduct a site-specific baseline risk assessment, to calculate risk-based concentrations that may be used to develop preliminary remediation goals, and to evaluate human health risks during the implementation of remedial alternatives. Prereq.: ENST 3700, ENST 5860, and senior or graduate standing. 3 s.h.

5860. Environmental Regulations. An examination of federal and state regulations that relate to cleanup of abandoned waste sites, management of waste from current waste generators, development of new hazardous products and chemicals, safety and health issues, and control of pollution into air and water. Prereq.: ENST 2600 or equivalent. 3 s.h.

5888. Environmental Biotechnology. Lectures will cover the use of microbes for solving environmental problems. In the laboratory, teams of students will design and implement experiments in bioremediation. This course is intended for students in biology, environmental studies, chemistry, and engineering. Two hours lecture and four hours lab. Prereq.: CHEM 3719 or CEEN 3736. 4 s.h.

**ENTREPRENEURSHIP—ENT**

**College of Business Administration**

3700. Entrepreneurship—New Venture Creation. An examination of the entrepreneurial process from opportunity recognition and assessment through the launch of the new firm. Emphasis placed on exploring creativity and innovation. Students will develop a feasible business idea, present the idea as an elevator pitch, and write a business proposal. Prereq.: BUS 1500; sophomore standing and 2.5 GPA. 3 s.h.

on raising capital, understanding financial statements, implementing small business accounting software, and forecasting revenue, expenses, and cash flow. Prereq.: ENT 3700 or FIN 3720; 2.5 GPA.

4800. *Entrepreneurship-Business Plan Development.* An in-depth study of the aspects of a successful business plan. An individual business plan will be developed by students based on the analysis of a viable business concept. Prereq.: ENT 3700 and ENT 3750; or MGT 3725, MKTG 3703 and FIN 3720; 2.5 GPA.

4850. *Entrepreneurship Internship.* The student is given the opportunity to relate theory to practice in an on-site field experience in a new venture or local small business. Student works 12-15 hours per week under direct supervision of company management and direct guidance of faculty advisor. A weekly journal and final report are required. Prereq.: ENT 3700, 3750, and 4800; 2.5 GPA and approval of director.

4851. *Field Studies in Entrepreneurship.* Students work with actual problems and opportunities faced by small businesses under faculty supervision. Problems/opportunities are defined, analyzed and researched. Recommendations are developed and presented to business owners for evaluation. Prereq.: ENT 3700, 3750, and 4800; 2.5 GPA and approval of director.

**FINANCE—FIN**

Lariccia School of Accounting and Finance

**Lower-Division Course**

2600. *Finance Field Experience.* Internship and/or cooperative education experiences in finance. Students may be assigned to corporate, non-profit, or government entities on a semester basis. Can repeat this course once for a different field experience. Prereq.: 2.5 GPA, department approval, and sophomore standing.

2615. *Planning Your Financial Future.* An introductory course to personal financial planning. Emphasis on establishing financial goals and monitoring progress toward reaching those goals to improve the individual's quality of life. Topics include financial planning process, budgeting, credit, financing strategies, education planning, tax planning, etc. Open to business and non-business majors. Serves as the first course for students who are interested in the finance field.

**Upper-Division Courses**

3720. *Business Finance.* Study of the financial problems associated with the life cycle of business. Analysis of problems relating to estimating the financial needs of an enterprise and to evaluating the alternative means of providing temporary and permanent capital. Relationship of current financial decision with financial policy is analyzed from the viewpoint of management and the investor. Prereq.: C or better in ACCT 2603 and 2603L. 2.5 overall GPA.

3721. *Personal Financial Management.* An integration of the comprehensive financial planning process into the individual's financial life cycle. Includes accumulation, preservation, and distribution of financial assets. Topics include financial planning basics and risk management, investment selection, retirement planning and employee benefits, tax considerations, estate and trust basics. Prereq.: C or better in FIN 3720. Junior standing and 2.5 overall GPA.

3725. *Real Estate Investment.* Topics include real property ownership, real estate markets, valuation methods, financing methods and management of real estate investments. Prereq.: C or better in FIN 3720. 2.5 overall GPA.

3726. *Risk Management.* Introduces students to risk management and insurance decisions in personal and business financial planning. Topics include insurance for life, health, disability, property and liability risks as well as annuities, group insurance, long-term care insurance and social security. Prereq.: C or better in FIN 2615 and FIN 3720. 2.5 overall GPA.

3730. *Investment Planning.* Introduces topics of investment planning, vehicles, analysis and strategies required in the financial planning process. Discussions are within the context of risk and return, asset valuation, various financial instruments, financial mathematics, asset pricing models and portfolio management. The aim of the course is for students to gain the knowledge to evaluate alternative investment choices in the context of client's financial planning needs. Prereq.: C or better in FIN 3720. 2.5 overall GPA.

4833. *Retirement Plans & Employee Benefits.* Provides students with retirement and employee benefits topics required for a financial planning career discussed within the context of time value of money, inflation, and taxation. Specifically, insurance (life, disability and medical) issues, ESOPs and deferred compensation plans, private and public retirement plans and distribution rules are reviewed in-depth. Prereq: C or better in FIN 3730. 2.5 overall GPA.

4835. *Advanced Business Finance.* In-depth examination of the techniques and analyses employed in the financial management process. Advanced study of working capital management, capital budgeting, and long- and short-term financing choices. Integrated decision making tools such as the options framework as well as economic value added. Prereq.: C or better in FIN 3720. 2.5 overall GPA.

4836. *Financial Markets.* An examination of global financial markets, institutions, and instruments with emphasis on factors influencing how firms and individuals make financing and investing decisions. Advanced coverage of primary market financing, in-
investment banking, stock and index options, financial futures. Prereq.: C or better in FIN 3720, and 3730. 2.5 overall GPA.

4838. Financial Plan Development. Prepares students with financial planning knowledge, skills and ability to integrate, apply and communicate to their clients. Planning recommendations are demonstrated through real-life case studies. The focus of this capstone course is on the fundamental planning practices, professional skills and integration of concepts and knowledge. Prereq.: C or better in FIN 3726, FIN 4833 and ACCT 4815. 2.5 overall GPA. 4 s.h.

4839. International Accounting and Finance. Cross-functional introduction to multinational enterprises and multinational financial management with emphasis on foreign currency risk management; measuring and managing accounting and economic exposure; foreign trade and investment analysis; various topics in international accounting and finance. Prereq.: C or better in FIN 3720. 2.5 overall GPA. 3 s.h.

4841. Seminar in Investments and Security Markets. An examination of the literature on efficient capital markets with implications for security selection and portfolio management. Prereq.: C or better in FIN 3720. 2.5 overall GPA. 3 s.h.

4845. Business Valuation. Study of business valuation techniques currently used in valuing publicly traded and private equity to include: cash flows, forecasting, estimating cost of capital for public and private companies, valuation of stand-alone companies and business units from perspective of acquirer and seller. Prereq.: C or better in FIN 3720. 2.5 overall GPA. 3 s.h.

4850. Finance Internship. The student is given the opportunity to relate theory to practice in a career related on-site field experience with a participating organization. Prereq.: Finance major, junior standing, 2.75 Finance GPA, 2.5 overall GPA and approval of director. 3 s.h.

4853. Financial Analysis. Theory and practice of financial analysis. Analysis and interpretation of financial information with emphasis on practical applications. Projected financial statements, budgeting, valuation and computer modeling of current financial problems. Prereq.: C or better in FIN 3720. 2.5 overall GPA. 3 s.h.

4860. Special Topics in Finance. Subject matter, credit hours, and prerequisites will be announced in advance of each topic. Prereq.: Permission of director. 2.5 overall GPA. 1-4 s.h.
aspects of the management-guest relationship with particular attention to personal and property liability.

2612. Food Systems: Operation, Production, and Service. The fundamentals of food service operations including menu planning, purchasing of foods and equipment, care of foods and equipment, efficient work methods, budget and cost control. Also standard principles, techniques in quantity food production, management, and service. Prereq.: FNUT 1553 and 1553L. 3 s.h.

2612L. Food Systems: Operations, Production, and Service Laboratory. Application of the fundamentals of food systems operations, management, and service. Six hours lab per week. Prereq.: FNUT 1553 and 1553L. Concurrent with FNUT 2612. Permit required. 3 s.h.

2613L. Medical Nutrition Therapy Supervised Practice. Application of the nutrition care process in a medical setting for the dietetic technician. Includes a two hour on-campus seminar, and six hours of supervised clinical experience per week. Prereq.: FNUT 2603 and 2603L. 2 s.h.

2628. Practicum in Dietetic Technology. Experience in supervision of food production; assessment, documentation, and teaching of the individual patient or client groups; community nutrition. The role of the dietetic technician in the health care delivery system; overview of current opportunities in the food service field; standards of professional responsibility, practice, and self development. Fifteen discussion hours and 210 hours of clinical experience. Prereq.: FNUT 2609L, 2613L. Overall GPA of 2.5 required. 4 s.h.

2650. Seminar in Dietetic Technology. The role of the dietetic technician in the health care delivery system; overview of current opportunities in the food service field; standards of professional responsibility, practice, and self development. Concurrent with FNUT 2628. Permit required. 1 s.h.

2652L. Nutrition Assessment Laboratory. Procedures and techniques in anthropometric, biochemical, clinical and dietary assessment of nutritional status in healthy and at-risk populations. Three hours lab per week. Prereq.: FNUT 1551 and FNUT 2603 or concurrent. 1 s.h.

Upper-Division Courses

3720. Nutrition, Health, and Aging. Current knowledge of nutrition as it relates to overall health and human aging. Needs of the elderly in normal and diseased conditions. Nutritional needs/concerns of the elderly in the contexts of their physiological, social, and psychological dilemmas. Prereq.: SOC 1500. 3 s.h.

3735. Nutritional Biochemistry. Designed for nutrition majors, covers the basic concepts of classification, structure, and function of biological molecules, major metabolic pathways, heredity and immune function, with emphasis on the understanding of the metabolism and function of nutrients. Prereqs.: FNUT 1551, CHEM 1506/L, BIOL 1552/L. 2 s.h.

3759. Advanced Nutrition. Integrated approach to nutrition and health, emphasizing metabolism and functions of nutrients at the cellular level; nutritional needs for optimal health; problems of over nutrition and under nutrition. Prereq.: FNUT 1551, CHEM 1506/L, FNUT 3735. 3 s.h.

3760. Medical Nutrition Therapy 2. The nature and etiology of diseases and the relationship of diet to good health and to disease processes; the special dietary needs of abnormal conditions. Prereq. or concurrent: FNUT 2603 and 3759 or concurrent with FNUT 3760. 3 s.h.

3760L. Medical Nutrition Therapy 2 Laboratory. Orientation to the dietetic profession. Select clinical experiences providing opportunities for developing an understanding and working knowledge of the nutrition care process and its application to individuals exhibiting special nutritional needs. Six hours lab. Concurrent with FNUT 3760 and FNUT 3760R. Restricted course. 2 s.h.

3761. Science of Nutrition in Exercise. Advanced study of concepts related to the integration of nutrition and physical activity in athletic as well as normal and diseased populations. Emphasis on substrate utilization and modification, and nutrient/ergogenic supplementation and crash diets. Prereq.: FNUT 1551 and FNUT 3735. 3 s.h.

4802. Research Methods in Dietetics. Overview of research methodology, statistics and applications in the field of nutrition and dietetics. Prereq.: MATH 2623 or 2625 and junior standing. 2 s.h.

4802L. Research Methods in Dietetics Laboratory. Application of basic concepts of research methodology and statistics to dietetic practice. Three hours lab per week. Concurrent with FNUT 4802. Permit required. Prereq.: FNUT 4802. 1 s.h.

4810. Experimental Foods. Advanced study of food science and technology; methodology of food research including evaluation by sensory and objective methods. Prereq.: FNUT 1553, CHEM 3706. Permit required. 2 s.h.

4810L. Experimental Foods Laboratory. Application of scientific principles and experimental procedures to cooking processes. Three hours lab per week. Concurrent with FNUT 4810. Permit required. 1 s.h.

4858. Food Service Systems Management. Advanced food service systems management principles and processes as they relate to resources and operating subsystems. Focus on subsystem interrelationships. Prereq.: FNUT 2612 and a minimum of 20 s.h. of Human Ecology credit. Permit required. 4 s.h.
4858L. Food Systems Management Laboratory. Application of the management process to institutional food service systems. Thirteen hours supervised practice, one hour lecture per week. Prereq.: Restricted to Coordinated Program in Dietetics. 3 s.h.

4860. Medical Nutrition Therapy 3. The nature and etiology of selected disease conditions with focus on solving dietician problems accompanying them. Prereq.: FNUT 3760. 3 s.h.

4860L. Medical Nutrition Therapy 3 Lab. Selected clinical experience providing opportunities for application of nutritional care process to individuals exhibiting special nutritional needs. Twelve hours lab, one hour lecture per week. Restricted to Coordinated Program in Dietetics. 3 s.h.

4872. Maternal and Child Nutrition. Principles of the nutritional care process as it relates to the maternal and pediatric population. Prereq.: FNUT 2603 & 2603L, CHFM 3731 or special approval. 2 s.h.

4872L. Maternal and Child Nutrition Laboratory. Selected clinical experiences providing opportunities for application of nutritional care process to maternal and child population. Four hours clinical experience, one hour lecture per week. Concurrent with FNUT 4872. Permit required. Restricted to Coordinated Program in Dietetics. 2 s.h.

4873. Nutrition and Aging. Nutritional needs of the elderly as influenced by the aging process and disease states; factors affecting the food availability, food intake, and nutritional status of the elderly; nutritional services for the elderly. Prereq.: FNUT 3760. 2 s.h.

4873L. Nutrition and Aging Laboratory. Supervised practice experiences providing opportunities for application of the dietetic process in the extended care setting. One hour lecture, 12 hours clinical experience per week. Prereq.: FNUT 4873 or concurrent and restricted to Coordinated Program in Dietetics. 3 s.h.

4874. Community Nutrition and Wellness. Public health nutrition and wellness programs and their services to the community. Emphasis on program funding, cultural competence and needs of the underserved and elderly. Prereq.: FNUT 2603. 3 s.h.

4874L. Community Nutrition and Wellness Laboratory. Selected clinical experiences providing opportunities for application of the nutrition care process and wellness education to individuals and groups in the community setting. Sixteen hours clinical experiences, one hour lecture per week. Prereq.: Restricted to Coordinated Program in Dietetics. 3 s.h.

4885. Practicum in Dietetics. Supervised practice providing opportunities to integrate application and management of medical nutrition therapy into professional practice. Fifteen lecture hours and 280 clinical experience hours. Prereq.: FNUT 4858L and 4860L. 4 s.h.

4895. DPD Capstone. Application of dietetics principles learned in the classroom to situations in clinical, food service-management, and community settings. Provides opportunities for communication with diverse groups, critical thinking, and problem solving. Emphasis on case-study presentations of current issues and trends in the field. One (1) hour lecture and six (6) hours of laboratory per week. Prereq.: FNUT 4858, FNUT 4874, HMEC 4890. 3 s.h.


5862. Food and Culture. Food practices of selected world cultures. Evaluation of these practices in meeting dietary needs with consideration of the existing social, economic, and environmental conditions. Prereq.: CHFM 3731. 2 s.h.

5862L. Food and Culture Laboratory. Concurrent with FNUT 4862. Three hours lab per week. Permit required. 1 s.h.

5872. Maternal and Child Nutrition. Principles of the nutritional care process as it relates to the maternal and pediatric population. Prereq.: CHFM 3731 or special approval. 2 s.h.

5873. Nutrition and Aging. Nutritional needs of the elderly as influenced by the aging process and disease states; factors affecting the food availability, food intake, and nutritional status of the elderly; nutritional services for the elderly. Prereq.: FNUT 3760. 2 s.h.

FOREIGN LANGUAGES—FNLG

Department of Foreign Languages and Literatures

Foreign Languages—FNLG

Lower-Division Courses

1500. Introduction to Foreign Language Study. An introductory exploration of human language and foreign language learning. Topics include language and society, language and culture (linguistic and cultural knowledge), strategies for learning a foreign language, practical applications of knowing foreign languages, issues of proficiency and bilingualism, intercultural communication, basic terms and concepts, language use and gender. For students without previous foreign language study. Prereq.: Placement test or permission of department chairperson. 3 s.h.

1550. Elementary Foreign Language. Intensive training in understanding, speaking, reading, and writing a foreign language not regularly offered. Geography and daily life, as well as appreciation of the culture of its speakers, are studied. Students should achieve an intermediate-low level of proficiency. Assignments in
the Language Learning and Resource Center (LLRC). Grading is ABC/NC.

1560. Language, Ethnicity, and Gender. Basic understanding of relations between ethnicity, gender, and speech style, distinguishing linguistics, sociolinguistics, and women’s issues. Examination of topics such as language, socialization, oral vs written language, language and class membership, and intra-ethnicity variation in Urban Vernacular English. Listed also as ENGL 1560. 

1560H. Language, Ethnicity, and Gender. Basic understanding of relations between ethnicity, gender, and speech style, distinguishing linguistics, sociolinguistics, and women’s issues. Examination of topics such as language, socialization, oral vs written language, language and class membership, and intra-ethnicity variation in Urban Vernacular English. Listed also as ENGL 1560. 3 s.h.

2600. Intermediate. Intensive training in understanding, speaking, reading, and writing a foreign language not regularly offered; knowledge of geography and daily life as well as appreciation of the culture. Students should achieve an intermediate-mid level of proficiency. Assignments in the LLRC. Prereq.: FNLG 1550. 3 s.h.

2601. Advanced Intermediate. Intensive training in understanding, speaking, reading, and writing a foreign language not regularly offered; knowledge of geography and daily life as well as appreciation of the cultures of speakers of the language. Assignments in the LLRC as appropriate. Prereq.: FNLG 2600. 3 s.h.

2602. Advanced Intermediate 2. A distance learning class and a continuation of FNLG 2601 with intensive training in understanding, speaking, reading, and writing a foreign language not regularly offered. Prereq.: FNLG 2601 in the same language. 3 s.h.

2605. Topics in Foreign Drama. Study of representative plays written in a language other than English (but read in English translation); examination of relevant critical theories and of historic and institutional factors affecting the development of the genre; special attention to ethical issues raised in the plays. This course may not be repeated for credit. 3 s.h.

2610. Foreign Film. Study of representative films originally produced in a language other than English; examination of relevant critical theories and of historic and institutional factors affecting the development of the genre; special attention to cultural issues raised in the films. 3 s.h.

2615. Introduction to French Literature. A survey of the principal milestones of French literature, illustrated by reading representative works of various periods and parts of the Francophone world in their English translations. French majors must supplement this course by registering for FRNC 2608 during the same semester. This course is for non-French majors. Prereq.: ENGL 1551. 3 s.h.

2660. Women in the Ancient World. Study of various aspects of the lives of women in Ancient Greece and Rome. Emphasis on examination and evaluation of primary sources. All readings are in English. 3 s.h.

2685. Topics in Russian Literature and Culture. Studies of selected authors, genres, or themes in Russian literature read in English translation. Topic is announced each time course is offered. May be repeated once for credit if topic is different. 3 s.h.

Upper-Division Courses

3701. Advanced Foreign Language 1. A distance learning class and a continuation of FNLG 2602 with intensive training in understanding, speaking, reading, and writing in a foreign language not regularly offered. Prereq.: FNLG 2602 in the same language. 3 s.h.

3702. Advanced Foreign Language 2. A distance learning class and a continuation of FNLG 3701 with intensive training in understanding, speaking, reading, and writing in a foreign language not regularly offered. Prereq.: FNLG 3701 in the same language. 3 s.h.

3799. Study Abroad in Foreign Language. An individually-arranged program of foreign study in a language not regularly offered. Programs can be of two general types: (1) trips or residential programs sponsored by consortial universities, and (2) independent academic coursework through institutions with which YSU does not have a consortial agreement. A written statement detailing the student’s academic plan must be approved by the Chair of Foreign Languages and the Dean of CLASS prior to the trip. May be repeated up to a total of 15 s.h., if specific course content changes. Note: study abroad generally requires about one year’s advance planning. Prereq.: sophomore status and approval of the Chair of Foreign Languages. 1-15 s.h.

4801. Methods of Foreign Language Teaching. Methods of teaching foreign languages (K-12) with emphasis on the Ohio model and the ACTFL guidelines; curricula planning, teaching technology, the rationale for foreign language study, public and professional relations. Elementary, middle school, or high school field experience. Prereq.: Upper-Division status in BCOE and successful completion of at least one course at the 3700 level in FRNC, ITAL, SPAN, or GRMN. 3 s.h.

4899. Professional Development for Teachers. Students will 1) attend an appropriate professional conference and produce a journal detailing their experiences at the conference, and 2) assemble and present a portfolio of their previous language coursework to the faculty and other interested parties. Prereq.: Permission of the Department Chair. 1 s.h.

5850. Sociolinguistics. An investigation of the relationship between language and society. Includes discussion of dialects and standard language, language planning, linguistic identity, multi- and bilingualism,
class, gender, ethnicity, and social interaction. Listed also as ENGL 4850. Prereq.: ENGL 1551. 3 s.h.

5851. Language Acquisition. A study of research on the learning of first and second languages. Topics include developmental sequences, learner variables, critical periods and conditions for learning, and the roles of input and interaction. The course is designed for those planning to teach languages. Listed also as ENGL 4851. Prereq.: ENGL 1551. 3 s.h.

AMERICAN SIGN LANGUAGE—ASL

Lower-Division Courses

1550. Elementary American Sign Language 1. Introduction to the fundamentals of American Sign Language (ASL), including vocabulary, syntax, and grammatical non-manual signals. Introduction to the history and culture of the Deaf Community. Grading is ABC/NC. 2 s.h.

1551. Elementary American Sign Language 2. Continuation of ASL 1550 with further development of vocabulary, syntax and grammatical non-manual signals and additional study of the history and culture of the Deaf Community. Prereq.: ASL 1550. 2 s.h.

1552. Intermediate American Sign Language 1. Continuation of ASL 1551 with further development of vocabulary, syntax and grammatical non-manual signals and additional study of the history and culture of the Deaf Community. Prereq.: ASL 1551. 2 s.h.

2600. Intermediate American Sign Language 2. Continuation of ASL 1552 with further development of vocabulary, syntax and grammatical non-manual signals and additional study of the history and culture of the Deaf Community. Prereq.: ASL 1552. 2 s.h.

Arabic—ARBC

Lower-Division Courses

1550. Elementary Arabic. Intensive training in understanding, speaking, reading, and writing Arabic. Geography and daily life, as well as appreciation of the culture of Arabic speakers, are studied. Assignments in the Language Learning and Resource Center (LLRC). Grading is ABC/NC. 4 s.h.

2600. Intermediate Arabic. A continuation of ARBC 1550 with intensive training in understanding, speaking, reading, and writing Arabic. Geography and daily life, as well as appreciation of the culture of Arabic speakers, are studied. Assignments in the Language Learning and Resource Center (LLRC). Prereq.: ARBC 1550. 4 s.h.

2605. Advanced Intermediate Arabic. A distance learning class and a continuation of ARBC 2600 with intensive training in understanding, speaking, reading, and writing Arabic. Prereq.: ARBC 2605. 3 s.h.

Upper-Division Courses

3701. Advanced Arabic 1. A distance learning class and a continuation of ARBC 2606 with intensive training in understanding, speaking, reading, and writing Arabic. Prereq.: ARBC 2606. 3 s.h.

3702. Advanced Arabic 2. A distance learning class and a continuation of ARBC 3701 with intensive training in understanding, speaking, reading, and writing Arabic. Prereq.: ARBC 3701. 3 s.h.

3799. Study Abroad in Arabic. An individually-arranged program of foreign study in the Arabic language. Programs can be of two general types: (1) trips or residential programs sponsored by consortial universities, and (2) independent academic coursework through institutions with which YSU does not have a consortial agreement. A written statement detailing the student's academic plan must be approved by the Chair of Foreign Languages and the Dean of CLASS prior to the trip. May be repeated up to a total of 15 s.h., if specific course content changes. Note: study abroad generally requires about one year's advance planning. Prereq.: Sophomore status and approval of the Chair of Foreign Languages. 1-15 s.h.

Chinese—CHIN

Lower-Division Courses

1550. Elementary Chinese. Intensive training in understanding, speaking, reading, and writing Chinese. Geography and daily life, as well as appreciation of the culture of Chinese speakers, are studied. Assignments in the Language Learning and Resource Center (LLRC). Grading is ABC/NC. 4 s.h.

2600. Intermediate Chinese. Continuation of CHIN 1550 with intensive training in understanding, speaking, reading, and writing Chinese. Geography and daily life, as well as appreciation of the culture of Chinese speakers, are studied. Assignments in the Language Learning and Resource Center (LLRC). Prereq.: CHIN 1550. 4 s.h.

2605. Advanced Intermediate Chinese. A distance learning class and a continuation of CHIN 2600 with intensive training in understanding, speaking, reading, and writing Chinese. Geography and daily life, as well as appreciation of the culture of Chinese speakers, are studied. Assignments in the Language Learning and Resource Center (LLRC). Prereq.: CHIN 2605. 3 s.h.
2606. Advanced Intermediate Chinese 2. A distance learning class and a continuation of CHIN 2605 with intensive training in understanding, speaking, reading, and writing Chinese. Prereq.: CHIN 2605. 3 s.h.

Upper-Division Courses

3701. Advanced Chinese 1. A distance learning class and a continuation of CHIN 2606 with intensive training in understanding, speaking, reading, and writing Chinese. Prereq.: CHIN 2606. 3 s.h.

3702. Advanced Chinese 2. A distance learning class and a continuation of CHIN 3701 with intensive training in understanding, speaking, reading, and writing Chinese. Prereq.: CHIN 3701. 3 s.h.

3799. Study Abroad in Chinese. An individually-arranged program of foreign study in the Chinese language. Programs can be of two general types: (1) trips or residential programs sponsored by consortial universities, and (2) independent academic coursework through institutions with which YSU does not have a consortial agreement. A written statement detailing the student’s academic plan must be approved by the Chair of Foreign Languages and the Dean of CLASS prior to the trip. May be repeated up to a total of 15 s.h., if specific course content changes. Note: study abroad generally requires about one year’s advance planning. Prereq.: sophomore status and approval of the Chair of Foreign Languages. 1-15 s.h.

French—FRNC

Lower-Division Courses

1550. Elementary French. Intensive training in understanding, speaking, reading, and writing French. Geography and daily life, as well as appreciation of the culture of its speakers, are studied. Assignments in the Language Learning and Resource Center (LLRC). Grading is ABC/NC. 4 s.h.

2600. Intermediate French. Intensive training in understanding, speaking, reading, and writing French; knowledge of the natural and cultural features of French-speaking countries and regions. Assignments in the Language Learning and Resource Center (LLRC). Prereq.: Placement test or FRNC 1550. 4 s.h.

2605. Advanced Intermediate French. Advanced training in understanding, speaking, reading, and writing French; knowledge of the natural and cultural features of French-speaking countries and regions. Assignments in the Language Learning and Resource Center (LLRC). Prereq.: Placement test or FRNC 2600. 3 s.h.

2606. Intensive French Review. Intensive review of basic French speaking and writing language skills. Grammatical structures and vocabulary in context. Prereq.: Placement test or FRNC 2600. 3 s.h.

2608. Directed Reading. Reading authentic French texts of intermediate difficulty relevant to the content of another course not taught in French. Reading comprehension strategies and vocabulary building. Primarily for students not majoring in French. May be repeated once. Prereq.: FRNC 2605 or Placement test. 1 s.h.

2610. Translation. Techniques of translating complex sentence structures into English from general, business, technical, and scientific materials. Prereq.: Placement exam or FRNC 2600. 3 s.h.

Upper-Division Courses

3701. Service Learning in French. Using the French language to engage in community service or an internship. Completion of a journal written in French and detailing the experience is required. May be repeated up to 4 s.h. Prereq.: Approval of Department Chair, and FRNC 2600 or placement test. 1-2 s.h.

3710. Applied French Phonetics. A systematic study of French phonetics to correct defects in pronunciation and intonation and give students a better understanding of the differences between the French and English sound systems. Prereq.: FRNC 2605 and 2606. 3 s.h.

3716. Advanced French Grammar and Composition. A systematic study of French language morphology, sentence structure, and usage applied to a variety of written discourse styles. Contrast with English discourse styles and effective grammatical use. Prereq.: FRNC 2605 and 2606. 3 s.h.


3720. Literature and Culture: France. A study of major works of French literature through its history, placed in the cultural context which helped produce them. Prereq.: FRNC 2605 and FRNC 2606. 3 s.h.

3725. Francophone Literature and Culture. A study of major works representative of Francophone literature in their cultural context. Prereq.: FRNC 2605 and FRNC 2606. 3 s.h.

3730. Literature and Culture: America. A study of major works in Francophone literature in North America in its cultural context. Prereq.: FNLG 2615 and FRNC 3715. 3 s.h.

3736. Introduction to French Linguistics. Examination of basic concepts and issues of modern French linguistic theory. Emphasis is on sociolinguistics with attention also to phonology, morphology, syntax and pragmatics. Prereq.: FRNC 2605 and 2606. 3 s.h.

3740. French for Business and Communication. Development of oral and written communication in business and other practical situations. Business practices in French-speaking countries. Prereq.: FRNC 2605 and 2606. 3 s.h.

3750. French Civilization and Culture. A study of contemporary French civilization and culture, focusing
on what the French consider typical of their character, as exemplified by their traditions, magazines, films, and heroes. Readings and class work in French. Prereq.: FRNC 2605 and 2606.

3799. Study Abroad in French. An individually-arranged program of foreign study in the French language. Programs can be of two general types: (1) trips or residential programs sponsored by consortial universities, and (2) independent academic coursework through institutions with which YSU does not have a consortial agreement. A written statement detailing the student's academic plan must be approved by a member of the French faculty, the chair of Foreign Languages and the dean of CLASS prior to the trip. Credit toward fulfillment of requirements for the French major will be determined by the chair of Foreign Languages and not the French faculty. May be repeated up to a total of 15 s.h., if specific course content changes. Note: study abroad generally requires about one year's advance planning. Prereq.: Sophomore status and approval of the chair of Foreign Languages.

1-15 s.h.

4874. Advanced Writing. A course designed to develop skills in free composition on assigned topics. Prereq.: FRNC 3750 and one of the following: 3720, 3725, 3730.

3 s.h.

4885. French Conversation and Composition Capstone. Capstone course emphasizing impromptu conversations and in-class essay writing. Students must achieve a level of Intermediate High on both the ACTFL Oral Proficiency Interview and the ACTFL Writing Proficiency Test. Prereq.: 15 s.h. in French at the 3700 level or above and permission of Chair.

3 s.h.

German—GRMN

Lower-Division Courses

1550. Elementary German. Intensive training in understanding, speaking, reading, and writing German. Geography and daily life, as well as appreciation of the culture of its speakers, are studied. Students should achieve an intermediate-low level of proficiency. Assignments in the Language Learning and Resource Center (LLRC). Grading is ABC/NC.

4 s.h.

2600. Intermediate. Intensive training in understanding, speaking, reading, and writing German; knowledge of geography and daily life as well as appreciation of the cultures of German speakers. Students should achieve an intermediate-mid level of proficiency. Assignments in the LLRC. Prereq.: Placement test or GRMN 1550.

4 s.h.

2603. Directed Reading 1. Reading authentic German texts of intermediate difficulty relevant to the content of another course not taught in German. Reading comprehension strategies and vocabulary building. Primarily for students not majoring in German. May be repeated once. Prereq.: German 2600 or placement exam.

1 s.h.

2605. Advanced Intermediate. Intensive training in understanding, speaking, reading, and writing German; knowledge of geography and daily life as well as appreciation of the cultures of German speakers. By the end of the course the students should achieve an intermediate-high level of proficiency. Assignments in the LLRC. Prereq.: Placement test or GRMN 2600.

3 s.h.

2610. Translation 1. Techniques of translating complex sentence structures into English from general, business, technical, and scientific materials. Prereq.: GRMN 2600.

3 s.h.

Upper-Division Courses

3705. German Film and Culture Since 1950. Significant German feature films portraying various aspects of German culture such as daily life, filmic versions of literature, life in East and West Germany, and post-unification cultural differences. Focus on listening comprehension and written expression. Prereq.: Placement test or GRMN 2600.

3 s.h.

3720. German Literature. Reading of German prose and/or poetry focusing on an author, a genre, or a literary trend. Prereq.: GRMN 2605.

3 s.h.

3725. Phonetics and History of the Language. Theory and practice in German phonetics with special emphasis on improving the pronunciation and intonation of second-language learners. A history of the German language with attention to changes in sounds, forms, word order, vocabulary, and writing systems. Prereq.: GRMN 2605

3 s.h.

3740. Conversation and Composition. Development of oral fluency, writing style, and understanding spoken German. Special emphasis on expanding active and passive vocabulary; advanced grammar structures. Prereq.: Placement test or GRMN 2605.

3 s.h.

3750. Cultural Heritage 1. A survey of German civilization from the beginnings to 1949, including such topics as literature, history, music, and art. Prereq.: Any 3700 German course.

3 s.h.

3751. Cultural Heritage 2. A survey of German civilization since 1949, including such topics as literature, history, music, and art. Prereq.: Any 3700 German course.

3 s.h.

3753. Directed Reading 2. Reading advanced authentic German texts relevant to the content of another course not taught in German. Reading comprehension strategies and vocabulary building. Primarily for students not majoring in German. May be repeated once. Prereq.: GRMN 3740 or 2 s.h. credit for GRMN 2603.

1 s.h.

3762. Translation 2. A continuation of Translation 1 with more advanced texts from students’ fields of interest including natural sciences, social sciences, business, and humanities. Prereq.: GRMN 2610 and any GRMN at 3700 level.

3 s.h.
3785. Special Topics. Studies in German language, literature, or civilization ranging from medieval to modern times. Topic announced each time course is offered. May be repeated for a maximum of 6 s.h. Prereq.: 6 s.h. GERMAN at 3700 level. 3 s.h.

4861. Literary Trends Since 1950. Study of a major author or a genre since World War II using appropriate German films. Prereq.: GRMN 3750 or 3751. 3 s.h.

4880. Research and Writing. A thorough investigation of a problem in German or German-American language, literature or culture, or in German-language education. Extensive oral and written reporting of research results. Capstone course. Prereq.: GRMN 3750 or 3751. 3 s.h.

Greek (Ancient)—GRK

Lower-Division Courses

1550. Elementary Ancient Greek. Introduction to Ancient Greek with emphasis on those aspects of grammar most essential for developing the ability to read Greek. Translation of simple Ancient Greek texts into English. Assignments in the Language Learning and Resource Center (LLRC). Grading is ABC/NC. 3 s.h.

2600. Intermediate. Continuation of GRK 1550 with emphasis on more complex aspects of Ancient Greek grammar. Translation of more advanced Ancient Greek texts, including some authentic passages. Assignments in the LLRC. Prereq.: Placement test or GRK 1550. 4 s.h.

2603. Directed Reading 1. Reading of selections from an Ancient Greek author or genre with emphasis on translation. Review of Ancient Greek grammar and introduction of some advanced grammatical constructions not covered in Ancient Greek 1550 or 2600. May be repeated once if topic is different. Prereq.: Placement test or GRK 2600 or permission of department chairperson. 3 s.h.

Upper-Division Courses

3753. Directed Reading 2. Reading of selections from an Ancient Greek author or genre with emphasis on translation and interpretation of text. Review of Ancient Greek grammar. Introduction of relevant modern scholarship. Writing of evaluative essays. May be repeated once if topic is different. Prereq.: GRK 2603 and permission of department chairperson. 3 s.h.

4883. Directed Reading 3. Reading of selections from an Ancient Greek author or genre with emphasis on translation and interpretation of text. Review of Ancient Greek grammar. Writing of a research paper. May be repeated once if topic is different. Prereq.: GRK 3753 and permission of department chairperson. 3 s.h.

Hebrew—HBRW

Lower-Division Courses

1550. Elementary Hebrew. Beginning training in understanding, speaking, reading, and writing Hebrew. Geography and daily life, as well as appreciation of the culture of its speakers, are studied. Assignments in the Language Learning and Resource Center (LLRC). Grading is ABC/NC. 4 s.h.

2600. Intermediate. Intensive training in understanding, speaking, reading, and writing Hebrew; knowledge of geography and daily life as well as appreciation of the culture of Hebrew speakers. Assignments in the LLRC. Prereq.: Placement test or HBRW 1550. 4 s.h.

2605. Advanced Intermediate. Reading and discussion in Hebrew of selections from the Old Testament. Prereq.: Placement test or HBRW 2600. 3 s.h.

Upper-Division Courses

3706. Readings in Hebrew Scripture. Reading and discussion in Hebrew of selections from the Hebrew Scriptures. May be repeated once if the texts studied are different. Prereq.: HBRW 2605. 3 s.h.

3799. Study Abroad in Hebrew. An individually-arranged program of foreign study in the Hebrew language. Programs can be of two general types: (1) trips or residential programs sponsored by consortial universities, and (2) independent academic coursework through institutions with which YSU does not have a consortial agreement. A written statement detailing the student's academic plan must be approved by a member of the Hebrew faculty, the chair of Foreign Languages and the dean of CLASS prior to the trip. May be repeated up to a total of 15 s.h., if specific course content changes. Note: study abroad generally requires about one year's advance planning. Prereq.: Sophomore status and approval of the chair of Foreign Languages. 1-15 s.h.

Italian—ITAL

Lower-Division Courses

1550. Elementary Italian. Intensive training in understanding, speaking, reading, and writing Italian. Geography and daily life, as well as appreciation of the culture of its speakers, are studied. Assignments in the Language Learning and Resource Center (LLRC). Grading is ABC/NC. 4 s.h.

2600. Intermediate Italian. Intensive training in understanding, speaking, reading, and writing Italian; knowledge of geography and daily life as well as appreciation of the cultures of Italian speakers. Assignments in the Language Learning and Resource Center (LLRC). Prereq.: Placement test or ITAL 1550. 4 s.h.

2605. Advanced Intermediate Italian. Intensive training in understanding, speaking, reading and writing
Italian; knowledge of geography and daily life as well as appreciation of the cultures of Italian speakers. Prereq.: Placement test or ITAL 2600. 4 s.h.

2606. **Intensive Italian Review.** Intensive training in understanding, speaking, reading, and writing Italian. Grammatical structures and vocabulary in context. Prereq.: Placement test or ITAL 2600. 3 s.h.

2610. **Introduction to Italian Film.** Analysis, written and oral, of Italian films presented in conjunction with FNGL 2610. Prereq.: ITAL 2600; Coreq.: FNGL 2610. 1 s.h.

**Upper-Division Courses**

3701. **Service Learning in Italian.** Using the Italian language to engage in community service or an internship. Completion of a journal written in Italian and detailing the experience is required. May be repeated up to 4 s.h. Prereq.: Approval of Department Chair; and ITAL 2600 or placement test. 1-4 s.h.

3702. **Intensive Italian Review.** Intensive training in understanding, speaking, reading, and writing Italian. Grammatical structures and vocabulary in context. Prereq.: ITAL 2605. 4 s.h.

3720. **Advanced Italian Grammar and Composition.** In-depth study of Italian grammar through exercises and original composition. Prereq.: ITAL 2605 and 2606. 3 s.h.

3724. **Italian Linguistics and Phonetics.** Examination of basic concepts and issues of modern Italian linguistic theory in the areas of phonology, morphology, syntax and pragmatics. Special emphasis is placed on sociolinguistics and on theory and practice in Italian phonetics aimed at improving the pronunciation and intonation of second language learners. Regular in-class discussion and occasional in-class writing assignments, all in Italian. Prereq.: ITAL 3702, or ITAL 2605 and 2606. 4 s.h.

3725. **Italian Phonetics.** Theory and practice in Italian phonetics with special emphasis on improving the pronunciation and intonation of second language learners. Prereq.: ITAL 2605 and 2606. 3 s.h.

3730. **Advanced Italian Conversation.** Designed to develop oral facility through exercises and discussion of assigned topics, and through prepared and extemporaneous situational dialogues. Prereq.: ITAL 2605 and 2606. 3 s.h.

3735. **Italian Civilization and Culture.** A condensed study of the geography, history, literature and social heritage of Italy, from the fall of the Roman Empire to the present. Regular in-class discussion and occasional in-class writing assignments, all in Italian. Prereq.: ITAL 3702 or 2605 and 2606. 4 s.h.

3740. **Survey of Italian Literature 1.** Introduction to Italian literature from the 14th Century to the Renaissance through representative selections of key literary figures. Theoretical and critical approaches to help interpret texts. Regular in-class discussion and occasional in-class writing assignments, all in Italian. Prereq.: ITAL 3702 or 2605 and 2606. 4 s.h.

3741. **Survey of Italian Literature 2.** Introduction to Italian literature from the Enlightenment to the present through representative selections of key literary figures. Theoretical and critical approaches to help interpret texts. Regular in-class discussion and occasional in-class writing assignments, all in Italian. Prereq.: ITAL 3702 or 2605 and 2606. 4 s.h.

3743. **Topics in Italian Literature I.** A study of a genre, author, or literary movement. May be repeated with a different topic. Prereq.: ITAL 2605 and 2606. 3 s.h.

3750. **Contemporary Italian Literature.** A study of contemporary Italian literature and its movements and innovations across a variety of genres, including fiction, memoir, poetry, song lyrics, rap and journalism. Featuring the works of Ammaniti, Baricco, Benni, Consoli, Khouma, Mazzucco, Severgnini and Virzì. Regular in-class discussion and occasional in-class writing assignments, all in Italian. Prereq.: ITAL 3702 or 2605 and 2606. 4 s.h.

3760. **Literary Representations of 19th Century Italy.** A study of literary representations of 19th century Italy and the Italians from the pre-Risorgimento era through the turn of the century, with concentration on the works of Foscolo, Manzoni, Verga and di Lambrusco. Regular in-class discussion and occasional in-class writing assignments, all in Italian. Prereq.: ITAL 3702 or 2605 and 2606. 4 s.h.

3798. **Study Abroad in Sicily.** A structured but individualized program of study at the Culturforum Italian Language School in Cefalù, Sicily. Prereq.: ITAL 2605 and 2606 and permission of chair. 4 s.h.

3799. **Study Abroad in Italian.** An individually arranged program of foreign study in the Italian language. Programs can be of two general types: (1) trips or residential programs sponsored by consortial universities, and (2) independent academic coursework through institutions with which YSU does not have a consortial agreement. A written statement detailing the student’s academic plan must be approved by a member of the Italian faculty, the chair of Foreign Languages and the dean of CLASS prior to the trip. Credit toward fulfillment of requirements for the Italian major will be determined by the chair of Foreign Languages and the Italian faculty. May be repeated up to a total of 15 s.h., if specific course content changes. Note: study abroad generally requires about one year’s advance planning. Prereq.: Sophomore status and approval of the chair of Foreign Languages. 1-15 s.h.

4800. “Risorgimento,” Romanticism, and Rome (1800-1860). A study of the historical circumstances and the artistic and literary trends that preceded the “Risorgimento” or the unification of Italy. Prereq.: ITAL 2605 and 2606. 3 s.h.

4825. **Viability, “Verismo,” and Verga (1860-1920).** A study of the historical and cultural circumstances in addition to the artistic and literary trends that followed the “Risorgimento” or the unification of Italy. Prereq. ITAL 2605 and 2606. 3 s.h.
4850. *Literature of the 16th Century*. A course dealing with the literature of the Renaissance and concentrating on Ariosto, Bandello, Machiavelli, and Tasso. Prereq.: ITAL 2605 and 2606. 3 s.h.

4860. *Italian Literature of the 14th Century*. A study of Italian literature of the 14th century with concentration on Dante, Petrarch and Boccaccio. Prereq.: ITAL 2605 and 2606. 3 s.h.

4870. *Topics in Italian Literature 2*. A study of a genre, author, or literary movement. May be repeated with a different topic. Prereq.: ITAL 2605 and 2606. 3 s.h.

4880. *Italian Conversation and Composition Capstone*. Capstone course emphasizing impromptu conversations and in-class essay writing. Students must achieve a level of Intermediate High on both the ACTFL Oral Proficiency Interview and the ACTFL Writing Proficiency Test. Prereq.: 16 s.h. in Italian at the 3700 level or above and permission of Chair. 4 s.h.

**Latin—LATN**

**Lower-Division Courses**

1550. *Elementary Latin*. Introduction to Latin, with emphasis on those aspects of grammar most essential for developing the ability to read Latin. Translation of simple Latin texts into English. Introduction to the culture of the late Roman Republic, including reading selected primary sources in English. Assignments in the Language Learning and Resource Center (LLRC). Grading is ABC/NC. 3 s.h.

2600. *Intermediate*. Continuation of Latin 1550 with emphasis on more complex aspects of Latin grammar. Translation of more advanced Latin texts, including some authentic passages. Introduction to the culture of the Augustan Age, including reading selected primary sources in English. Assignments in the LLRC. Prereq.: Placement test or LATN 1550. 4 s.h.

2603. *Directed Reading 1*. Reading of selections from a Latin author or genre with emphasis on translation. Review of Latin grammar and introduction of some advanced grammatical constructions not covered in Latin 1550 or 2600. May be repeated once if topic is different. Prereq.: Placement test or Latin 2600. 3 s.h.

**Upper-Division Courses**

3753. *Directed Reading 2*. Reading of selections from a Latin author or genre with emphasis on translation and interpretation of text. Review of Latin grammar. Introduction to relevant modern scholarship. Writing of evaluative essays. May be repeated once if topic is different. Prereq.: LATN 2603 and permission of department chairperson. 3 s.h.

4883. *Directed Reading 3*. Reading of selections from a Latin author or genre with emphasis on translation and interpretation of text. Review of Latin grammar. Writing of a research paper. May be repeated once if topic is different. Prereq.: LATN 3753 and permission of department chairperson. 3 s.h.

**Russian—RUSS**

**Lower-Division Courses**

1550. *Elementary Russian*. Intensive training in understanding, speaking, reading, and writing in Russian. Geography and daily life, as well as appreciation of the culture of its speakers, are studied. Students should achieve a novice-high level of proficiency. Assignments in the Language Learning and Resource Center (LLRC). Grading is ABC/NC. 4 s.h.

2605. *Advanced Intermediate 1*. Russian phonetics and conversation. Focus on sounds, intonation, and forms of speech etiquette. Prereq.: Placement test or RUSS 2600. 3 s.h.

2606. *Advanced Intermediate 2*. Reading and listening. Focus on morphology and syntax. Topics will vary according to the student’s major area of interest. May be repeated if topic is different. Prereq.: Placement test or RUSS 2605. 3 s.h.

**Upper-Division Courses**

3700. *Directed Study*. Readings or independent language study work relating to the students’ major. May be repeated up to a total of 6 s.h. Prereq.: RUSS 2605. 1-3 s.h.

3799. *Study Abroad in Russian*. An individually-arranged program of foreign study in the Russian language. Programs can be of two general types: (1) trips or residential programs sponsored by consortial universities, and (2) independent academic coursework through institutions with which YSU does not have a consortial agreement. A written statement detailing the student’s academic plan must be approved by a member of the Russian faculty, the chair of Foreign Languages and the dean of CLASS prior to the trip. May be repeated up to a total of 15 s.h., if specific course content changes. Note: study abroad generally requires about one year’s advance planning. Prereq.: Sophomore status and approval of the chair of Foreign Languages. 1-15 s.h.

**Spanish—SPAN**

**Lower-Division Courses**

1550. *Elementary Spanish*. Intensive training in understanding, speaking, reading, and writing Spanish. Geography and daily life, as well as appreciation of the culture of its speakers, are studied. Assignments
in the Language Learning and Resource Center (LLRC). Grading is ABC/NC.

2600. Intermediate Spanish. Intensive training in understanding, speaking, reading, and writing Spanish; geography and daily life, as well as appreciation of the cultures of Spanish speakers are studied. Assignments in the Language Learning and Resource Center (LLRC). Prereq.: Placement test or SPAN 1550. 4 s.h.

2605. Advanced Intermediate Spanish. Review and expansion of basic Spanish language skills and cultural information. Assignments in the Language Learning and Resource Center (LLRC). Prereq.: Placement test or SPAN 2600. 3 s.h.

Upper-Division Courses

3701. Service Learning in Spanish. Using the Spanish language to engage in community service or an internship. Completion of a journal written in Spanish and detailing the experience is required. May be repeated up to 4 s.h. Prereq.: Approval of Department Chair; and SPAN 2600 or placement test. 1-2 s.h.

3702. Intensive Spanish Review. Further study of the Spanish language and Hispanic cultures through oral, written, and reading activities. Focus is on contextualized vocabulary and review of grammar to help students move towards a more advanced level. Prereq.: SPAN 2600. 3 s.h.

3724. Spanish Pronunciation. Theory and practice of Spanish pronunciation. Description of production of Spanish speech sounds and general characteristics of Spanish pronunciation. Topics on intonation. Audio-lingual practice in class and in language laboratory. Prereq.: SPAN 3702. 3 s.h.

3735. Advanced Spanish Grammar and Composition. A systematic study of Spanish morphology, sentence structure, and usage applied to a variety of written discourse styles such as description, narration, and exposition. Discussion of contrasts with English discourse styles, and effective grammatical use. Prereq.: SPAN 3702. 3 s.h.

3736. Introduction to Spanish Linguistics. Examines some of the basic concepts and issues of modern Spanish linguistic theory in the areas of phonology, morphology, syntax and pragmatics, with special emphasis on sociolinguistics. Prereq.: SPAN 3702. 3 s.h.

3737. Translation and Composition. Study of translation techniques, and practice in translating from Spanish into English and from English into Spanish, working with a variety of texts from the social sciences, natural sciences, and technology. Emphasis on interpretation of vocabulary and idioms. Prereq.: SPAN 3735 or 3736. 3 s.h.


3755. Advanced Spanish Conversation. Development of oral expression through discussion of current topics in the context of worldwide Hispanic culture, politics, and economics. Expansion of vocabulary. Laboratory work according to individual needs. Prereq.: SPAN 3702. 3 s.h.

3758. Culture and Literature of Spanish-Speaking Groups in the U.S. Provides an overview of the significant culture and literature of the diverse Hispanic groups in the U.S. The relationship between literature and society broached through an in-depth discussion of several representative texts and their historical and political background. Prereq.: SPAN 3702. 3 s.h.

3762. Culture: Spain. Examination of the cultural landscape and major issues in Spanish society through the study of art, history, geography, politics, music, cinema, popular culture, and cultural groups in the various regions of Spain. Prereq.: SPAN 3702. 3 s.h.

3763. Introduction to Literature: Spain. Introduction to Peninsular literature through representative selections of key works of fiction, poetry and film. Theoretical and critical approaches to help the student interpret texts. Prereq.: SPAN 3702. 3 s.h.

3766. Culture: Spanish-America. This course examines the cultural landscape and major issues in Spanish-American society through the study of art, history, geography, politics, music, cinema, popular culture, and cultural groups in the various regions. Prereq.: SPAN 3702. 3 s.h.

3767. Introduction to Literature: Spanish-America. Introduction to Spanish-American literature through representative selections of key works of fiction, poetry and film. Theoretical and critical approaches to help the student interpret texts. Prereq.: SPAN 3702. 3 s.h.

3799. Study Abroad in Spanish. An individually-arranged program of foreign study in the Spanish language. Programs can be of two general types: (1) home-stays sponsored by institution, and (2) independent academic coursework through institutions with which YSU does not have a consortial agreement. A written statement detailing the student's academic plan must be approved by a member of the Spanish faculty, the chair of Foreign Languages and the dean of CLASS prior to the trip. Credit toward fulfillment of requirements for the Spanish major will be determined by the chair of Foreign Languages and the Spanish faculty. Prereq.: Sophomore status and approval of the chair of Foreign Languages. 1-15 s.h.

5855. Topics in Spanish Language and Linguistics. An introduction to the terminology, concepts, bibliography and current issues of Spanish language and linguistics. Major topics include phonology, morphology, semantics, syntax, applied linguistics, transformational grammar, and other topics related to language variation and society. May be repeated once when topic varies. Prereq.: Any 3700-level SPAN course. 3 s.h.
5870. Topics in Spanish Literature: Spain. Study of an author, a genre, or a movement in Spanish literature from 1492 to the present. The topic will be announced each time the course is offered. May be taken three times if content is not repeated. Prereq.: SPAN 3762 or 3763. 3 s.h.

5885. Topics in Hispanic Literature and Film. Examines the relationship between the Hispanic narrative discourse and cinema, including film adaptations of literary works. Modern social and cultural issues, as well as Hispanic self-images. May be taken three times if content is not repeated. Prereq.: one of SPAN 3762, 3763, 3766, 3767. 3 s.h.

5890. Topics in Spanish Literature: Spanish-America. Study of an author, a genre, or a movement in Latin America from 1492 to the present. The topic will be announced each time the course is offered. May be taken three times if content is not repeated. Prereq.: SPAN 3766 or 3767. 3 s.h.

Swahili—SWAH

1550. Elementary Swahili. Intensive training in understanding, speaking, reading, and writing Swahili. Geography and daily life, as well as appreciation of the culture of its speakers, are studied. Students should achieve intermediate low-level proficiency. Assignments in the Language Learning and Resource Center (LLRC). Grading is ABC/NC. 4 s.h.

2600. Intermediate. Intensive training in understanding, speaking, reading, and writing Swahili; knowledge of geography and daily life as well as appreciation of the culture. Students should achieve Intermediate Mid Level proficiency. Assignments in the LLRC. Prereq.: Placement test or SWAH 1550. 4 s.h.

FOUNDATIONS OF EDUCATION—FOUN
Department of Educational Administration, Research, and Foundations

1501. Introduction to Education. Historical, political, legal, cultural and ethical perspectives on the work and roles of teachers and schooling. Issues confronting educators, voters, parents and children. Twenty-five hours of field work, orienting students to classrooms and to the organization and governance of school districts. 3 s.h.

3708. Education and Society. School as a dynamic social institution. An analysis of how schools interact with diverse communities and with social, political, and cultural institutions and traditions. Twenty-five hours of field research. Prereq.: Admission to the College of Education or permission of chairperson. 3 s.h.

3710. Educational Assessment. Critical review of types, purposes, procedures, uses, and limitations of assessment strategies and techniques including authentic assessment, value-added assessment, and alternate assessment. Standardized testing and implications for current practice. Prereq.: Upper Division. 3 s.h.

5875. Seminar in Foundations of Education. Selected topics for a focused study on problems, issues, or concerns to be addressed by a sociological, historical, philosophical, assessment, or research perspective. Prereq.: Permission of chairperson. 1-3 s.h.

5880. Special Topics in Foundations of Education. An advanced study of sociological, historical, and/or philosophically based research which provides analysis of a particular educational issue with special emphasis on implications for diverse populations and/or diverse school settings. Prereq.: Permission of chairperson. 1-3 s.h.

GEOGRAPHY—GEOG
Department of Geography

Lower-Division Courses

1503. Physical Geography. An introductory analysis of selected elements of the natural habitat and their geographic distribution. Includes processes involved in weather, climates, soils, vegetation, and landforms. 3 s.h.

2610. Map Use and Interpretation. The use of maps, aerial photography, and satellite imagery to depict physical and cultural landscapes. Topics include map elements and how to locate, read, and interpret maps and remotely-sensed imagery. 3 s.h.

2611. Geospatial Foundations. An overview of geospatial science and technology, including introductory concepts in spatial analysis, Geographic Information Systems, remote sensing, and GPS. The class provides a survey of theoretical geospatial topics as well as their applications in a computer lab setting. 3 s.h.

2626. World Geography. A comparative study of representative regions of the world. Attention is focused on an examination of the physical, cultural, social and political attributes of selected regions. 3 s.h.

2630. Weather. An examination of basic weather elements, their interrelationships and the natural laws that govern them. Focus is on both global scale atmospheric processes and localized factors that influence weather conditions and patterns. 3 s.h.

2630L. Weather Lab. Students observe, collect and analyze atmospheric data, and determine and predict weather conditions. Atmospheric laws and meteorological principles, concepts, and processes are investigated using the scientific method. Weekly investigations are undertaken in this hybrid lab encompassing in-class and online instructions. The class
meets in person as needed for guidance. Optional lab to accompany GEOG 2630: Weather. Prereq.: GEOG 2630 or concurrently with GEOG 2630. 3 s.h.

2630H. Honors Weather. An examination of basic weather elements, their interrelationships and the natural laws that govern them. Focus is on both global scale atmospheric processes and localized factors that influence weather conditions and patterns. 3 s.h.

2640. Human Geography. An examination of the place to place variation in people's utilization of the earth. Topics include the distribution of people, spatial variations in culture, urbanization and politicization of space. 3 s.h.

2640H. Honors Human Geography. An examination of the place to place variation in people's utilization of the earth. Topics include the distribution of people, spatial variations in culture, urbanization and politicization of space. 3 s.h.

2650. Global Economic Landscapes. Geographic patterns of economic activities such as agriculture, manufacturing, retailing and services, and regional patterns and issues in the emerging global economy. 3 s.h.

Upper-Division Courses

3703. Human Impacts on the Environment. Focus is on the interaction between natural systems and human activities that results in environmental change and degradation of the Earth's atmosphere, waters, soil, vegetation, and animal life. Societal conflicts, mitigation, conservation, and sustainable resource strategies are discussed. Prereq.: GEOG 1503; or GEOL 1504 or 1506; or ENST 1500; or HIST 3774. 3 s.h.

3705. Mountain Geography. Investigates the physical, biological, and cultural processes that take place in selected mountain environments. Topics also include resource use, environmental change, and sustainable development at both regional and global scales. Prereq.: BIOL 1505 or ENST 1500 or ENST 2600 or GEOG 1503 or GEOL 1504 or GEOL 1505. 3 s.h.

3712. Thematic Map Design and Symbolization. An introduction to cartographic design. Emphasis is on composition elements and the construction and perception of point, line, and area map symbols. The use of color, statistical techniques, and animated maps are also explored. Prereq.: GEOG 2610, 2626, or 2640. 3 s.h.

3713. Geography of South America. Spatial patterns found in the physical and cultural landscapes of South America. Prereq.: GEOG 2626 or 2640; or HIST 3728. 3 s.h.

3715. Geography of Middle America. Spatial patterns found in the physical and cultural landscapes of Middle America (Mexico, Central America, and the Caribbean). Prereq.: GEOG 2626 or 2640; or HIST 3727. 3 s.h.

3717. Geography of Europe. Spatial patterns found in the physical and cultural landscapes of Europe. Prereq.: GEOG 2626 or 2640. 3 s.h.

3719. Geography of the United States. Spatial patterns found in the physical and cultural landscapes of the United States. Prereq.: GEOG 2626 or 2640; or HIST 2605 or 2606. 3 s.h.

3721. Geography of Ohio. Spatial patterns found in the physical and cultural landscapes of Ohio. Prereq.: GEOG 2626 or 2640; or HIST 2605 or 2606 or 3748. 3 s.h.

3724. Themes in Cultural Geography. A seminar focusing on cultural traditions in geography in the United States. Primary focus is on scholars, traditions, theory and methodology of cultural geography as published in the professional literature. Prereq.: GEOG 2626 or 2640 or ANTH 1500 or SOC 1500. 3 s.h.

3726. Urban Geography. A study of the changing spatial patterns associated with the rise of urbanization, comparative urban developments and cities as a part of the urban system. Prereq.: GEOG 2626 or 2640; or HIST 3736; or SOC 3707. 3 s.h.

3730. Global Climates. An examination of the earth's climates and the processes and controls responsible for their occurrence, distribution and change. Prereq.: GEOG 1503 or 2630. 3 s.h.

3733. Severe and Hazardous Weather. Focus is on severe weather that may threaten harm to life and/or property. The scientific underpinning of severe weather types and their geographic distributions, hazards, and mitigation measures. Topics include extratropical cyclones; thunderstorms; lightning; tornadoes; hurricanes; floods; droughts; cold and heat waves; blizzards; snow, ice and wind storms; and El Niño/La Niña. Prereq.: GEOG 1503 or 2630. 3 s.h.

3735. Water in the Earth System. Focus is on the cycling of water within the Earth system. Covers the unique properties of water, the global water cycle, the distribution of water within the various reservoirs of the hydrosphere, the role of water in energy transfer and systems interactions, and human impacts on water resources. Prereq.: GEOG 1503 or 2630; or GEOL 1504 or 1505 or 2602; or ENST 1500 or 2600. 3 s.h.

3737. Soils and Land Use. Examination of soil characteristics influencing land use planning and development. Topics include the basic physical and chemical properties of soil, soil water, the soil-forming factors, the use and interpretation of county soil reports, and soil characteristics beneficial and detrimental to selected land use practices. Participation in field trips is required. Prereq.: GEOG 1503; or GEOL 1504 or 1505; or ENST 2600; high school chemistry recommended. 3 s.h.

3741. Transportation Geography. Spatial properties of interregional and intraurban transportation. Topics include network development, movement patterns of people and commodities and the impact of trans-
3745. The Automobile in American Culture. The impact of the automobile on the economic, cultural and environmental landscapes of the United States from a geographic standpoint. Prereq.: GEOG 2640 or 2650 or 3741. 3 s.h.

3750. Topics in Regional Geography. Application of the regional method to selected areas of the world. Topic is announced each time the course is offered. May be repeated three times for credit if content is not repeated. Maximum credit 9 s.h. Prereq.: GEOG 2626 or 2640. 3 s.h.

3775. Field Methods in Geography. Practical experiences in geographic data collection. Emphasis on applying techniques of observation, sampling, surveying, interviewing and mapping to both physical and human spatial phenomena. Participation in field trips is mandatory. Prereq.: GEOG 1503 or 2610 or 2640. 3 s.h.

3780. Medical Geography. A geographical and epidemiological approach to disease study. Examines the diffusion and distribution of illnesses and the social and environmental factors contributing to their occurrence. Global disease trends, health care issues and development are explored and compared. Prereq.: GEOG 2626 or 2640 or ANTH 1500 or BIOL 2602 or SOC 1500. 3 s.h.

4825. Geography Internship. Practical application of geographic principles and skills in the public or private workplace. A minimum of 40 clock hours per credit hour per semester is required in the work setting. An activities log must be maintained and oral and written reports of the internship experience are required. May be repeated for up to 6 s.h. Prereq.: 3 s.h. upper-division geography. By permit only. 1-3 s.h.

4840. Seminar in Geography. Selected aspects of geography not covered in existing courses. Topic to be announced each time the course is offered. May be taken up to two times for credit if topic is not repeated. Prereq.: 9 s.h. of geography. 3 s.h.

4890. Geography Capstone. Investigation of research topics, methods, and issues in geography. Students select a geographic research topic, collect and analyze data using appropriate methods and present findings in oral and written form. Prereq.: Senior standing in Geography. 3 s.h.

5802. Biogeography. The distribution and scale of flora and fauna and the factors and processes that produce these patterns. Topics also include disturbance events, dispersal, colonization and invasion, and biological hierarchy. Prereq.: BIOL 1505 or BIOL 2602 or GEOG 1503. 3 s.h.

5805. Remote Sensing I. Analysis and interpretation of earth features from both airborne and satellite observation platforms. Themes include photogrammetry, digital data manipulation, multispectral imagery, and interpretation of environmental features. Not available to students who have taken GEOG 3765. Prereq.: GEOG 3750. 3 s.h.
1504. *The Dynamic Earth*. An examination of earth as consisting of interrelated geologic systems which are dynamic and constantly changing. Includes study of surface, lithologic and tectonic systems. 3 s.h.

1505/1505L. *Physical Geology*. A study of the various physical and chemical processes acting on and within the earth, and their products. The laboratory component includes identification of minerals and rocks, and the interpretation of topographic and geologic maps. Three hours of lecture, two hours of lab per week. 4 s.h.+0 s.h.

1505H. *Honors Physical Geology*. Concepts of the earth as a dynamic planet, investigated through a variety of lectures, text and journal readings, and independent library-research assignments. Prereq.: Eligibility for the Honors Program or consent of instructor. 3 s.h.

1508. *Geology of Gemstones and Allied Minerals*. Formation, occurrence, and distribution of gem materials. Properties and identification of gem stones; factors affecting their value. Introduction to synthetic/artificial gem materials. Not applicable toward the geology major. 3 s.h.

1509L. *Geoscience Laboratory*. Problem solving and assessment of case histories to illustrate the scientific method and geologic principles and concepts. Two hours laboratory per week. 1 s.h.

1510. *Geology of National Parks*. Geologic history of national parks; geologic processes observed in North American parks and Hawaii. Simulated field trips to several major parks. Not applicable toward the geology major. 3 s.h.

2602. *Introduction to Oceanography*. Survey of geological, physical, chemical, and biological oceanography; description and distribution of properties and their relationship to circulation, shorelines, ocean features, sediments, organisms, and environments. 3 s.h.

2605. *Historical Geology*. An in depth study of the origin and evolution of the Earth and its systems and life forms throughout geologic time. The course is designed to develop student critical thinking skills through analysis of concepts and issues, and the integration of maps, lithologic information, and fossil information. Three hours lecture and two hours lab per week. Field trips are an integral part of the course. Prereq.: GEOL 1505 and GEOL 1505L. 4 s.h.

2611. *Geology for Engineers*. Study of geologic principles, processes, and materials; focus on recognition of geologic factors as they apply to engineering operations and projects. Laboratory work includes examination of minerals, rocks, maps, and case histories. Two hours lecture, two hours laboratory per week. 3 s.h.

2614. *Mesozoic Dinosaurs and Other Reptiles*. A survey of major Mesozoic dinosaurs and reptiles, including discussion of their environment, organic evolution, diversity, and controversies pertaining to their classification and extinction. Prereq.: GEOL 3713. 3 s.h.

2615. *Geology and the Environment 1*. A study of the interrelationship of human activity and the geologic environment. An examination of geologic hazards, geologic considerations in waste disposal, resource utilization, and land use. Prereq.: GEOL 1504 or 1505 or 2611. 3 s.h.

2620. *Intro to Natural Gas and Water Resources*. A survey of the history, science and technology of oil and gas exploration and production and water resource related issues with an emphasis on non-conventional production in the Appalachian Basin. Prereq.: MATH 1513, CHEM 1516 and CHEM 1516L. 3 s.h.

2699. *Individual Study*. The introductory study of problems or issues in geology, or a review of literature relating to a specific geologic topic. A maximum of 3 s.h. may be taken. Prereq.: 8 s.h. in Geology, consent of department chairperson and instructor. 1-3 s.h.

**Upper-Division Courses**

3700. *Mineralogy*. The occurrence, composition, and crystallography of common and economically important minerals. Identification of minerals using physical, chemical, optical and x-ray properties. The theory and use of the polarizing microscope and its application to the study of crystalline material, including asbestos materials. Two hours lecture, four hours of lab per week. Prereq.: CHEM 1515 (may be concurrent) and GEOL 3713. 4 s.h.

3701. *Geomorphology*. A study of landforms and the processes which create them, using aerial photographs, geologic maps, and topographic maps. The laboratory work emphasizes recognition and interpretation of landforms. Two hours lecture, two hours laboratory per week. Prereq.: GEOL 1505. 3 s.h.

3702. *Glacial Geology*. A study of glacier types: their origin, movement, erosional/depositional contributions, and their relationship to various non-glacial features. Emphasis is on the Pleistocene glacial succession in North America. Field trips are an integral part of the course. Prereq.: GEOL 1505. 3 s.h.

3704. *Structural Geology*. Description and interpretation of geologic structures, mechanical properties; stress-strain relationships, regional structure of North America, and major tectonic theories. Prereq.: GEOL 3713. Geology majors must take GEOL 3704L concurrently with 3704. 2 s.h.

3704L. *Structural Geology Laboratory*. Structural geology techniques and analyses, including orthographic solutions, stereographic projections, and interpretation of maps. Two hours lab per week. Prereq. or concurrent: GEOL 3704 and MATH 1504, or consent of instructor. 1 s.h.

3706. *Geology of Economic Mineral Deposits*. A study of the occurrence, origin, and distribution of mineral deposits, with special attention to their economic use. Field trips are mandatory. Prereq.: GEOL 1505 and 3713. 3 s.h.
3709. **Subsurface Investigations.** An introduction to subsurface investigative methods that integrate principles of geophysics, geochemistry, interpretation of well logs and other bore hole data, outcrops and published information in the solution of actual geological problems. Two hours lecture, two hours lab per week. Students are expected to perform field work in addition to regularly scheduled class time. Prereq.: GEOL 3713, MATH 1571 recommended. 3 s.h.

3714. **Principles of Paleontology.** A detailed study of fossil invertebrates, including their origin, classification, paleoecology and stratigraphic utilization. Two hours lecture and two hours lab per week. Prereq.: GEOL 1514. 3 s.h.

3716. **Environmental Impact of Abandoned Mines.** Mining methods, types of mines, information retrieval, mine stabilization, and the effects of abandoned mines on environmental and human activities, especially of deep coal mines in the Mahoning Valley and adjacent areas. Two hours lecture and two hours lab per week. Prereq.: GEOL 1505 and 3713 or equivalent. 3 s.h.

3718. **Igneous and Metamorphic Petrology.** An in-depth study of the petrogenesis of igneous and metamorphic rocks based on their chemical and petrographic characteristics. Three hours lecture, three hours lab per week. Prereq.: GEOL 3700. 4 s.h.

3719. **Environmental Impact of Abandoned Mines.** Mining methods, types of mines, information retrieval, mine stabilization, and the effects of abandoned mines on environmental and human activities, especially deep coal mines in the Mahoning Valley and adjacent areas. Two hours lecture and three hours of lab per week. Prereq.: GEOL 1505 or equivalent or permission of instructor. 3 s.h.

3720. **Field Investigations in Geology.** A field-based approach to the study of geologic concepts and problems. Class and travel supervised by the Geology faculty; location, duration of stay, hours, credit, and grading criteria dependent on the site and nature of the geologic concepts and problems investigated. The course may be repeated. A maximum of 4 s.h. may be applied toward Geology major requirements. Prereq.: By permit only. 1-4 s.h.

3750. **Geoscience Seminar.** Guest lecture and student presentation forum course designed to provide students with exposure to a broad range of topics and current research relevant to the geosciences. Course may be repeated. Prereq.: Junior standing, GES major. 1 s.h.

4804. **Ground Water.** A study of the geologic and hydrologic factors controlling the occurrence and behavior of water beneath the earth's surface. Two hours lecture, two hours lab per week. Prereq.: GEOL 1505 and 3713; MATH 1571 recommended. 3 s.h.

4824. **Tectonics.** Geodynamics and the workings of plate tectonics. Kinetics and dynamics of plate motion, plate driving forces, thermal structure of the earth, and thermal convection in the earth. Tectonic and structural features on the earth. Geophysical, stratigraphic and structural signatures of extensional rifting, strike-slip faulting, subduction zones, plate collisions and mountain belts. Prereq.: GEOL 3704, 3718 and 5802. 3 s.h.

4825. **Geophysical Well Log Analysis.** An introduction to geophysical well logging, analysis, and interpretation applications in the oil and gas industry. Topics include well construction, drilling mud properties, and interpretation of gamma ray, SP, resistivity, sonic, neutron density, and cement bond logs. Prereq.: GEOL 2620 or permission of instructor, PHYS 1502 or PHYS 2611 recommended. Junior standing. 3 s.h.

4830. **Senior Thesis** is designed to be completed during the student's senior year and is expected to be a significant research-based contribution to the geosciences. A typical senior thesis topic will support the research program of full-time GES faculty. Students may develop their own research topic provided they have the support of one or more full-time GES faculty. Prereq.: Junior standing, minimum cumulative GPA of 3.0, submission of approved research proposal, permission of GES Chairperson. 1-3 s.h.

4899. **Special Topics.** Selected aspects of geology not covered in existing courses. Topics to be announced each time course is offered. May be repeated for different topics. Prereq.: appropriate 3700- or 4800-geology course and permission of the chairperson. 1 s.h.

5802. **Sedimentology and Stratigraphy.** The study and interpretation of sedimentary rocks, including physical characteristics, petrography, depositional environments, principles of correlation, and principles of basin analysis. Two hours lecture, two hours lab per week. Prereq.: GEOL 1505, 3713 and 3 s.h. upper-division geology. 3 s.h.

5805. **Special Problems in Geology.** An in-depth study of a specific problem in one of the branches of geology. The problem depends on the student's interest and qualifications and the equipment availability. A maximum of 8 s.h. may be taken. Prereq.: 8 s.h. in Geology, consent of the department chairperson and instructor. 1-4 s.h.

5815. **Geology and the Environment 2.** In-depth examination of earth processes, earth resources, and properties of earth materials as they relate to human activities, and their geologic consequences. Prereq.: GEOL 2615 or ENST 2600. 3 s.h.

5817. **Environmental Geochemistry.** An application of low-temperature aqueous geochemistry and geochemical computer modeling to environmental problems such as acid mine drainage, geochemical cycling of trace elements and nutrients, hazardous waste remediation, nuclear waste disposal, and surface and ground-water contamination. Prereq.: GEOL 3700 and CHEM 1516. 3 s.h.
GERONTOLOGY—GERO
Department of Sociology and Anthropology

1501. Introduction to Gerontology. Basic introduction to the interdisciplinary study of aging. Includes social, psychological, economic, cultural, health, and policy issues. Discussion of normal vs. abnormal (disease-related) aspects of aging. 3 s.h.

3703. Aging and Society. An interdisciplinary introduction to studies in aging. Examines the impact of population aging and its effect on society at large. Also examines individual aging processes and social significance of aging. Prereq.: SOC 1500 or GERO 1501. Listed also as SOC 3703. 3 s.h.

3745. Sociology of Health, Illness, and Healthcare. Social attitudes toward illness. Cultural and social factors in disease definition of illness, and organization of the health professions and health facilities. Prereq.: SOC 1500, GERO 1501, or admission to NEOMED-YSU program. Listed also as SOC 3745. 3 s.h.

3755. Theories of Gerontology. Review and critical analysis of current theories of the social aspects of aging and their use in research. Prereq.: SOC 1500 or GERO 1501. Listed also as SOC 3755. 3 s.h.

3756. Aging and Ethnicity. Aging in American subcultures, noting differences in status/role systems, demographic distributions, life styles, methods of dealing with the elderly, and related problems. Listed also as SOC 3756. Prereq.: SOC 1500 or GERO 1501. 3 s.h.

3757. Aging and Social Policy. Critical examination of social policies and social systems which affect aging and retirement. Prereq.: SOC 1500, GERO 1501, or POL 1560. Listed also as SOC 3757 and POL 3757. 3 s.h.

3758. Long-Term Care. Examines critical issues in long-term care systems, services, and programs. Impacts of social demographic and economic changes on long-term care needs, demands, and supplies. Contemporary trends and future outlooks of long-term care. Listed also as SOC 3758. Prereq.: SOC 1500 or GERO 1501. 3 s.h.

3790. Aging in Cross-Cultural Perspective. Examines the phenomenon of aging from cross-cultural perspectives with an emphasis on cultural evolution and its impact upon the status, roles and cultural values associated with aging and the aged. Listed also as SOC 3790 and ANTH 3790. Prereq.: GERO 1501 or ANTH 1500, or SOC 1500. 3 s.h.

4804. Family, Health, and Aging. Examines family and health related aspects of aging. Positive and negative interactions among family members and caregivers, and their impact on mental and physical quality of life of the elderly. Listed also as SOC 4804. Prereq.: GERO 3703 or SOC 3703. 3 s.h.

4821. Internship in Gerontology. Application of gerontological knowledge in settings such as social agencies, government offices, hospitals, nursing homes, or industry. May be repeated up to 15 s.h., but only a maximum of 6 semester hours can be applied to the gerontology major. Prereq.: Junior standing, 9 s.h. of Gerontology, and permission of chairperson. 3-15 s.h.

4850. Research Methods. An introduction to methods employed in social research. Attention is given to (1) the logic of scientific inquiry and the relationship between theory and methods; (2) the various qualitative and quantitative methods; (3) research design, data collection, organization, analysis, interpretation and application; (4) the social, cultural, political, and ethical context of social research; and (5) computer skills employed in data analysis. Prereq.: SOC 3701, ANTH 3701, or GERO 3701. Listed also as ANTH 4850 or SOC 4850. 3 s.h.

4851. Capstone in Gerontology. A capstone experience for the interdisciplinary study of aging. Students will complete a major research project. Prereq.: Senior status in Gerontology and SOC 4850. 3 s.h.

HEALTH AND HUMAN SERVICES—HHS
College of Health and Human Services

1500. Introduction to the Bitonte College of Health and Human Services. Freshman orientation course. Designed to enhance students' transition to college life through exploration of personal, academic, and career development. The course includes exposure to YSU student services and activities, as well as academic policies and procedures. Class is CR/NC and must be taken within the first 31 semester hours of course work. 1 s.h.

1510. Investigations Into Economic Class in America. The course examines the impact of economic class on individuals and communities. Investigating society's rules and resources provides a way to understand individuals, institutions, and society. Problem identification, analysis, and a structured process for change offer pathways to solutions for personal and community issues. 3 s.h.

3791. Community Medicine Seminar. Exploration of a variety of contemporary community health issues using problem-solving methods from a community medicine perspective. Prereq.: Admission to NEOMED-YSU B5/MD program. 3 s.h.

4800. Study Abroad in Health and Human Services. Students travel to designated countries in order to provide services for citizens while immersed in diverse cultures and traditions. The country traveled to and the service activities engaged in vary. Assignments and evaluation are based on service course objectives supervised by Health and Human Service faculty. Prereq.: junior standing, major in
BCHHS, and permission of the Dean’s Office. In some cases sophomore students may enroll (permission required). Course may be repeated each semester; fundraising and travel funds required. 1-6 s.h.

HISTORY—HIST
Department of History

Lower-Division Courses

1500. Discovering World History. Introduction to the methods, problems, and content of world history from Antiquity to the present. Emphasizes the relevance of past events and developments to the modern world. Does not count toward the major or minor in history, nor toward integrated social science degrees. 3 s.h.

1501. American Dreams: Introduction to U.S. History. Survey of American history focusing on five strategic events in the American past. Emphasis is on cultural conflict and compromise, institutional developments and revolutions, and the emergence of democracy as concept and practice. This course is intended for those students for whom history is not a requirement. 3 s.h.

1511. World Civilization to 1500. Origins and growth of the major civilizations of the world from earliest times to about 1500. Placement into ENGL 1550 or completion of ENGL 1539 or 1540. 3 s.h.

1512. World Civilization from 1500. Development of the major civilizations of the world from 1500 to the present. Placement into ENGL 1550 or completion of ENGL 1539 or 1540. 3 s.h.

1511H. World Civilization to 1500. An honors course in the origins and growth of the major civilizations of the world from earliest times to about 1500 with emphasis on the analysis and critical evaluation of historical developments. Prereq.: Eligibility for admissions to University Honors Program, or recommendation of a history instructor. 3 s.h.

1512H. World Civilization from 1500. An honors course in the development of the major civilizations of the world from about 1500 to the present with emphasis on the analysis and critical evaluation of historical developments. Prereq.: Eligibility for admissions to University Honors Program, or recommendation of a history instructor. 3 s.h.

2601. American Military History. A survey of American military history from the origin of the United States Army to the present, with emphasis on how military policies and strategies have been influenced by the domestic and foreign affairs of the United States. Identical with MSCI 2601. 3 s.h.

2605. Turning Points in U.S. History 1. Key episodes in the social, economic, political and cultural developments of the United States to 1877, exploring how diverse peoples shaped the growing nation. Cross-listed with AMER 2605. Prereq.: Readiness for ENGL 1550. 3 s.h.

2605H. History of the United States 1. An honors course concerning the political, social, and economic development of the United States to 1877 with emphasis on the analysis and critical evaluation of historical developments. Prereq.: Eligibility for admission to University Honors Program, or recommendation of a history instructor. 3 s.h.

2606. Turning Points in U.S. History 2. Key episodes in the social, economic, political and cultural developments of the United States since 1877, exploring how diverse peoples shaped the growing nation. Cross-listed with AMER 2606. Prereq.: Readiness for ENGL 1550. 3 s.h.

2606H. History of the United States 2. An honors course concerning the political, social, and economic development of the United States from 1877 to the present with emphasis on the analysis and critical evaluation of historical developments. Prereq.: Eligibility for admission to University Honors Program, or recommendation of a history instructor. 3 s.h.

2655H. History of Western Civilization 1. An honors course in Western Civilization to 1715 with emphasis on the analysis of historical developments. 3 s.h.

2656H. History of Western Civilization 2. An honors course in Western Civilization from 1715 to the present with emphasis on the analysis of historical developments. 3 s.h.

Upper-Division Courses

3700. The Atlantic World. Development of the Atlantic rim from 1450 to 1700 with emphasis on the processes of exploration, cultural contact, and colonization. Cross-cultural focus on West Africa, the Caribbean and eastern North America. Prereq.: HIST 2605. 3 s.h.

3702. Early America. From the first English interactions with the Native Americans and Africans, to the rebellion for independence, to the struggles over the creation of the Constitution. Prereq.: HIST 2605. 3 s.h.

3704. Age of Jefferson and Jackson. Early 19th century America, with emphasis on politics and culture before 1845. Prereq.: HIST 2605. 3 s.h.

3706. Age of Lincoln and Grant. The period from 1845 to 1877, including the development of the North-South conflict, the war years, and the Reconstruction. Prereq.: HIST 2605. 3 s.h.

3710. Incorporation of America, 1877-1919. The history of the United States from Reconstruction to the Treaty of Versailles, focusing on the transformation from a rural, agricultural nation to and urban, industrial nation. The nation's political, social, economic and cultural development, along with foreign policy. Prereq.: HIST 2606. 3 s.h.

3712. United States in Crisis: 1920-1945. The Roaring Twenties, Great Depression, New Deal, and World War II. An examination of the social, economic, and political forces that enables America to cope with
dramatic foreign and domestic crises. Prereq.: HIST 2606. 3 s.h.

3713. Cold War America: 1945-1990. An exploration of U.S. efforts to grapple with the Soviet Union, civil rights and equality, the role of government, changing sexual and social mores, the welfare state, and deindustrialization. Prereq.: HIST 2606. 3 s.h.

3715. Introduction to Historic Preservation. Introduction to the field of historic preservation. Provides historical context for the discipline as well as a basic grounding in the concepts and opportunities of the field. Prereq.: HIST 2605 and 2606. 3 s.h.

3717. Constitutional History of the United States. The development of the American constitutional system from colonial times to the present. Prereq.: HIST 2605 or 2606. 3 s.h.

3723. History of American Sports. An examination of sports within America from earliest times to the present. Special emphasis on the manner in which sports and society have influenced each other, such as racial and class relationships, social mobility, politics, religion, and foreign policy. Prereq.: HIST 2605 or 2606. 3 s.h.

3724. Colonial Latin America. Latin America from pre-Hispanic times to the independence, wars including both Spanish America and Brazil. Examines colonial institutions and the experiences of indigenous people, people of African descent, and women. U.S. influence in the region is also studied. Prereq.: HIST 1512 or 2605. 3 s.h.

3725. Modern Latin America. History of Latin America from the independence wars to the present. Examines political and economic developments as well as the social history of indigenous people, people of African descent, and women. U.S. influence in the region is also studied. Prereq.: HIST 1512 or 2606. 3 s.h.

3726. History of Women in the United States. Analysis of the various roles and contributions of women in American history. Prereq.: HIST 2605 or 2606. 3 s.h.

3727. Mexico and the Caribbean. Includes Mexico, Colombia, Venezuela, and the Central American republics. Special consideration is given to 20th century Mexico. Prereq.: HIST 2611, or consent of instructor. 3 s.h.

3730. The Black Experience in American History. A historical study of Black people’s roles in and contribution to the political, social, and economic development of American society. Prereq.: HIST 2605 or 2606, or AFST 2600. 3 s.h.

3731. History of African American Mayors. Study of African American mayors, beginning with the 1967 elections of Carl Stokes and Richard Hatcher to the present. Focus is on why African Americans were elected mayors, and what benefits they contributed to the African American community as well as to their respective cities. Prereq.: HIST 2606 or AFST 2600. 3 s.h.

3732. History of African American Mayors. The development of the American constitutional system from colonial times to the present. Prereq.: HIST 2605 or 2606. 3 s.h.

3734. History of Organized Crime in the United States. The history or organized crime emphasizes the organization of the criminal underworld, the ethnic, racial, and religious composition of criminal groups, and the impact of organized crime on prostitution, gambling, Prohibition, and drugs. Prereq.: HIST 2605 or 2606. 3 s.h.

3736. History of American Cities. City politics, social change, ethnic and racial issues, industrialization, and city planning during the 19th and 20th centuries. Other issues include the provision of city services, the rivalry between cities, and the development of the federal-urban relationship. Prereq.: HIST 2605 or 2606. 3 s.h.

3740. The Vietnam War. American involvement in Southeast Asia from the days of French rule to the fall of the Saigon government and beyond. Includes the war debate at home, and other consequences of the war. Prereq.: HIST 1512, 2606, or 2662. 3 s.h.

3741, 3742. Diplomatic History of the United States 1, 2. A study of American foreign relations as determined by interaction between domestic and international pressures (1) to 1900 and (2) since 1900. Prereq.: HIST 2605 for 3741, HIST 2606 for 3742. 3+3 s.h.

3743. Labor in United States History. Traces the transformation of American workers and the impact of the labor movement upon the United States. Emphasizes the diversity of the working class and the historical context of the political and social implications of the labor movement. Prereq.: HIST 2606. 3 s.h.

3744. The History of American Business. An examination of the growth and structural development of American business and its relationship to government from colonial times to the present with emphasis on the 20th century. Prereq.: HIST 2605 or 2606. 3 s.h.

3745. History of Jewish Labor. Examines Jewish labor history in Europe, the United States, and Israel. Explores the social history of the worker, gender and national differences, living and working conditions, as well as labor movements and worker political mobilization. Prereq.: HIST 1512 or 2606. 3 s.h.

3747. History of Appalachia. From 18th century settlement to present, emphasizing images of the region and its people, and focusing on issues of economic development, folk culture, religion, race, gender and outmigration. Prereq.: HIST 2605 or 2606. 3 s.h.

3748. History of Ohio. The important events and movements that have shaped Ohio history in the social, economic, religious and political areas. Prereq.: HIST 2605 or 2606. 3 s.h.

3749. History of African-American Relations. Survey of African-U.S. relations from the transatlantic slave trade to the present with emphasis on the 20th century. Prereq.: HIST 2663 or consent of instructor. 3 s.h.

3750. History of Modern Africa. The impact of colonialism on the peoples of 20th century Africa, focusing
on sub-Saharan: Colonialism, colonial administration, urbanization, nationalism, pan-Africanism, decolonization and the challenges of modern Africa. Prereq.: HIST 2663 or consent of instructor. 3 s.h.

3751. History of South Africa. From the beginnings of the 19th century to the present. Prereq.: HIST 1512, 2605, 2606, or 2663. 3 s.h.

3752. Ancient History 1. From the Neolithic Revolution to the Peloponnesian Wars. Intensive study of civilizations of Mesopotamia and Egypt, as well as Hellenic history. Prereq.: HIST 1511. 3 s.h.

3753. Ancient History 2. The Hellenic Period to the fall of Rome. Intensive study of the Age of Alexander and the Roman Republic. Prereq.: HIST 1511. 3 s.h.

3755. Early Medieval Civilization. A political, economic, intellectual and cultural history which traces events and developments throughout Europe from the collapse of the Ancient World to the beginning of the High Middle Ages. Prereq.: HIST 1511. 3 s.h.

3756. High Medieval Civilization. A political, economic, intellectual and cultural history which traces events and developments throughout Europe during the High Middle Ages (eleventh through fifteenth centuries). Prereq.: HIST 1511. 3 s.h.

3757. History of Medicine. Practices and theories of healing, and their relation to social and intellectual context, from ancient times to the present. Prereq.: HIST 1511 or 1512, or a social science course. 3 s.h.

3758. Renaissance Europe. A survey of European history from the end of the High Middle Ages to the 16th century. Emphasizes the rise of humanism and of Renaissance culture in Italy, its dissemination beyond the Alps as well as the development of national states and the flowering of the Late Medieval tradition in western and eastern Europe. Prereq.: HIST 1511. 3 s.h.

3759. The Reformation Era. The history of Europe from the Lutheran Revolt to the Peace of Westphalia in 1648. Major themes of study are the causes of the Reformation, the impact of Luther, Calvin and the Radical Reformation, the Catholic Reform movement, the Wars of Religion, and the rise of the modern secular states. Prereq.: HIST 1512. 3 s.h.

3760. The Age of Louis XIV. The history of Europe from 1600 to the outbreak of the French Revolution in 1789. Emphasis on France under Louis XIV and Louis XV, Old Regime society, and the intellectual creativity of the Eighteenth-Century Enlightenment. Also focuses on the widening confrontation between science and religion, the growth of Europe's overseas empire, and the emergence of the modern nation-state. Prereq.: HIST 1512. 3 s.h.

3761. The French Revolution and Napoleon (1789-1815). The French Revolution is examined in detail, especially from its outbreak to the fall of Robespierre. The last portion deals with the rise of Napoleon, his political role, his military campaigns, the reconstruction of Europe, and his fall at Waterloo. Prereq.: HIST 1512. 3 s.h.

3762. The Second World War. An examination of the war's diplomatic and ideological origins; social, economic, and political factors; and strategic, tactical, and technological dimensions of the conflict in all major theaters. Prereq.: HIST 1512 or 2606. 3 s.h.

3763. Modern France, 1815 to Present. France from the fall of Napoleon to the present. Major cultural, intellectual, and political themes of the period. Impact of the two World Wars, France's post-war revival, the student riots of 1968, and the changes which have transformed French politics and society in the 1980s. Prereq.: HIST 1512. 3 s.h.

3764. Modern Europe, 1715 to the Present. A survey of European history from the Enlightenment to the European Union. Themes include the development and debate surrounding European civilization's emphasis on individuality, technology, capitalism, class, war, and progress. Prereq.: HIST 1512. 3 s.h.

3765. Europe from the Congress of Vienna to the Franco-Prussian War (1815-1871). Such movements as Nationalism, the impact of the Industrial Revolution, Marxism, the growth of Democracy, Liberalism and Conservatism, Romanticism and Realism, Reform and Revolution, from the main themes of the period. The course is divided into two historical periods, from 1815 to the Revolution of 1848, and from 1848 to 1871 with the emphasis on the unification of Italy and of Germany and the New Europe that arose as a consequence. Prereq.: HIST 1512. 3 s.h.

3766. Europe from the Franco-Prussian War to World War I. The impact of the Paris Commune; revolutionary movements and their contradictions; imperialism, political anti-Semitism, and the images of war; the Bismarckian international order and its suicide. Prereq.: HIST 1512. 3 s.h.

3767. Europe from World War I to the Present. War, revolutions, and the European order; Versailles and its contradictions; the Fascist response to Communism and Depression; the interaction of Democracies, Fascism, and Stalinism in the making of World War II and the Cold War. Prereq.: HIST 1512. 3 s.h.

3769. Modern Germany. Unification and modernization; scientific, technological, and cultural splendors; world power and disaster; Nazism, the Holocaust, and German society. Prereq.: HIST 1512. 3 s.h.

3770. Asia to 1500. Political, economic, religious, artistic, and philosophical developments in India, China and along the Silk Road, from ancient times to 1500 C.E. Prereq.: HIST 1511. 3 s.h.

3772. History of Modern China. China from the mid-19th century to date, with emphasis on Western impact, industrialization, intellectual trends, the Revolution of 1911, national reconstruction, student movements, the rise of Communism, and the contemporary scene. Prereq.: HIST 2662 or consent of instructor. 3 s.h.

3774. Global Environmental History: Topics and Methods. The historical development and diversity of
ideas and actions regarding the interaction of human societies and the natural environment. From 1492 to the present, with particular emphasis on the nineteenth and twentieth centuries. Economic growth and resource depletion. Emergence and development of conservation, environmentalism, ecology. Ideas, events, and institutions. Historiography and methods of environmental history. Prereq.: HIST 1511, 1512, 2605 or 2606.

3775. Global Industrial Revolution. Major themes and events in the origins and global diffusion of industrialization from the 18th to the 21st centuries. The Industrial Revolution and associated changes in technology, society, culture, economy, geo-politics, environment, and public health. Prereq.: HIST 1512 or 2605 or 2606. 3 s.h.

3776. History of Modern Japan. Japan’s history from the Meiji Restoration to date, including the industrialization, the party movement, intellectual development, the rise and fall of militarism, postwar reconstruction, and current problems. Prereq.: HIST 1512 or consent of instructor. 3 s.h.

3778. Russia to 1855. History of Russia from its ninth century origins to the eve of the Great Reforms of Tsar Alexander II. Surveys political, social, cultural, and intellectual developments, the Orthodox Church, and Russian expansion and colonization in Siberia and Alaska. Prereq.: HIST 1511 or 1512. 3 s.h.

3779. Russia 1855 to Present. The Russian Empire from the Great Reforms of Alexander II to its collapse during WWI, the Revolutions of 1917, the rise and fall of the Soviet Union (1922-1991), and Soviet successor states to the present. Prereq.: HIST 1511 or 1512. 3 s.h.

3780. History of Eastern Europe. The histories of the nations that have made up Central and Eastern Europe from the earliest times to their present, and their contributions to world civilization. Prereq.: HIST 1511 or 1512. 3 s.h.

3782. History of the Balkans. Southeastern Europe from the 4th century to the present, including the impact of the Byzantine and Ottoman Empires and the two World Wars. Prereq.: HIST 1511 or 1512. 3 s.h.

3783. Britain and Its Empire 1: 1668-1870. An integrative history of Britain and its empire, from the Glorious Revolution to Victoria’s crowning as Empress of India. Emphasis on how the development of British liberal politics, industrial society and Romantic culture influenced its empire and vice versa. Prereq.: History 1512. 3 s.h.

3784. Britain and Its Empire 2: 1870-Present. An integrative history of Britain and its empire, from the opening of the Suez Canal to the present. Emphasis on how Britain’s decline as a world political, diplomatic, military and industrial power impacted its world empire during the twentieth century, noting how the empire changed Britain itself in the process. Prereq.: History 1512. 3 s.h.

3785. The Mediterranean World: Modern Italy, 1815-Present. Survey of Italian history from the Risorgimento to the present. Emphasis on the reasons for the late emergence of Italian nationhood, the rise of Italian nationalism, unification, the weakness of Italian democracy, the rise of Fascism, and the political instability Italians have experienced since 1945. Prereq.: HIST 1512. 3 s.h.

3787. History of Women in Europe. Analysis of the various roles and contributions of women in European history from the Renaissance to the present. Prereq.: HIST 1512. 3 s.h.

3788. The Holocaust. Study of the attempted genocide against the Jews in World War II. Special emphasis on racial theories that gave rise to Nazism, politics of collaboration, various forms of resistance, and ethical problems associated with the concentration camps. Prereq.: HIST 1512. 3 s.h.

3789. Jewish History. An overview of Jewish history in the past twenty centuries, with emphasis on achievements in the arts, sciences, and politics, and on precedents for the Holocaust. Prereq.: HIST 1511 and 1512. 3 s.h.

3790. Medieval Britain. From the Celtic times to 1485. Emphasizes the political and cultural evolution of the British people before and after the Norman Conquest, including the creation of the English identity, the development of constitutional monarchy, the propaganda value of architecture, art, and literature, and the role of the Church. Prereq.: HIST 1511. 3 s.h.

3793. Tudor-Stuart Britain. England, Scotland, Wales, and Ireland from the end of the War of the Roses to the accession of George I to the British throne in 1714. Emphasis on the development of the centralized Tudor state, colonization of the New World and India, the English Civil War and Glorious Revolution, European wars for naval supremacy, and the culture of the Shakespearean age. Prereq.: HIST 1512. 3 s.h.

3794. The First World War. An examination of the origins of the war, the social, economic, intellectual and political repercussions, and the technical and military developments. Prereq.: HIST 1512. 3 s.h.

3795. The World since 1945. Global developments including the Cold War, decolonization and economic dependency in the non-western world; militarism and terrorism; pollution; and the internationalism of the world. Prereq.: HIST 1512. 3 s.h.

3796. Genocide and Mass Murder. The origins, definitions, causes and forms of genocide. Case studies will be drawn from across geographical regions and time periods such as Armenia, the Holocaust, Cambodia, the former Yugoslavia, Rwanda and the Sudan. Prereq.: HIST 1512 or consent of instructor. 3 s.h.

3797. Middle East 1: The Islamic Centuries. From Muhammad to the collapse of the Ottoman Empire. Intensive study of the medieval Islamic caliphates,
Crusades, Turks, and European imperialism. Prereq.: HIST 1511 or 2661. 3 s.h.

3798. Middle East 2: The Modern Period. The 20th century. Impact of oil, Arab nationalism, Zionism, Islamic fundamentalism. Prereq.: HIST 1512 or 2661. 3 s.h.

4801. Select Problems in American History. Specific problems in American history in such areas as economics, political theory, and cultural and intellectual history. May be repeated with different content. Prereq.: Consent of the instructor. 3 s.h.

4808. Oral Communication Projects in History. Development of oral communication skills for students of history. Emphasizes the understanding of effective speaking practices, the development of self-analysis, and the presentation of material gathered from a linked course. Concurrent: Enrollment in an upper division history course. 1 s.h.

4809. Documentation and Interpretation of Historic Sites. Methods of documenting historic properties especially as related to the National Register of Historic Places. Includes interpretation of historic sites for public exhibit. Prereq.: HIST 3715. 3 s.h.

4811. Practicum in Historic Preservation. Experience in historic preservation through student participation in a wide variety of historic preservation projects. Prepares students for internships outside the university. Prereq.: HIST 3715 and permission of Historic Preservation Committee. 3 s.h.

4812. Historic Preservation Internship. Practical application of principles and methods in the field of historic preservation with the goal of producing a completed project. Internship to be selected by student in conjunction with program director. May be repeated once. Prereq.: HIST 3715 and approval of internship committee. 3 s.h.

4815. American Material Culture. A discussion and analysis of the use and importance of material artifacts as texts for the recovery of the American past. Emphasis on sources not traditionally utilized by historians. Examples include the contextual analysis of children’s books, foodways, and sacred spaces. Prereq.: HIST 2605 and 2606, or AMER 2601 and 3701. Cross-listed with AMER 4815. 3 s.h.

4850. International Area Study. A course in the geography and history of a selected international area with emphasis on cultural development by traveling in the selected region. The class and travel is supervised by the Geography and/or History faculty. The course grade is based upon a term paper which must be submitted within 60 days after the end of the course. Prereq.: By permit only. 3-9 s.h.

4851. Select Problems in European History. Specific problems in European history in such areas as economics, political theory, and cultural and intellectual history. May be repeated with different content. Prereq.: Consent of instructor. 3 s.h.

4860. Select Problems in Transnational History. Transnational issues in African, Asian, Latin American, and/or Middle Eastern history in such areas as economic, political, social, cultural and intellectual history. May be repeated with different content. Prereq.: Consent of the instructor. 3 s.h.

4870. Senior Research Seminar. A seminar that requires the writing of an extensive paper based mainly on primary material. All history majors must take this course. Prereq.: Senior standing and completion of four upper-division history courses with a grade of C or better. 3 s.h.

5806. American Architectural History 1. Development of structural styles and trends within the United States, focusing on formal architectural styles. Prereq.: HIST 2605 and 2606. 3 s.h.

5807. American Architectural History 2. Development of vernacular, folk, and industrial architecture in the United States. Focus is on local variants with emphasis on 20th Century specimens. Field trips will view representative building types, especially housing. Prereq.: HIST 5806. 3 s.h.

5810. Conservation of the Historic Built Environment. The theory and practice of preserving and rehabilitating all aspects of the historic built environment. Provides broad exposure through field experience. Prereq.: HIST 3715. 3 s.h.

HONORS PROGRAM—HONR Interdisciplinary University Honors Study

1500. Intro. To Honors. Prepares students for the expectations and requirements of the Honors Program. Students develop skills that aid in their overall academic endeavors and explore topics pertinent to their development within the Honors Program and as citizens of the university, local, national and global communities. Prereq.: Admission to the University Honors Program or eligibility for admission to the University Honors Program. 1 s.h.

1599. Special Topics. An introductory-level examination of some topic appropriate for honors study. Typically team-designed. In certain cases, students may arrange to have the course counted toward the major by negotiation with the major department. With approval of the director of Honors, may be repeated for credit with different topics. Prereq: Admission to the Honors Program or permission of instructor and director of Honors. 3 s.h.

2601, 2602. Honor Seminar. An interdisciplinary seminar series dealing with topics appropriate to students in the Honors Program. The subjects include, but are not limited to, creativity, the organization and function of the university, the total human being, critical thinking, current events, etc. Prereq.: Eligibility for the Honors Program. 1-2 s.h.

2699. Special Topics. A close examination of some topic appropriate for lower-division honors study. Typically team-designed. In certain cases, students
may arrange to have the course counted toward the major by negotiation with the major department. With approval of the director of Honors, may be repeated for credit with different topics. Prereq: Admission to the Honors Program or permission of instructor and director of Honors.

3701, 3702. University Honors Seminar. A critical investigation of selected areas underlying civilization, embracing and integrating the particular studies of science, society, and the humanities. Prereq.: Eligibility for the Honors Program. 1-2 s.h.

3799. Special Topics. A close examination of some topic appropriate for upper-division honors study. Typically team-designed. In certain cases, students may arrange to have the course counted toward the major by negotiation with the major department. With approval of the director of Honors, may be repeated for credit with different topics. Prereq: Admission to the Honors Program or permission of instructor and director of Honors. 1-2 s.h.

4890. Senior Honors Thesis. Directed research for students pursuing senior honors thesis research. Prereq.: Junior status; completion of 18 s.h. of Honors coursework; submission of an approved Honors thesis proposal; and permission of the honors director. May be repeated for up to 3 s.h. 1-3 s.h.

HOSPITALITY MANAGEMENT—HMGT
Department of Human Ecology

1500. Introduction to Hospitality Industry. General overview of the hospitality industry with perspectives on the organizational structure, operations, management and various associated issues. 3 s.h.

2603. Hospitality Managerial Accounting 1. Using the “Uniform System of Accounting for Small Hotels, Motels, and Motor Hotels,” introduces the unique requirements of hospitality industry record keeping. Focus on using financial data to safeguard assets, control costs, budget and plan, and practice yield management. Prereq.: Math 1552 or 2623. 4 s.h.

2622. Hotel Management. The role of service departments within a hotel, such as housekeeping, front office, security (or night audits), and concierge. Topics include: fundamental lodging classifications and brands in the lodging industry, recent trends, the relationship between the hotel rooms department and other departments. Prereq: HMGT 1500 or 1501. 3 s.h.

2634. Hospitality Management Information Systems. Overview of the management information systems of hotels, restaurants, and other hospitality industries. Prereq.: CSIS 1514 3 s.h.

2691. Hospitality Cooperative Work Experience. Work experience in which the student assumes supervisory responsibilities within an assigned food-service or lodging facility. One hour seminar and 20 hours work experience per week. Prereq.: C or better in HMEC 1550 and HMGT 1500; 2.0 GPA. 3 s.h.

3719. Facilities Management. Maintenance, engineering and security principles for lodging and food service properties. Technical information, preventive maintenance, engineering, housekeeping and security department roles; security techniques used to enhance safety of persons and property, including loss prevention, administration, organization, emergency planning, and liability. Prereq.: HMGT 1500 or 1501. 4 s.h.

3725. Food and Beverage Management. Managerial authority and responsibilities in setting goals, forecasting, controlling quality and costs, establishing policy in the successful operation of a food and beverage department. Two hours lecture, two hours lab. Prereq.: FNUT 2612. 3 s.h.

3734. Front Office Operation. Advanced study of the front-office management from reservations through checkout including the property management systems, central reservation system, and their impacts on other lodging operations. Prereq.: C or better in HMGT 2622. 3 s.h.

3745. Hospitality Marketing and Sales. Basic concepts and practices of modern hospitality marketing, which enable students to develop strategic and operating marketing plans for hospitality industries. Prereq.: C or better in HMGT 1500 or 1501. 4 s.h.

4804. Hospitality Industry Law and Ethics. Legal aspects of managing a hotel, resort, or restaurant. Provides an understanding of preventive measures to avoid or successfully deal with litigation. Includes legal research, licensing, innkeepers’ obligations. Prereq.: MGT 2604; C or better in HMEC 1550 and HMGT 3719. 3 s.h.

4846. Event Management. Focus on the career of meeting and convention management, includes adult learning theory, finance, promotion, post-meeting evaluation, facility selection, budgeting, exhibit management, physical facilities, pre-event planning. Prereq.: MKTG 2603 or C or better in HMGT 3745. 3 s.h.

4896. Hospitality Operations Management. Capstone course requiring a broad application of knowledge and skills. Students solve operational dilemmas and make decisions reflecting the diverse nature of managing a hotel, resort, and food-service property. Prereq: C or better in HMGT 2691 and CHFM 3731. 3 s.h.

HUMAN ECOLOGY—HMEC
Department of Human Ecology

1550. Human Ecology Professions. Orientation to the history, philosophy, and human eco-system foundation of family and consumer science careers; standards for professional, ethical practice; decision making and career planning. An introductory course for all Human Ecology Department majors or
Methods of organization, instruction, and evaluation. Includes discussion of current consumer issues and resources for consumer information. Prereq.: ECON 1501 or 1502 or 1503 or 2610. 3 s.h.

4800. Teaching in Family and Consumer Sciences. Methods of organization, instruction, and evaluation for teaching in vocational family and consumer sciences. Prereq.: Minimum grade of C in CHFM 3731. 3 s.h.

4835. Field Experiences in Human Ecology. Internship in a community agency or commercial enterprise related to human ecology. Four hours experience or two hours of seminar weekly equal one credit hour. May be repeated up to 6 s.h.. Prereq.: twelve s.h. of Human Ecology credit and junior standing. Student must file application one semester prior to registering. 3 s.h.

4836. Internship. Integration of theory and practice through supervised field-based experiences in a professional setting. May be taken over consecutive semesters with PR grading for first semester; 75 hours of field work per credit hour. May be repeated up to 12 s.h. Prereq.: Junior standing, HMEC 1550, 2.0 overall GPA., 2.5 GPA. in major, and 18 s.h. in required major courses. 1-9 s.h.

4852. Family Resource Management. A systems view of family functioning with the emphasis on managerial decision making and effective use of resources. Prereq.: CHFM 3731 or PSYC 3707 or SOC 3705. 3 s.h.

4853. Family Financial Education. Financial management principles and application in the context of family type and stage of the life cycle; financial literacy education curricula, resources, and teaching strategies. Prereq: Minimum grade of C in HMEC 3780 and HMEC 4852. 3 s.h.

4874. Directed Individual Study. Individual study or research of a special problem or issue related to human ecology. Application must be made with the department prior to registration. Prereq.: 12 s.h. human ecology credit and senior standing. 1-3 s.h.

4876. Undergraduate Research. Individual research that addresses a significant family or consumer issue; research methods, literature review, and proposal development. Prereq: CHFM 3731 and PSYC 2617 or FNUT 4802. 2 s.h.

4877. Research Capstone. Individual research that addresses a significant family or consumer issue; collection and analysis of data; dissemination of results through written and oral reports. Prereq: HMEC 4876. 2 s.h.

4890. Communication of Contemporary Issues. This course enables students to understand the interpersonal relationships of the specializations in the field of family and consumer sciences while exploring public policy issues that impact the family and the profession. Students will develop skills in the application of demonstration, audiovisual, and public relations tools and techniques in communicating human ecology information to target groups from preschool to adult. Two hours of lecture and 2 hours of lab per week. Prereq.: Minimum grade of C in CMST 1545 and Minimum grade of C in HMEC 1550; Prereq or Coreq: CHFM 3731. 3 s.h.

5870. Human Ecology Workshop. Special workshops in a professional area of human ecology as needed. Prereq.: junior standing. 1-3 s.h.

5893. Work and Family. Interaction of work and family systems; implications for education, business, and human services; development of programs to assist individuals in balancing multiple roles. Prereq.: CHFM 3731, SOC 3705, or PSYC 3707. 3 s.h.

5895. International Studies in Human Ecology. Professional areas of human ecology and their relationship to native cultures are the focus of travel to designated countries. Class sessions and travel as well as pre-tour and post-tour assignments and evaluation based on course objectives supervised by human ecology faculty. Prereq.: CHFM 3731, junior standing, permission of instructor and H. E. department chairperson. 1-4 s.h.

HUMAN PERFORMANCE AND EXERCISE SCIENCE—HPES

Department of Human Performance and Exercise Science

1500. Physical Activity Core Concepts. Essential concepts that document the relationship between physical activity and maintaining optimal health. Personal and social implications of physical inactivity are also explored. Two HPES activity courses must be taken in addition to this course to satisfy the requirements for GER credit. 1 s.h.

Activity Classes

Taking HPES 1500 and any two of the following activity courses—HPES 1502, 1507, 1510, 1511, 1512, 1513, 1514, 1515, 1519, 1520, 1521, 1522, 1523, 1524, 1526, 1528, 1529, 1530, 1531, 1537, 1544, 1545, 1548, 1554, 1555, 1556, 1557, 1564, 1565, 1566, 1588, 2697

—counts as 3 s.h. for the PS Domain of the GER:

The three courses do not need to be taken concurrently.
1502. **Volleyball 1.** Basic rules and fundamental skills of volleyball including serves, bump, overhead pass, and block. 1 s.h.

1507. **Volleyball 2.** Intermediate-to-advanced volleyball skills including diving, rolling, and various team offensive and defensive strategies. Prereq.: HPES 1502. 1 s.h.

1510. **Archery.** Techniques of target archery. Selection, care, and repair of equipment. 1 s.h.

1511. **Badminton.** Skills, mechanics, and rules of badminton. 1 s.h.

1512. **Bowling 1.** Fundamentals of bowling the straight ball. Equipment selection, correction of errors, and scoring. For beginning bowlers. 1 s.h.

1513. **Bowling 2.** Intermediate bowling. Refinement of bowling skills and use of the hook delivery. Tournament planning, team strategy, and competition. Prereq.: HPES 1512. 1 s.h.

1514. **Fencing 1.** Fundamentals of foil fencing. Methods of attack and parry, and elementary boutting and judging. 1 s.h.

1515. **Fencing 2.** Intermediate strategies and techniques of foil fencing and boutting. Prereq.: HPES 1514. 1 s.h.

1519. **Racquetball.** Racquetball rules and techniques for singles and doubles play. Basic strategy and skill development. 1 s.h.

1520. **Golf 1.** Fundamental skills of golf. Includes grip, stance, swing patterns, and putting as well as rules of course play. 1 s.h.

1521. **Golf 2.** Intermediate golf. Refinement of swing patterns, methods of instruction, correction of errors. Emphasis on the use of various clubs and types of shots. Prereq.: HPES 1520. 1 s.h.

1522. **Tennis 1.** Fundamental skills of tennis including forehand and backhand drives and service. Basic rules, strategy, and method. 1 s.h.

1523. **Tennis 2.** Theory and practice of intermediate-to-advanced tennis skills and play. Prereq.: HPES 1522. 1 s.h.

1524. **Physical Fitness and Exercise Programs.** Discussion and participation in activities designed to develop and improve the health-related aspects of physical fitness including weight and stress control. 1 s.h.

1526. **Marksmanship.** The safety and practice of handling firearms. Target shooting in prone, kneeling and standing positions. 1 s.h.

1528. **Advanced Physical Fitness and Exercise Programs.** Discussion of and participation in strenuous activities designed to develop and improve the health- and performance-related aspects of physical fitness. 1 s.h.

1529. **Recreational Games.** Fundamentals, skills, techniques, strategy, and rules of racquetball, paddle tennis, table tennis, shuffleboard, and other recreational games. 1 s.h.

1530. **Aquatics 1.** Introduction to swimming and survival skills, floating, drownproofing, basic swim strokes (side, elementary back and front crawl), beginning diving, and simple aquatic games. This course is designed for the student who cannot swim; it is not open to swimmers. 1 s.h.

1531. **Aquatics 2.** Intermediate swimming. Introduction to back crawl, breaststroke and butterfly. Techniques in underwater swimming; use of mask, snorkel and fins. Elementary lifesaving skills and refinement of basic springboard diving. Prereq.: HPES 1530. 1 s.h.

1534. **Fitness Swimming.** Utilization of freestyle swimming stroke to improve/maintain fitness across the lifespan. Content includes stroke mechanics, turning technique, and swim training program design to meet individual fitness and health goals. Prereq.: Ability to swim for 250 yards. 1 s.h.

1537. **Aquatic Exercise.** Fitness through aquatic conditioning exercises tailored to the individual needs of the student. Open to swimmers and non-swimmers. 1 s.h.

1544. **Step Aerobics.** Rhythmic exercise and conditioning activities performed to music, utilizing a step platform as the foundation of the workout. Designed to improve cardio-respiratory endurance and flexibility. Emphasis on understanding the five basic components of fitness and basic principles and techniques involved in step training. 1 s.h.

1545. **Folk and Square Dance.** European and Mediterranean folk dances, American Square dances, and mixers. Beginning materials and practice. 1 s.h.

1548. **Aerobic Dance.** Rhythmic exercises and conditioning activities performed to music. Designed to improve cardiovascular fitness, flexibility, and general muscle tone. 1 s.h.

1549. **Varsity Competition.** Credit may be obtained through competition in varsity athletic programs. Prereq.: Consent of coach. 1 s.h.

1550. **Pilates.** Instruction in principles of body alignment and posture and participation as it pertains to fundamental Pilates techniques. 1 s.h.

1552. **Yoga.** Instruction in principles of meditation, body alignment and posture, and participation as it pertains to fundamental yoga techniques. 1 s.h.

1554. **Fitness Walking.** Information on the benefits of walking for fitness. Health advantages, appropriate conditioning, pace, warm-up and cool-down. Practical experience in the skills needed to achieve success in developing and adhering to a walking program. 1 s.h.

1555. **Jogging.** Holistic approach to the theory and practice of jogging with emphasis on the physiological benefits. 1 s.h.
1556. Racquetball 2. Advanced racquetball techniques, strategy, conditioning, and mental preparation for singles, doubles, and tournament play. Emphasis on the use of various advanced shots, positioning, and officiating. Prereq.: HPES 1519. 2 s.h.

1557. Weight Training. Introduction to progressive resistive exercise for men and women. Topics include strength training, types of equipment, exercise techniques, circuit training, competitive weightlifting, body building, and injury prevention. 1 s.h.

1558. Physical Fitness for Life. Participation in exercise and physical activities, and identification of resources and assessment instruments utilized in developing an individualized, well-rounded, effective, lifelong physical fitness program. One hour lecture, two hours lab. 2 s.h.

1559. Aerobic Conditioning Activities. Analyses and practices in activities designed to develop and improve cardiovascular endurance. Such activities include, but are not limited to, aquatics, fitness walking and jogging. One hour lecture, two hours lab. Prereq.: Exercise science major, or Physical education major. 2 s.h.

1560. Resistance Training. Concepts and applications of progressive resistance exercise. Emphasis on advanced principles and techniques for developing muscular strength and endurance for fitness and athletic performance. Two hours lab. Prereq.: Exercise science major or Physical education major. 1 s.h.

1563. Rock Climbing. Instruction and participation in fundamental rock climbing techniques that include safely constructing anchor systems, employing belay methods, equipment selection, and beginning climbing skills. A weekend, off-campus field-experience is required. 1 s.h.

1564. Bicycling. Instruction and practice in bicycling skills, techniques, and procedures necessary for intermediate or long trips. Students must provide their own three-, five-, or ten-speed bicycle. 1 s.h.

1565. Self-Defense. The defensive techniques of Judo and Aikido designed to counter attacks with a knife, club, gun or bare fist. Balance, control, safety, falling. 1 s.h.

1566. Judo. Introduction to the history, philosophy and techniques of Judo. Fundamental techniques include falls, hand and leg throws, grappling, various holds and joint locks. 1 s.h.

1568. Taekwondo/Karate. An introduction to the history, philosophy and techniques of taekwondo/karate. Fundamental techniques include: stances, kicks, punches, and forms. 1 s.h.

1575 Performance and Analysis of Net/Wall Games. Analysis and practice in performing and teaching tennis, racquetball, badminton, volleyball and other net/wall games. One hour lecture, two hours lab. 2 s.h.

1588. Selected Activities in Human Performance and Exercise Science. Knowledge of and practice in a particular area of dance, fitness, or sport. Activity is announced each time the course is offered. May be repeated up to 4 s.h. with change in topic. 1-2 s.h.

2630. Lifeguard Training. Water rescue, preventive lifeguarding techniques, emergency procedures. Red Cross certificate granted upon satisfactory completion of all requirements. 2 s.h.

2631. Water Safety Methods for Instructors. Techniques for teaching and supervising swimming, emergency water safety, and basic water safety. Introduction to infant and preschool aquatic programs. A water safety instructor’s certificate granted upon satisfactory completion of all requirements. Prereq.: Current lifeguard training certificate or emergency water safety certificate. 2 s.h.

2632. Skin and Scuba Diving. Basic skin-diving with the use of mask, fins, and snorkel. Scuba diving skills with the use of tank and regulator. Emphasis on diving physics, physiology, lifesaving, first aid, and safety skills related to skin and scuba diving. Two hours lecture, two hours lab. Student must furnish mask, fins, and snorkel. 2 s.h.

2635. Openwater Scuba Diving. Practical experiences in physiological and psychological stress, underwater navigation, effects of hypothermia, decompression, repetitive diving, and rescue techniques. Students completing this course receive basic scuba certification. Five hours lecture, ten hours lab per semester. Prereq.: HPES 2632. 1 s.h.

2637. Skin, Scuba and Openwater Diving. Basic scuba and skin-diving skills with use of tank and regulator. Practical experiences in physiological and psychological stress, effects of hypothermia, decompression, and rescue techniques related to repetitive diving. Students completing course receive basic openwater certification. Students must furnish mask, fins, and snorkel. Two days openwater field experience. Two hours lecture, two hours lab. 3 s.h.

2697. Camping. The specific skills and problems encountered in camping: shelter, clothing, food, transportation, and site selection. Two hours lab. 1 s.h.

Lecture-Laboratory Classes for Majors or Minors only

1506. Performance and Analysis of Track and Field. Skills, techniques, and rules of track and field events. Includes progressions, organizational strategies, and field day administration for teachers. Two hours lab. Prereq.: Physical education major. 1 s.h.

1567. Performance and Analysis of Invasion Games. Analysis and practice in performing and strategies for teaching invasion games including soccer, team handball, basketball, and variations of hockey and football. Information such as rules, terminology, etiquette, strategies, progressions, lead-up games, officiating, and assessment. One hour lecture, two hours lab. Prereq.: Physical education major. 2 s.h.
1573L. **Tactical Approach to Teaching Team Sports.** Analysis and practice in performance and strategy development, for teaching team sports using a concept-based model. Two hours lab per week. Prereq.: Physical education major. 1 s.h.

1574. **Performance and Analysis of Lifetime Sports.** Analysis and practice in performing and teaching golf, bowling, and other lifetime sports. Two hours lab. Prereq.: Physical education major. 1 s.h.

1575. **Performance and Analysis of Net/Wall Games.** Analysis and practice in performing and teaching tennis, racquetball, badminton, volleyball and other net/wall games. One hour lecture, two hours lab. Prereq.: Physical education major. 1 s.h.

1576. **Performance and Analysis of Aquatic Activities.** Analysis and practice in performing and teaching swimming, diving, water safety skills, and aquatic exercise. Two hours lab. Prereq.: Physical education major. 1 s.h.

1577. **Rhythmic Movement for Children.** Content and teaching strategies related to rhythmic movement for children grades PreK-4. Rhythmic movement skills and concepts explored to provide successful dance experiences for children. One hour lecture, one hour lab. Prereq.: Physical education major. 1 s.h.

1578. **Motor Development.** Principles, methods, materials, and organization of activities for preschool-grade 3 children. Active participation, approximately 15-20 hours field work in area preschools/schools. Prereq.: 30 s.h. 3 s.h.

1579. **Rhythm and Movement for Early Childhood.** Introduction to components of physical fitness and their physiological basis. Role of exercise in prevention of cardiovascular and other hypokinetic diseases. Participation and application of training principles in a variety of fitness activities. Selection and proper use of exercise equipment. One hour lecture, two hours lab. Prereq.: Physical education major. 2 s.h.

1580. **Biomechanics.** Knowledge and methods of mechanics as they apply to the structure and function of the human body and principles of mechanical physics. Prereq.: BIOL 1552 or 1545. 2 s.h.

1582. **Pedagogical Aspects of Exercise Science.** Effective instructional practices and development of organizational skills and characteristics required for teaching in exercise programs. Two hours lecture, two hours lab. Prereq.: HPES 1559 and 1595. 3 s.h.

1583. **Movement for Early Childhood.** Laban's movement approach to teaching fundamental movement patterns, educational dance, gymnastics, games, and creative activities for grades PreK-3. Two hours lecture, two hours lab. Prereq.: Physical education major. 3 s.h.

1584. **Principles and Analysis of Motor Development.** Application of a lifespan motor development approach to critically analyzing movement patterns. Motor patterns, applications to teaching. Two hours lecture, two hours lab. Prereq.: HPES 1595 and 4 s.h. from among HPES 1506, 1567, 1574, 1575 and 1577. 3 s.h.

1585. **Games Analysis.** Selection, analysis, adaptation, and creation of games for varying developmental levels and environmental situations in grades 3-12. Large and small group, coeducational, fielding/running, self-challenging, and multicultural activities. Two hours lecture, two hours lab. Prereq.: 4 s.h. from among HPES 1506, 1559, 1560, 1567, 1574, 1575 and 1577. 3 s.h.

1586. **Introduction to Biomechanics.** Knowledge and methods of mechanics as they apply to the structure and function of the living human system. Includes the physical characteristics of the human body and principles of mechanical physics. Prereq.: BIOL 1552 or 1545. 2 s.h.

1587. **Exercise Science and Exercise Related Professions.** Includes exploration of the general concepts, goals, aims, objectives, professional organizations, scholarly literature, sub-disciplines within the field, and career employment opportunities. 2 s.h.

1588. **Scientific Basis of Fitness.** Introduction to components of physical fitness and their physiological basis. Role of exercise in prevention of cardiovascular and other hypokinetic diseases. Participation and application of training principles in a variety of fitness activities. Selection and proper use of exercise equipment. One hour lecture, two hours lab. Prereq.: Physical education major. 2 s.h.

1589. **Introduction and Concepts of Physical Education and Exercise Science.** Introduction to physical education, exercise science and related professions. Includes exploration of the general concepts, goals, aims, objectives, professional organizations, scholarly literature, sub-disciplines within the field, and career employment opportunities. 2 s.h.

1590. **Sports First Aid and Injury Prevention.** Basic injury prevention, evaluation, and emergency care. Certification in ARC Standard First Aid and Adult CPR. Basic wrapping and strapping techniques used with common sports injuries. Two hours lecture, two hours lab. Prereq.: Exercise science major, or Physical education major. 3 s.h.

1591. **Introduction to Outdoor Pursuits.** Philosophy and content of outdoor education including participation in activities such as canoeing, backpacking, orienteering, and initiative activities. Emphasis on risk management as it pertains to land and water-based outdoor pursuits. Two hours lab. Prereq.: physical education major. 1 s.h.

1592. **Methods of Teaching Rhythmic Aerobic Activity.** Rhythm and movement fundamentals related to aerobic dance and step aerobics. Methods and materials of teaching rhythmic aerobic activity culminating in practical teaching experience in the classroom. One hour lecture, two hours lab. Prereq.: HPES 1589. 2 s.h.

1593. **Physical Education Practicum.** A supervised experience in a minimum of 14 physical activity sub-disciplines (e.g., sports management, sporting goods industry, not-for-profit organizations, physical activity administration, physical activity skill instruction, etc.) under the direction of a qualified individual. Prereq.: Physical education major and HPES 1595. 2 s.h.

1594. **Exercise Equipment Management.** Factors to consider when purchasing new or used exercise equipment, equipment repair and preventive maintenance procedures, and equipment-related risk management. Prereq.: Permission of instructor. 1 s.h.

1595. **Introduction to Biomechanics.** Analysis and practice in performance and strategy development, for teaching team sports using a concept-based model. Two hours lab per week. Prereq.: Physical education major. 1 s.h.

1596. **Biomechanics.** Knowledge and methods of mechanics as they apply to the structure and function of the living human system. Includes the physical characteristics of the human body and principles of mechanical physics. Prereq.: BIOL 1552 or 1545. 2 s.h.

1597. **Principles and Analysis of Motor Development.** Application of a lifespan motor development approach to critically analyzing movement patterns. Motor patterns, applications to teaching. Two hours lecture, two hours lab. Prereq.: HPES 1595 and 4 s.h. from among HPES 1506, 1567, 1574, 1575 and 2610. 3 s.h.

1598. **Biomechanics.** Knowledge and methods of mechanics as they apply to the structure and function of the living human system. Muscular structure and
function in relation to physical movement, analysis of fundamental movements. Includes the physical characteristics of the human body and principles of mechanical physics. Two hours lecture. Two hours lab. Prereq.: BIOL 1552/L or 1545/L. 3 s.h.

2699. Sport in American Culture. Sport in American culture from the colonial period to the present as it relates to such areas as education, literature, film and drama, minorities, politics, professional sport, religion and urbanization. 3 s.h.

3700. Exercise Testing and Prescription 1. Introductory exercise leadership skills including exercise testing and prescription, and design of safe and effective programs. Includes a minimum of 30 hours of field experience in exercise testing, leadership, observation, and career exploration. Content based on American College of Sports Medicine objectives. Prereq.: HPES 2625. 4 s.h.

3702. Health Education Theory and Methods. Overview of health education theory, history, ethics, and methods for the community, school, workplace and health care setting. Provides a foundation in teaching methods. Prereq.: PHLT 1568. Also listed as PHLT 3702. 3 s.h.

3705. Statistics and Research Design in Exercise Science. Scientific methods in exercise science including research design and statistical analyses. Experience with statistical software and understanding published research. Two hours lecture, two hours lab. Prereq.: HPES 1559, 1595, and MATH 1507. Minimal Math Placement level 30 can replace MATH 1507. 3 s.h.

3710. Physiology of Exercise. Acute responses and chronic adaptations of the body to physiological demands of physical activity. Topics related to the optimization of performance in sport and exercise include neuromuscular and cardiorespiratory function, energy production and utilization, and environmental influences. Concurrent with HPES 3710L. Prereq.: CHEM 1515, and BIOL 1552 or BIOL 3730; or consent of instructor. 4 s.h.

3710L. Physiology of Exercise Laboratory. Experiments and basic laboratory procedures in the field of exercise physiology. Concurrent with HPES 3710. 1 s.h.

3715. Health Education for Grade PreK-6. Comprehensive School Health Education curricula, methods and materials for teaching pre-kindergarten through sixth grade students. Prereq.: PHLT 1568, 3702 and BIOL 1545 or AHLT 1500 and 1501. Also listed as PHLT 3715. 3 s.h.

3716. Health Education for Grades 7-12. Comprehensive School Health Education curricula, methods and materials for teaching seventh through twelfth grade students. Prereq.: PHLT 1568, PHLT 3702 or HLT 3702, and BIOL 1545 or AHLT 1500 and 1501. 3 s.h.

3720. Kinesiology and Applied Anatomy. Muscular structure and function in relation to physical movement; analysis of fundamental movements. Prereq.: PHYS 1501. 3 s.h.

3720L. Kinesiology and Applied Anatomy Laboratory. Analysis and basic laboratory procedures in relation to physical movement and biomechanics. Two hours lab. Prereq.: PHYS 1501. Concurrent with HPES 3720. 1 s.h.

3722. Physical Education in Elementary Grades for Classroom Teachers. Principles, methods, materials, and organization of activities for elementary school children. Active participation required, including approximately 15 hours of field work in area schools. Prereq.: HPES 2622. 2 s.h.

3730. Exercise Testing and Prescription 2. Intermediate exercise testing, exercise prescription based on metabolic calculations and program development for special populations. Supervised field experience in exercise leadership involving 5-8 hours per week. Content based on American College of Sports Medicine objectives. Prereq.: HPES 3700 AND 3710. 4 s.h.

3750. Principles of Coaching. The scientific, psychological, and management aspects of coaching. Includes ethics and management responsibilities, personnel management, community relations, conditioning, and other related topics. Prereq.: Junior standing. 2 s.h.

3760. Strength Training and Conditioning. Scientific principles, concepts, and adaptations to resistance exercise. Practical application of lifting and spotting technique, testing procedures, program design, and organization and administration of the strength and conditioning facility. Two hours lecture, two hours lab. Prereq.: HPES 1560 and 3710. 3 s.h.

3765. Athletic Training 1. Practical and theoretical aspects of the prevention of athletic injuries. Includes supplies, wrapping and strapping, protective equipment. Emphasizes prevention, evaluation, and emergency care. One hour lecture, two hours lab. Prereq.: BIOL 1552 or 1545, HPES 1589 and 2605, and involvement as a student athletic trainer. 2 s.h.

3766 Principles and Analysis of Motor Development. Application of a lifespan motor development approach to critically analyzing movement patterns. Emphasis on motor development beyond biomechanical aspects of movement, and on teaching applications. Two hours lecture, two hours lab. Prereq.: HPES 2672/L. 3 s.h.

3767/L. Pedagogy in P-12 Physical Education. Effective teaching practices and development of skills including classroom management, lesson planning, and selection of appropriate methods of instruction. Liability issues. Clinical experiences (observation and peer teaching). Three hours lecture, two hours lab. Prereq.: 20 s.h. in major and HPES 2661, and 3766. 3 s.h.

3780. Methods of Teaching Dance. Rhythm and movement fundamentals and forms: folk, square, social and aerobic. Methods and materials of teach-
ing dance culminating in clinical or field experiences. One hour lecture, two hours lab. Prereq.: HPES 3767.

4803. Issues and Trends in Exercise Science. Current issues and trends and their impact on exercise science and the general public as they relate to the American College of Sports Medicine's behavioral objectives for various professional certificates. Prereq.: 64 s.h. or permission of instructor. 1 s.h.

4805. Administration of Exercise Programs. Provides an overview of legal, management, and marketing skills necessary to implement exercise related wellness programs. Requires development of business plan including facility design and equipment selection. Prereq.: HPES 3700. 4 s.h.

4808. Assessment Instruments and Strategies in Health and Physical Education. Theory, purposes, procedures, uses, and limitations of standards-based assessment for teaching P-12 health and physical education including cognitive, motor, and affective domains. Practical experience in designing and implementing performance based assessment. Two hours lecture, two hours lab. Prereq.: Physical Ed or Health Ed major and 72 s.h. 3 s.h.

4810. Exercise Testing and Prescription 3. Clinical exercise tests (electrocardiography, pulmonary function, submaximal/maximal cardiorespiratory tests) and exercise prescription (cardiovascular, pulmonary, diabetes, stress, cancer, FVD and hypertension). Supervised experience in clinical exercise facilities nine hours during the semester. Content based on American College of Sports Medicine objectives. Prereq.: HPES 3705 and 3730. 5 s.h.

4850. Exercise Testing and Prescription for the Health Professions. Introduction to exercise testing and prescription for healthy adults as well as clinical (cardiovascular, pulmonary, diabetes, obesity, osteoporosis, arthritis) and other special (pregnancy, children, elderly) populations. For Health Professions majors. Not applicable to the major in Exercise Science. Two hours lecture, two hours lab. Prereq.: Senior standing or permission of instructor. 3 s.h.

4851. Cultural Aspects of Physical Education and Sport. Survey of major historical, psychosocial developments, and philosophical issues in physical education and sport from ancient times to the present. Prereq.: 20 s.h. in physical education major. 3 s.h.

4852. Psychosocial Aspects of Physical Education and Sport. Survey of major psychosocial principles, developments and concerns as they relate to the participant in physical activity and sport. Prereq.: 20 s.h. in major. 2 s.h.

4855. Organization and Administration of Human Performance and Exercise Programs. Organizational patterns and administrative methods in activities, including instructional programs, intramurals and recreation. Prereq.: 20 s.h. in major. 3 s.h.

4865. Athletic Training 2. Advanced techniques of athletic training with emphasis on evaluation, treatment and rehabilitation of athletic injuries. Topics include application of therapeutic modalities, reconditioning programs, and the role of the athletic trainer in sports medicine. One hour lecture, two hours lab. Prereq.: HPES 3765. 2 s.h.

4870. Exercise and Aging for Health Professions. For majors in Gerontology/Health Professions who work with older adults in exercise/physical activity programs. Emphasis on physical aspects/limitations of aging, exercise testing, prescription, and programs for the elderly. Not applicable to the major in Exercise Science. Prereq.: Senior standing or permission of instructor. 3 s.h.

4876. Teaching of Elementary Physical Education. Curriculum principles, methods and materials for teaching elementary physical education. Includes development of a portfolio and field work in area schools. Two hours lecture, two hours lab. Prereq.: HPES 3767 and UDS COE. 3 s.h.

4878. Teaching of Middle/Secondary Physical Education. Curriculum, principles, methods and materials for teaching secondary physical education. Includes the development of a reflective teaching journal and portfolio, and field work in area schools. Two hours lecture, two hours lab. Prereq.: HPES 3767. 3 s.h.

4880. Internship. A culminating experience in an approved fitness or sports-related setting under the direct supervision of a qualified individual and coordinated by a supervising faculty member. Requires 400 hours to obtain 8 s.h. Prereq.: Completion of Exercise Science core requirements through HPES 4820. 8-12 s.h.

4884. Physical Education Internship. A culminating experience in an approved sport or fitness-related facility or place of business under the direct supervision of a site and university supervisor. Capstone course. Requires 600 contact hours to obtain 12 s.h. Prereq.: Completion of all HPES major core courses. 12 s.h.

4888. Selected Topics in Human Performance and Exercise Science. In-depth study of special subject matter within the field of physical education. Topic announced each time course is offered. May be repeated for a maximum of 6 s.h. with change in topic. Prereq.: 72 s.h. or consent of instructor. 1-3 s.h.

4890. Undergraduate Research. Research participation under the direction and guidance of a full-time faculty member. Provides the advanced student with research experience in HPES. May be repeated to a maximum of six s.h. Junior standing or permission of instructor. 1-3 s.h.

4895. Adapted Physical Education. The organization of physical education activities selected to meet the individual needs of exceptional students. Students will create and teach appropriate lessons in a school setting. Approximately 20 hours of field work. Prereq.: HPES 3766. 3 s.h.

4899. Physiology of Exercise for Physical Education. Acute responses and chronic adaptations of the body to the physiological demands of physical activity. Prime focus is application to the teaching of physical education. Prereq.: HPES 3766/L. 2 s.h.

4899L. Physiology of Exercise for Physical Education Laboratory. Experiments and basic laboratory procedures in the field of exercise physiology. Concurrent with HPES 4899. 1 s.h.

INDUSTRIAL AND SYSTEMS ENGINEERING—ISEN
Department of Mechanical and Industrial Engineering

1560. Principles of Systems Design. An introduction to creative thought processes and analytical tools that are used to develop usable systems. Cognitive theory provides a foundation for analyzing human/machine interactions within systems. Cases are used to elucidate accident causation theory and exercise the application of risk reduction strategies. Prereq.: ENGR 1550. 3 s.h.

3710. Engineering Statistics. Applications of data collection and analysis techniques to engineering problems. Techniques for data structuring, data modeling, parameter estimation, and design of experiments utilizing engineering data. Prereq.: MATH 1571. 3 s.h.


3723. Manufacturing Processes. Introduction to properties and uses of engineering materials. Introduction to mechanical testing methods, metrology, tolerances, testing and inspection; semi-finished product manufacturing; macro-processing (forming, casting, powder metallurgy, metal working, composite fabrication); joining; nontraditional manufacturing processes; and surface processing. Prereq. Math 1572. 3 s.h.

3724. Engineering Economy. The analysis and evaluation of factors that affect the economic success of engineering projects. Topics include interest, depreciation, cost classification, comparison of alternatives, make-buy decisions, replacement models and after-tax analysis. Prereq.: MATH 1571. 3 s.h.

3727. Simulation of Industrial Engineering Systems. Techniques for the digital simulation of industrial engineering systems which can be represented via discrete event models. The generation of random variables, shaping of probability distributions, model structuring, model verification, and the simulation of inventory, queuing, and quality control systems in a high-level structured programming language. A special-purpose simulation language for expanding the class of problems which can be economically modeled. Prereq.: ISEN 3710, 3716. 3 s.h.

3736. Methods Engineering. Techniques for analysis of task performance, the use of process charts, and various methods of work simplification, humans-machine relation analysis. Theory and practice of time study and other methods of measuring and establishing performance level and productivity. Prereq.: ISEN 3710 or equivalent. 2 s.h.

3736L. Methods Engineering Laboratory. Practice in analyzing and recording tasks. Determination of time standards and productivity requirements. Analysis and evaluation of actual plant operations. Taken concurrently with ISEN 3736. Three hours laboratory per week. 1 s.h.

3745. Accounting for Engineers. Review of labor and material costing systems. Introduction to cost accounting systems. Practice in development of forecasting and estimating systems. Process, operation and product costing systems. Elements of financial accounting systems that affect engineering decisions. Prereq.: ISEN 3724 or equivalent. 3 s.h.

4810. Special Topics. Special topics and new developments in Industrial Engineering. Subject matter, credit hours, and special prerequisites to be announced in advance of each offering. Prereq.: senior standing in Industrial Engineering or consent of instructor. 3 s.h.

4811L. Manufacturing Practices 1 Laboratory. Experimental analysis of manufacturing processes. Process control and data acquisition. Experimental design applied to processes including polymer processes, casting, machining, and joining. Three hours laboratory. Prereq. or concurrent with ISEN 3723. 1 s.h.

4821. Capstone Design 1: Manufacturing and Service Systems. The application of engineering techniques to the analysis, design, layout, and justification of manufacturing and service facilities. Subjects covered include, equipment selection, process flow, and material flow. The system design involves field investigation, acquisition and analysis of data, use of computer-aided facilities planning and design software, preparation of drawings, and writing a final report. Grading is Traditional/PR. Prereq.: ISEN 3723, ISEN 3736, ISEN 5801, and 96 s.h. of engineering degree credits. 3 s.h.
4822. Capstone Design 2: Logistics Systems. Analysis, planning and design of material handling, storage/warehouse and logistics systems. The fundamental analytic tools, approaches, and techniques which are useful in the planning, design, layout, and operation of logistics systems and integrated supply chains. Development and use of fundamental models to illustrate the underlying concepts involved in both intra- and inter-company logistics operations. Prereq.: ISEN 4821. 3 s.h.

5801. Operations Research 1. Formulation and solution of engineering problems using linear programming. Model formulation, the primal, dual, and transportation simplex methods, duality theory, and sensitivity analysis. Prereq.: MATH 2673. 3 s.h.

5811L. Manufacturing Practices I Laboratory. Experimental analysis of manufacturing processes. Process control and data acquisition. Experimental design applied to processes including polymer processes, casting, machining, and joining. Three hours laboratory. Prereq. or concurrent with ISEN 3723. 1 s.h.

5812L. Manufacturing Practices 2 Laboratory. Experimental analysis of advanced manufacturing techniques. Advanced sensing and controlling technologies. Real-time monitoring, metrology, and data acquisition. Numerically controlled (NC) machines and programming. Net-shape and additive manufacturing. Prereq. or concurrent with ISEN 5823. 1 s.h.

5820. Advanced Quality for Engineers. Applications and practices of quality control in industry. Engineering and administrative aspects of quality control programs, process control, and acceptance sampling. Application of quantitative methods to the design and evaluation of engineered products, processes, and systems. Prereq.: ISEN 3720. 3 s.h.

5823. Automation. Principles and applications of sensing, actuation and control. Emphasis on hydraulic and pneumatic systems. Industrial process controllers, sensors and machine vision. Design and cost considerations for industrial automation applications. Prereq.: MECH 2641, ECEN 2614 or consent of instructor. 3 s.h.

5825. Advanced Engineering Economy. An extension of the topics in engineering economy. Analysis of rationale and norm of decision making, risk and uncertainty models, utility theory, measurement of productivity, and advanced project comparison methods. Prereq.: ISEN 3724. 3 s.h.

5830. Human Factors Engineering. Various aspects of human factors in the design of human-machine systems and environments. Study of human sensory, perceptual, mental, psychomotor, and other characteristics; techniques of measuring human capabilities, limitations, safety, comfort, and productivity. Prereq.: MATH 2673. 3 s.h.

5850. Operations Research 2. Formulation and solution of industrial engineering problems using operational research models. Topics include queuing models and the specialization of linear models to equipment replacement, project planning, assignment, and transshipment problems. Prereq.: ISEN 5801. 3 s.h.

5880. Management of Technology. The course discusses major topics in management of technology and innovations. Dynamics of technology innovation, sources of technology innovations, corporate technology strategy, collaboration and intellectual property, structures and process for innovations, idea generation, commercialization of technology and innovations, and market entry. Prereq.: Senior standing or consent of instructor. 3 s.h.

5881. Competitive Manufacturing Management. Basic principles of manufacturing competitiveness. The role of engineers in promoting competitiveness. Discussion of new technologies used in modern manufacturing management including, continuous improvement, waste elimination, JIT, lean production systems, setup time reduction, equipment maintenance/improvement, total quality management, and supply chain management. Prereq.: ISEN 3723 or consent of instructor. 3 s.h.

INFORMATION TECHNOLOGY—INFO Department of Computer Science and Information Systems

Lower-Division Courses

1575. Document Preparation. Preparation of documents using information processing and standard and advanced electronic productivity tools such as templates, tables, columns, forms macros, graphics, and merging. Integration of documents with other software. Creating and maintaining hypertext documents. Prereq.: Knowledge of word processing or ENGL 1550. 4 s.h.

2600. Concepts of Information Technologies. The foundation and general principles behind information technology, including data representation, encoding systems, encryption methods, database fundamentals, logic for programming, basic data analysis, and graph applications in networking. 3 s.h.

2663. Information Technology Management. Principles and practices of effective information systems management. Includes organization environment, leadership issues, information system types, strategic role of information technology, planning issues, managing and supporting essential technologies, system development and computing, and successful integration of people and technology. Prereq.: CSIS 1590 or IT 2600. 3 s.h.

2672. Desktop Publishing 1. Document creation using desktop publishing software on a microcomputer. Application must be mastered on a software package used by industry. Lab time required. Prereq.: CSIS 1590. 3 s.h.
2673. *Desktop Publishing 2.* Specialized and advanced document creation using desktop publishing software used by industry. A second software package must be mastered. Lab time required. Prereq.: OIS 2672. 3 s.h.

2698. *Special Topics.* An in-depth study of information technologies. Topics vary. May be repeated for different topics. Prereq.: Permission of chairperson. 1-3 s.h.

**Upper-Division Courses**


3714. *Advanced Spreadsheets.* Includes macros, look-up tables, advanced problems, templates, and projects with emphasis on accounting and finance applications. Prereq.: CSIS 1514 or 1590. 3 s.h.


3775. *Multimedia Authoring.* A study of multimedia authoring tools. Methods for integrating text, graphics, sound, and video. Project required. Three hours lecture and two hours lab. Prereq.: INFO 3774. 4 s.h.

3776. *Web Site Development.* Foundations of web site development including e-commerce, multimedia, database integration, security, and accessibility. Use of scripting languages for interactivity. Three hours lecture and two hours lab. Prereq.: INFO 3774. 4 s.h.


3787. *Training and Employee Development.* Theory and practice of designing training programs. Analyzing training needs, selecting instructional strategies, and implementing and evaluating training programs. Prereq.: INFO 3774 or both INFO 1575 and CSIS 1590. 3 s.h.

3790. *Integrated Information Systems.* Students organize and operate an information center utilizing decision-making skills, and information systems procedures and components. Lab time required. Prereq.: INFO 3714 or CSIS 3723. 3 s.h.

4880. *Information Technology Analysis and Design.* Information systems integration and modeling. Analysis of dynamic information flow, functional requirements, and system design in theory and practice. Prereq.: CSIS 3722 and either 3723 or 3782. 3 s.h.

4895. *Special Topics.* A study of special topics in information technologies. Subject matter and credit hours will be announced in advance. May be repeated multiple times if topic is different. Prereq.: At least 3 s.h. of upper-division departmental courses and permission of chair. 2-4 s.h.

5875. *Advanced Multimedia Authoring.* Advanced study of multimedia authoring tools. Analysis of commercial applications. Group project required. Three hours lecture and two hours lab. Prereq.: INFO 3775. 4 s.h.

**JOURNALISM—JOUR**

**Department of English**

**Lower-Division Courses**

2602. *Media Writing.* Introduction to writing for the mass media. Development of writing techniques and examination of styles and approaches used in writing for various mass audiences. Fulfills requirement for Integrated Language Arts Middle Childhood teaching license. Listed also as ENGL 2602. Prereq.: Completion of ENGL 1551 with grade C or better. 3 s.h.

2603. *Journalism Ethics and Social Responsibilities.* Examination of ethical standards and moral theories and their practical application in professional journalism through case studies. Students will learn to become active critics of media professionals. Crosslisted with ENGL 2603. 3 s.h.

2605. *Journalism as Literature.* Examination of literary works by journalists. Study of journalism techniques transferred to literary storytelling. Crosslisted with JOUR 2605. 3 s.h.

2622. *News Reporting I.* Study of news reporting and writing, with emphasis on journalistic and AP style, development of news judgment, interviewing, and storytelling through traditional and new media. Coursework may require travel for reporting projects. Crosslisted with ENGL 2622. Prereq.: Completion of ENGL 1551 with grade C or better. 3 s.h.

2624. *Imaging and Design of News.* Focus on the use of photographs, graphics, tables, charts, and other visual products to tell news stories. Includes study of basic visual literacy, design principles and technology. Coursework may require travel for reporting projects. Crosslisted as ENGL 2624. No prerequisites. 3 s.h.

2626. *American Journalism.* The development of journalism in America, the role of the news media and its effects on American society, and special consideration of journalism as a tool of diversity and as a literary tradition. Crosslisted with ENGL 2626. Prereq.: Completion of ENGL 1550 with a C or better. 3 s.h.
2632. Introduction to Photojournalism. The basics of photojournalism, including composition, lighting, editing, news judgment, and ethics. Listed also as ENGL 2632. 3 s.h.

Upper-Division Courses

3716. Introduction to Magazine Journalism. Focus on forces driving the magazine industry. Study of business models, freelancing, and writing for specialized audiences; includes basic feature writing and imaging techniques. Listed also as ENGL 3716. Prereq: JOUR 2622 or ENGL 2622; and JOUR 2624 or ENGL 2624. 3 s.h.

3717. Editorial and Opinion Writing. Techniques, approaches and practice in writing reviews, editorials, and opinion columns. Exercises in criticism of the arts, editorial research, and editorial style. Listed also as ENGL 3717. Prereq.: JOUR 2622 or ENGL 2622. 3 s.h.

3720L. Magazine Journalism Workshop. Working for campus publications to apply news gathering and reporting skills. Emphasis on organizational culture of magazines. Coursework may require travel for reporting projects. May be repeated for up to 3 s.h. Listed also as ENGL 3720L. Prereq.: JOUR 3716 or ENGL 3716 or consent of instructor. 1 s.h.

3721L. Journalism Workshop. Application of the principles of news reporting skills in student media. May be repeated once. Listed also as ENGL 3721L. Prereq.: ENGL 2622 or JOUR 2622. 3 s.h.

3722L. Radio News Workshop. Production of news and feature stories to be aired on radio; development of interview and media production skills for news. Coursework may require travel for reporting projects. Listed also as ENGL 3722L. Prereq.: JOUR 2622 or ENGL 2622. 3 s.h.

3723. Advanced Journalism Editing and Design. Application of visual literacy and editing skills. Emphasis on editorial decision making, journalistic style editing, quantitative reasoning, fact-checking, and practice of traditional and multimedia design techniques. Listed also as ENGL 3723. Prereq.: JOUR 2622 or ENGL 2622; and JOUR 2624 or ENGL 2624. 3 s.h.

3756. Projects in Working Class Reporting. Collaboration with the Center for Working Class Studies. Emphasis on using journalistic techniques to cover issues important to working-class people. Coursework may require travel for projects. Listed also as ENGL 3756. Prereq.: ENGL 1551. 3 s.h.

3759. Sports Journalism. Techniques of sports reporting with emphasis on game reporting, sports features, columns, photography and new media storytelling. Coursework may require travel for reporting projects. Listed also as ENLG 3759. Prereq.: JOUR 2622 or ENGL 2622 or consent of instructor. 3 s.h.

3760. News Reporting II. Focus is on advanced news reporting and storytelling skills. Includes in-depth coverage of feature writing, investigative, and enterprise journalism. Coursework may require travel for reporting projects. Listed also as ENGL 3760. Prereq.: JOUR 2622 or ENGL 2622. 3 s.h.

3761. New Media Journalism. Focus on new trends and techniques of electronic news organizations. Emphasis on storytelling using multimedia and non-linear methods of delivery. Coursework may require travel for reporting projects. Listed also as ENGL 3761. Prereq.: JOUR 2622 or ENGL 2622; and JOUR 2624 or ENGL 2624. 3 s.h.

3762. Political Reporting. Development of skills necessary to report, write, record, and publish stories about the American political system. Coursework may require travel for reporting projects. Listed also as ENGL 3762. Prereq.: JOUR 2622 or ENGL 2622. 3 s.h.

4821. Advising Student Media. Study of the role and responsibilities of the media advisor in high school and college. Topics include the unique legal and ethical concerns of student media, the training of student staff, the relationship of the student press to the academic administration, and publication-management concerns. Listed also as ENGL 4821. Prereq.: JOUR 2622 or ENGL 2622 or 3741. 3 s.h.

4822. Magazine Writing and Reporting. Advanced study of writing and reporting techniques for magazine journalists. Emphasis on learning freelance skills, getting work published, and marketing yourself as a magazine writer. Coursework may require travel for reporting projects. Listed also as ENGL 4822. Prereq.: JOUR 3716 or ENGL 3716. 3 s.h.

4823. In-Depth Reporting. Emphasis on extended research, extensive interviewing and investigative reporting techniques. Coursework may require travel for reporting projects. Listed also as ENGL 4823. Prereq.: JOUR 3716L or ENGL 3716L. 3 s.h.

4824. Press Law and Ethics. Study of First Amendment rights of the press; examination of laws concerning libel, privacy, copyright, obscenity, censorship, open meetings and open records in Ohio; discussion of press responsibilities. Listed also as ENGL 4824. Prereq.: JOUR 2622 or ENGL 2622 or JOUR 3716L. 3 s.h.

4825. Selected Topics in Journalism. Study of approaches to and special aspects of journalism not covered in depth in other journalism courses. May be repeated once with change of topic. Listed also as ENGL 4825. Prereq.: JOUR 2622 or ENGL 2622 or JOUR 3716L. 3 s.h.

4893. Journalism Senior Project. Capstone experience for journalism major. Individualized enterprise/investigative reporting projects with demonstration of advanced newsgathering techniques. Coursework may require travel for reporting projects. Listed also as ENGL 4893. Prereq.: Senior standing; and JOUR 3760 or ENGL 3760; and JOUR 4824 or ENGL 4824. 3 s.h.
4894. Journalism Internship. Supervised journalism work experience. Students complete 60 hours for each hour registered. Internship placement is selective. Coursework may require travel for reporting projects. May be repeated with the approval of the department chairperson for up to 6 hours. Listed also as ENGL 4894. Prereq.: JOUR 3760 or ENGL 3760; and JOUR 3721L or ENGL 3721L; senior standing, 2.5 GPA and permit.

JUDAIC STUDIES—JUDC
Department of History

1500. Introduction to Jewish Studies. A broad overview of Jewish history, culture, literature, and religion. Covers Jewish Civilization from its emergence in the Ancient Near East to its diverse worldwide expressions in the present day. 3 s.h.

3751. Lessons of the Holocaust from the United States Holocaust Memorial Museum. The history of the Holocaust as revealed by the United States Holocaust Memorial Museum. Requires supervised visit to the United States Holocaust Memorial Museum in Washington D.C. in addition to coursework. Prereq.: By permit only. 3 s.h.

LIBERAL ARTS AND SOCIAL SCIENCES—LASS
College of Liberal Arts and Social Sciences

2610. International Perspectives Credit for Study Abroad. The Social and Personal Awareness requirement will be reduced to one course for students who complete at least 3 semester hours of YSU approved coursework with a grade of ‘C’ or better while residing outside the United States for the equivalent of a semester. To receive the requirement reduction, the coursework must be approved by the Center for International Studies and Programs prior to the student studying abroad. 0 s.h.

3750. Study Abroad. An individually-arranged program of foreign study. Programs can be of 3 general types: (1) study trips conducted by YSU faculty, (2) trips or residential programs sponsored by consortial universities, and (3) independent trips. For independent trips, YSU faculty will design appropriate educational objectives and evaluate students’ performance in meeting these objectives. A written plan detailing these objectives must be approved by a faculty member of the Global Awareness Committee and the dean of Arts and Sciences prior to the commencement of the trip. For all three categories, credit toward fulfillment of the degree requirements will be determined by the dean(s) of the relevant college(s), in consultation with the appropriate department chairperson(s). Note: study abroad generally requires about one year’s advance planning. Prereq.: Sophomore status. 1-15 s.h.

3760. Washington Center Internship. Qualified students will work in selected public and private agencies in the Washington, D.C. area, thus providing access to government and community leaders and activities, and gaining experience by participating in projects, seminars, and courses. A final project is required. Students must take an additional academic credit course at Washington Center. Additional details are available through the Department of Political Science. Credit may be applicable to the major. Grading for this course will be CR/NC. Prereq.: Junior or senior standing, acceptance by the Washington Center, and permission of the chairperson of the major. 6-12 s.h.

3780. Lifetime Learning Experience. Credit for significant life or work experience specifically related to their primary concentration area. Prereq.: Junior standing in General Studies. 1-6 s.h.

4805. Integrated Social Studies Seminar. A study of selected topics integrating the concepts and methods of the social studies disciplines. May be repeated with a different topic. Prereq.: Senior standing in the Integrated Social Studies Curriculum with at least 40 semester hours of social studies courses and a minimum of one course in each discipline, or senior standing as a major in one of the social studies disciplines. 3 s.h.

4840. Columbus Program in Intergovernmental Issues. This Columbus residential internship is designed to give students practical experience and firsthand exposure to governmental processes, private organizations, and public agencies, officials, and policies involved in state government. This course is in collaboration with Kent State University which provides the primary instructors. Prereq.: Junior or senior standing; POL 1560; and acceptance into the program by the KSU program director prior to registration. 15 s.h.

4851. Capstone in Gerontology. A capstone experience for the interdisciplinary study of aging. Students will complete a major research project. Prereq.: Senior status in Gerontology and SOC 4850. 3 s.h.

4880. General Studies Capstone. Practical learning within the primary concentration area. May be an internship, field experience or scholarly thesis. The capstone experience must be approved by the student's general studies advisor or committee. Prereq.: Completion of 20 s.h. in the primary concentration area and consent of the advisor. 3 s.h.

4890. Internship. Integrate theory and practice through supervised learning experiences provided by an appropriate working professional and an Arts and Sciences faculty member. Students will submit a proposal for the internship, maintain a journal of experiences, and submit a final project paper. Students should expect to spend at least 4 hours/week per credit. Prereq.: Junior standing with at least 6 s.h. of coursework in the discipline of the internship, and consent of the appropriate chairperson. May be repeated for a maximum of 6 s.h. 2-3 s.h.
LINGUISTICS — ENGL
Department of English


Group 1

ENGL 2651. Introduction to Language. Introduction to language principally for prospective teachers, with emphasis on the nature and function of language and its history, variations, and acquisition. Prereq.: ENGL 1551.

3 s.h.

ENGL 3750. Language and Culture. Language structure as an instrument in human behavior and social institutions with emphasis on cross-cultural and intercultural communication. Prereq.: ENGL 1551.

3 s.h.

ENGL 3757. Development of the English Language. Sounds, vocabulary, grammar, and usage, from old to contemporary English.

3 s.h.


3 s.h.

ENGL 4855. Advanced Linguistics. In-depth study of selected issues in contemporary linguistic theory. Especially recommended for students pursuing advanced studies or a minor in linguistics or planning graduate studies. Prereq.: ENGL 3755.

3 s.h.


3 s.h.

FRNC 3710. Applied Phonetics. A systematic study of French phonetics to correct defects in pronunciation and intonation and give students a better understanding of the differences between the French and English sound systems. Prereq.: FRNC 2605.

3 s.h.

FRNC 3715. Conversation and Composition. Skills in written and oral expression developed through directed composition and conversation, discussion of assigned topics, extemporaneous situational dialogues, and written papers on topics of special interest to the participants. Prereq.: FRNC 2605.

3 s.h.

FRNC 4885. Special Topics. Studies in French language, literature, or civilization ranging from medieval to modern times. Topic announced each time course is offered. May be taken three times for credit if content is not repeated. Prereq.: FRNC 3750 and one of the following: 3720, 3725, 3730.

3 s.h.

GRMN 3725. Phonetics and History of the Language. Theory and practice in German phonetics with special emphasis on improving the pronunciation and intonation of second language learners. A history of the German language with attention to changes in sounds, forms, word order, vocabulary, and writing systems. Prereq.: GRMN 2605 or Placement exam.

3 s.h.

ITAL 3720. Advanced Grammar and Composition. Study in depth of Italian grammar through exercises and original composition. Prereq.: ITAL 2605.

3 s.h.

ITAL 3725. Phonetics. Theory and practice in Italian phonetics with special emphasis on improving the pronunciation and intonation of second language learners. Prereq.: ITAL 2605.

3 s.h.


3 s.h.

SPAN 3735. Advanced Spanish Grammar and Composition. A systematic study of Spanish morphology, sentence structure, and usage applied to a variety of written discourse styles such as description, narration, and exposition. Discussion of contrasts with English discourse styles, and effective grammatical use. Prereq.: SPAN 2605.

3 s.h.

SPAN 3736. Introduction to Spanish Linguistics. Examines some of the basic concepts and issues of modern Spanish linguistic theory in the areas of phonology, morphology, syntax and pragmatics, including readings and discussion on these topics. Prereq.: SPAN 2605.

3 s.h.

SPAN 5855. Topics in Spanish Language and Linguistics. An introduction to the terminology, concepts, bibliography and current issues in Spanish language and linguistics. Major topics include phonology, morphology, semantics, syntax, applied linguistics, transformational grammar, and other topics related to language variation and society. May be repeated once when topic varies. Prereq.: Any 3700-level SPAN course.

3 s.h.

Group 2

ENGL 4851. Language Acquisition. A study of research on the learning of first and second languages. Topics include developmental sequences, learner variables, critical periods and conditions for learning, and the roles of input and interaction. The course is designed for those planning to teach languages. Listed also as FNLG 4851. Prereq.: ENGL 3755.

3 s.h.

ENGL 4856. TESOL Methods. Introduction to teaching English as a Second Language (ESL), including reading, writing, listening, and speaking. Focus on using communicative methods with non-native speakers. Prereq.: ENGL 3755.

3 s.h.
ENGL 4857. TESOL Practicum. Supervised teaching in English as a second language (ESL) program. Additionally, weekly seminar attendance required. Prereq.: ENGL 4856. 3 s.h.

ENGL 4858. English Grammar. Descriptions and analysis of English language structure. Prereq.: ENGL 3755. 3 s.h.

ENGL 4859. Selected Topics in Discourse. Study in depth of a specific topic such as stylistics, semantics, or rhetoric. May be repeated once with different topic. Prereq.: ENGL 3740, 3741, or 3755 as appropriate to topic. 3 s.h.

PHIL 2619. Introduction to Logic. Introduction to syllogistic or classical logic, symbolic and inductive logic. Emphasis on the rules of syllogism, propositional functions, classes, truth tables, Venn diagrams; the use of analogy, generalization, the verification of hypotheses, and the scientific method. 3 s.h.

PHIL 3714. Language and Mind. Introduction to the study of traditional philosophical problems in the analysis of linguistic structures and functions and of their implications for the nature of mind, including meaning, mental representation and causation, information processing, and psychological explanation. Prereq.: One 2600-level PHIL course. 3 s.h.

PHIL 3719. Symbolic Logic. The structure and properties of axiomatic systems; the theory of propositional and relational logic; the algebra of classes; related topics. Prereq.: PHIL 2600. 3 s.h.

CSCI 5835. Artificial Intelligence. Study of the theory and applications of intelligent systems. Topics may include general problem-solving techniques, knowledge representation and expert systems, vision and perception, and natural language processing. AI systems and languages. Prereq.: CSIS 2617 and 3710. 3 s.h.

PSYC 3761. Cognition. Experimental methods, research findings, and current theories concerned with human cognitive processes. The information-processing approach, focusing on how information is transformed, stored, manipulated, and retrieved. Topics include attention, pattern recognition, categorization, memory, and language. Concurrent: PSYC 3761L. Prereq.: PSYC 2618. 3 s.h.

PSYC 3761L. Cognition Laboratory. Laboratory demonstrations and experiments using research techniques in cognition. Two hours per week. Concurrent: PSYC 3761. 1 s.h.

PSYC 3764. Psycholinguistics. An overview of language production, use, and comprehension including the biological basis of speech and language development, social aspects of language, and bilingualism. Prereq.: PSYC 2618 or ENGL 3755. 3 s.h.

PSYC 3764L. Psycholinguistics Laboratory. Research techniques in basic and applied psycholinguistics. Two hours per week. Concurrent: PSYC 3764. 1 s.h.

PSYC 4850. Seminar. Major topics in psychology not covered in listed courses. Two s.h. may be applied to the psychology major. Prereq.: Senior standing in psychology. 2 s.h.

**MANAGEMENT—MGT**

**Department of Management**

**Business Core**

2064. Legal Environment of Business I. Various sources of laws, basic legal reasoning and application. Emphasis on basic legal concepts of contracts, labor, tax, antitrust and business organizations, and their relationship to business and society. 3 s.h.

3725. Fundamentals of Management. Emphasizes the basic principles of management rather than those involved in business organization. The nature of managerial action within an organization, formal and informal structure, process of making decisions, and interrelated activities in management. Prereq.: 2.5 GPA and junior standing. 3 s.h.

3761. Information Systems for Management. Study of information systems and their interaction with individuals and organizations, providing a basic understanding of hardware, software, and computer technology used in information systems. Prereq.: 2.5 GPA and junior standing. 3 s.h.

3789. Operations Management. Study of current operations management theories and practices with emphasis on direction, planning, and control of production systems. Includes detailed analysis in such areas as materials management, work measurement, quality control, scheduling, maintenance, and forecasting. Prereq.: MGT 3725, ECON 3780. 3 s.h.

4850. Strategic Management and Leadership. Analysis of problems and issues faced by organizations operating in today’s dynamic environment interspersed with multiple stakeholders. Students integrate concepts and techniques learned from a range of disciplines and apply them to all levels of firms functioning in a wide variety of industries. Prereq.: MGT 3725, MKTG 3703, FIN 3720. 3 s.h.

**Management Core**

3750. Managing Individuals in Organizations. Study of the contributions of the fields of organizational behavior and human resources as they apply to organizational functionality. Topics include individual and group decision-making, motivation, perceptions, and attitudes as they impact human resource processes, including job design, selection, organizational development, total rewards, employee relations, and workplace health, safety, and security. Prereq.: MGT 3725 or Concurrent. 3 s.h.

4890. International Business. Management problems of firms engaged in international business, including the strategy of foreign involvement and control of foreign activities. Emphasis on management issues unique to firms in international operations. Prereq.: MGT 3725. 3 s.h.
Human Resource Management

1510. Union Leadership Skills. Introduction to basic leadership skills with emphasis on human relations, motivation, communication skills, decision making, problem solving, parliamentary procedure. 3 s.h.

3705. Fundamentals of Occupational Safety. Overview of the broad concepts of occupational safety and health that provide a proper foundation for understanding the basic principles of workplace safety and health programs. Analysis of the regulatory environment including OSHA and Workers’ Compensation; the development of safety management programs; the evaluation of workplace hazards; and discussion of the economic, political, and societal implications involving workplace safety and health. Prereq.: MGT 3725 or ENST 2600 or CJFS 1500 or BUS 1500 or consent of instructor. 3 s.h.

3715. Labor Law and Negotiations. Introduction to private and/or public sector labor law. Includes the study of the legal principles surrounding employee organizing, unfair labor practices, bargaining, striking, and picketing; involves participation in a negotiations simulation. Prereq.: MGT 1510 or MGT 2604 or BUS 1500 or consent of instructor. 4 s.h.

3720. Contract Administration and Grievance Procedure. Study of the development of economic and non-economic contract language for collective bargaining agreements, and the preparation and participation in grievance processing and labor arbitration cases. Prereq.: MGT 1510 or BUS 1500 or consent of instructor. 4 s.h.

3740. Labor Studies Seminar. Study of selected issues and problems on the basis of interest and need. May be repeated for a maximum of 9 s.h. Prereq.: Permission of instructor. 3 s.h.

3755. Managing Diversity. Current topics in diversity: national and international demographics of the changing face of the work force; processes that create diversity including the organization of work; managing differences in work settings; management responses to diversity; and connections to larger institutional dynamics. Prereq.: Junior standing in a declared major and one lower level GER approved SI course or permission of the instructor. 3 s.h.


4819. Selection, Training, and Development. Intensive analysis of programs for personnel acquisition, the training and development of employees. Includes the human resources planning process. Examination of federal and other employment legislation where applicable. Prereq.: MGT 3725 and MGT 3750. 4 s.h.

4844. Strategic Human Resource Management. Capstone course of the human resource (HR) major and should be taken in students’ last semester. Purpose is to integrate knowledge within HR and across disciplines in developing and implementing HR strategy. Special focus will be given to developing the proficiencies necessary to serve as an HR consultant, especially in quantifying the impact of HR practices. Prereq.: MGT 4810 or MGT 4819 or consent of instructor. Coreq.: MGT 4845. 3 s.h.

4845. Projects in Human Resource Management. Emphasizes experiential, practical application of knowledge to real-life human resource challenges. Prereq.: MGT 4810 or MGT 4819 or consent of instructor. Coreq.: MGT 4844. 1 s.h.

5845. Work in America. Examines the changing characteristics, expectations, and representations of work in America. Includes the exploration of demographic, historic, economic, technological, sociological, religious, ethical, popular, and poetic perspectives on work. Prereq.: MGT 3715 or Junior standing and 6 s.h. of GER approved SI courses. 3 s.h.

Management Information Systems

3771. Social Media and E-Commerce. Technologies available to organizations to reach customers, sell products, and create business values that continue to change and emerge. The course provides students with an understanding of social media and e-commerce technologies from a business/managerial perspective. Underlying issues surrounding the technologies, their development, and utilization of web-based initiatives are studied. Prereq.: 2.5 GPA AND MGT 3761 or concurrent. 3 s.h.

4821. Business Process Integration. This course examines the forces driving enterprise integration as well as the management decisions associated with the design and implementation of enterprise systems. Students successfully completing this course will have thorough understanding of enterprise integration as well as practical experience of configuring and using SAP. Prereq.: MGT 3761 or ACCT 3709 and 2.5 GPA. 3 s.h.

5825. PC Applications in Business. In-depth study of business microcomputer applications with emphasis on the development of personal decision support systems using database and spreadsheet software packages. Prereq.: MGT 3761. 3 s.h.

5835. Systems Analysis and Design. Information systems and system development life cycle (SDLC) sizing tools and techniques used to document an information system. Prereq.: MGT 3761 AND 2.5 GPA. 3 s.h.

5865. Database Management Systems. Design and management of organizational data resources. Database issues include design, definition, creation, documentation update, maintenance, revision, selection, acquisition, and use. The implementation of the
Operations Management

3737. Management Science. An understanding of methods of management science from an executive or managerial viewpoint, emphasizing formulation of business problems in quantitative terms. Topics such as linear programming, dynamic programming, game theory, Monte Carlo method, probability theory, queuing theory, inventory theory, transportation method, and simulation discussed and evaluated. Prereq.: MGT 3761. 3 s.h.

3785. Decision Support/Expert Systems. Fundamental techniques, construction, and use of decision support systems, expert systems, and management support systems. Prereq.: MGT 3761. 3 s.h.

3787. Industry Studies Seminar. Specialized course for students from a specific industry involving selected issues and problems on the basis of interests and needs. Prereq.: Permission of instructor. 1-2 s.h.

3714. Legal Environment of Business 2. In-depth analysis of commercial law areas covered on the CPA exam, with emphasis on sales, secured transactions, real and personal property, insurance, bankruptcy, and commercial paper. Prereq.: MGT 2604, junior standing. 3 s.h.

3735. Communications for Management and Business. Analyzes communication and information processes as means for coordinating and controlling organizational activities. Analytical writing activities required including a long, formal report. Prereq.: ENGL 1551, MGT 3725, permission of instructor. 3 s.h.

3740. Managing Organizational Environments. Dynamics of structure, design, strategy and culture in the context of an organization's relationships to external environments; included are institutional forces, the global environment, and the new technological environment. Organizational ethics as cultural components that define appropriate ways for stakeholders to deal with one another and with the organization's environments. Prereq.: MGT 3725, permission of instructor. 3 s.h.

3746. Globalization and Worker Rights. The study of worker rights in the global economy. This includes comparative labor standards, political debates over worker rights, and responses to globalization by corporations, unions, and human rights organizations in the form of codes of conduct, social monitoring, framework agreements, and strategic campaigns. Prereq.: Junior standing and MGT 3725 or MGT 3715. 3 s.h.

3754. Managing in Emerging Economies. The course is designed to provide an understanding of the business environments in the major emerging economies of the world, provide insights into the distinctive business opportunities and challenges in these economies, gain a feel for the strategic and operating issues that managers are likely to encounter in these markets, and develop conceptual frameworks to address these issues. Prereq.: MGT 3725, BUS 3715, min 2.5 overall GPA. 3 s.h.

3755. Business Ethics. Analysis of ethical considerations involved in the management of a business in relation to society, stockholders, customers, employees, competitors, and government. Prereq.: MGT 3725 and 3750. 3 s.h.

3780. Small Business/Entrepreneurship. Study of the small business environment and the problems in starting a business. How small businesses apply the managerial functions in using their resources. Cross-
listed with MKTG 4870. Prereq.: Senior standing or permission of instructor. 3 s.h.

4871. Small Business Enterprise. Students work with actual problems faced by small businesses under faculty supervision. Problems are defined, analyzed, researched. Recommendations are developed and presented to clients for evaluation. Cross-listed with MKTG 4871. Prereq.: MGT 4870 or permission of instructor. 3 s.h.

4880. Special Topics in Management. Subject matter, credit hours, and specific prerequisites to be announced in advance of each offering. Prereq.: Senior standing in MGT or permission of instructor. 1-4 s.h.

4895. Management Internship. Offers the student the opportunity to relate theory to practice through on-the-job work experience with participating organization. Mandatory bi-weekly meetings with faculty advisor to insure maximum learning from the experience. Offered all three semesters each year based on the availability of internships. A written evaluation of the job experience is required. Prereq.: 20 s.h. of MGT courses including 3725 and 3750, and department screening and approval. 1-4 s.h.

5860. Comparative Management. Comparative Study of organization, managerial styles, and leadership in foreign countries based on historical and environmental factors. Analysis of the reasons that managerial activity and the effectiveness of management vary among different business systems. Prereq.: MGT 3725 and 3750. 3 s.h.

MARKETING—MKTG
Department of Marketing

Lower-Division Course

1520. Selected Marketing Topics. Topics vary each semester. Subject matter and number of credit hours announced in advance of each offering. May be taken twice with change of topic. 1-3 s.h.

Upper-Division Courses

3702. Business Professionalism. This course is intended to help students prepare for and accomplish a successful transition from college to a professional career. Students will be challenged to understand the various elements of business professionalism including etiquette, communications, image, conflict resolution, career exploration and job search. Prereq.: BUS 1500 and junior standing, and course must be taken concurrently with MKTG 3703. 1 s.h.

3703. Marketing Concepts and Practice. The activities involved in marketing products, services, and ideas examined within a framework of customer management. Topics include global marketing environment, marketing analysis and segmentation, consumer behavior, product development and management, pricing, promotion, and distribution. Marketing is examined from its role as a central function of business and non-profit organizations, and from its dominant role in a market economy. Prereq.: BUS 1500 and junior standing. 3 s.h.

3709. Retail Marketing. Retailing is the largest industry and the dominant employer in the U.S. economy. The industry is explored, with particular emphasis on understanding the activities of retailers, both large and small. Topics include shopper behavior, store location, store layout, product presentation, and customer service. The criteria for success in retailing, the impact of technology on retailing, and the retail process examined within the larger domain of marketing. Beneficial to all marketing and business majors, as well as others engaged in shopping activities. Prereq.: MKTG 3703 and GPA of 2.5. 3 s.h.

3720. Industrial Marketing. Characteristics of Manufacturers' goods, channels of distribution, functions of intermediates, distribution costs, marketing research, government control, and legal limitations. Product policies, service policies, packaging policies, price policies. Industrial advertising organization, planning and budgeting, uses of advertising agencies and national advertising media, sales manuals, dealer helps. Prereq.: MKTG 3703 and GPA of 2.5. 3 s.h.

3726. Consumer Behavior. Individual and group behavior as related to marketing consumer behavior, considered from both the standpoint of the marketing manager and from that of the individual as a consumer. The behavioral sciences serve as a background to provide standards for the social and human evaluation of current marketing activities. Topics include the buyer as problem solver, buying decision processes and models, measurement of promotional effectiveness, and life style analysis. Prereq.: MKTG 3703 and GPA of 2.5. 3 s.h.

3740. Professional Selling. Personal selling and sales management examined within the marketing environment. Emphasis on marketing relationships, buyer motivation and behavior, selling strategy and sales management techniques. Prereq.: BUS 1500 and sophomore standing. 3 s.h.

3750. Product Management. New product development process from idea generation to launch; diffusion of innovation and sales forecast of new product, market entry strategy, branding of new product, business plan for new product. Prereq.: MGT 3703 and overall GPA of 2.50. 3 s.h.

4815. Marketing Research. Introduction to the major areas of research marketing. Problem definition, research design, gathering information and analysis to assist marketing management with the decision making process. Both empirical and theoretical
concepts. Review of research problems, approaches and trends in industrial retailing, wholesaling, trade associations, advertising, publishing and consulting firms. Prereq.: MKTG 3703 and GPA of 2.5. 3 s.h.

4825. Marketing Management. Comprehensive study of the management functions in marketing including organization, planning, research, merchandising, sales, advertising and promotion, marketing channels, and control related to corporate policies and objectives. Management practices covering recruiting, selection, training, equipping, compensating, and supervising. Prereq.: MKTG 3703, MKTG 3726 and MKTG 4815 and GPA of 2.5. 3 s.h.

4842. Special Topics in Marketing. Topics vary each semester. Subject matter, number of credits, and prerequisites announced in advance of each topic. No more than one Special Topic per semester is permitted. May be taken twice with change of topic. Prereq.: Permission of chairperson. 1-3 s.h.

4845. International Marketing. Development of United States trade, foreign trade promotion, organization, export and import procedures and practices. Presented from the viewpoint of the international marketing manager who must recognize differences between markets in various countries as influenced by their particular cultural and economic environments. Prereq.: MKTG 3703 and GPA of 2.5. 3 s.h.

4846. Marketing Channels and Logistics. Consideration of the problems likely to arise in the planning for and movement of goods through channels of distribution from producer to end-user. Elements of the logistical system, including transportation modes, plant and warehouse location, and inventory size determinations. Behavioral and functional relationships with and between channel members in a supply chain. Prereq.: MKTG 3703 and GPA of 2.5. 3 s.h.

4850. Marketing Internship. Through employment with participating business organizations the student receives professional marketing experience. Candidates work for the entire semester at a local business organization under the direct guidance of a faculty advisor. Required paper at the end of the course on the relationship of marketing theory and practice. Prereq.: MKTG 3703. 3 s.h.

4851. Services Marketing. Cross-functional approach to the marketing of customer services in profit and non-profit organizations, including domestic and international opportunity analysis, customer analysis, financial analysis, strategy formulation, process and systems management, and quality improvement. Prereq.: MKTG 3703 and GPA of 2.5. 3 s.h.

4870. Small Business/Entrepreneurship. Study of the small business environment and the problems in starting a business. How small businesses apply the managerial functions in using their resources. Cross-listed with MGT 4870. Prereq.: MKTG 3703. 3 s.h.

4871. Small Business Enterprise. Students work with actual problems faced by small businesses under faculty supervision. Problems are defined, analyzed, researched. Recommendations are developed and presented to clients for evaluation. Cross-listed with MGT 4871. Prereq.: MKTG 3703. 3 s.h.

MATERIALS

ENGINEERING—MTEN

College of Engineering

2606. Engineering Materials. Properties and uses of engineering materials, manufacturing processes, including heat treatments and forming operations. Introduction to mechanical testing methods. Listed also as MECH 2606. Prereq.: MATH 1572. 3 s.h.

3721. Engineering Plastics. Preparation, characterization, manufacture, properties and applications of commercial polymers. Prereq.: CHEM 1516/1516L, CHEN 2683, and MTEN 3721L or concurrent. 3 s.h.

3721L. Engineering Plastics Laboratory. Preparation of thermoplastics and thermostet plastics utilizing injection molding. Measurement of plastics properties using Instron analysis to predict performance. Prereq.: CHEM 1516/1516L, CHEN 2683 and MTEN 3721 or concurrent. 1 s.h.


3745L. Corrosion of Engineering Materials Laboratory. Measurement of corrosion rates of engineering materials, especially metals, IR compensation, polarization resistance, and electrochemical impedance spectroscopy for coated and uncoated materials. Prereq.: CHEM 1516/L, MTEN 3745 (or concurrent). 1 s.h.

3752. Ceramic Materials. Composition, microstructure, processing, and properties of commonly used ceramics and glasses. Advanced ceramics including piezoelectric ceramics, optical fibers, microelectromechanical systems (MEMS), and carbon polymorphs such as fullerenes and carbon nanotubes. Prereq.: MECH 2606 or MTEN 2606. 3 s.h.

3753. Materials used in Electrical Devices. Properties and processing of materials used in modern electronic devices. Manufacturing techniques used to make common electronic devices such as p-n rectifying junctions, MOSFET transistors, integrated circuits, magnetic storage devices, LEDs, and lasers. Prereq.: MECH 2606 or MTEN 2606. 3 s.h.

3768. Engineering Forensics using the SEM. Use of Scanning Electron Microscope (SEM) for forensic and failure analysis investigations. Individual term projects using the stereomicroscope, preparing SEM samples, taking SEM photomicrographs, and using
the energy dispersive x-ray analyzer. Two hours lecture and three hours lab per week. Prereq.: MECH 2606 or MTEN 2606.

3783. Properties, Processing, and Applications of Metals. Composition, processing, heat treatment, microstructure, and properties of commonly used engineering alloys. Alloy and heat treatment selection for the optimization of desired properties for engineering applications. Two hours lecture, three hours lab per week. Prereq.: MECH 2606 or MTEN 2606.

4815. Introduction to Biomaterials. The uses of synthetic materials including metals and alloys, ceramics, pyrolytic carbon and polymers within a human body. Reaction of human body to devices made out of the synthetic materials. Impact of human environment on the materials. Use of biomaterials in orthopedic, drug delivery, skin grafts, etc. Prereq.: MTEN 3721.

4820. Fiber-reinforced Composite Materials. Introduction to the manufacture and applications of fiber-reinforced composite materials. Topics covered include polymer, ceramic and metallic matrix composite materials. Principles in selection and processing of composite materials are considered. Prereq.: MTEN 3721.

4825. Foamed Materials. Properties, processing, and applications of foamed materials with an emphasis on metallic foams. Prereq.: MTEN 3783 or permission of instructor.

4888. Materials Engineering Design. Development of materials engineering designs from the proposal phase to the detailed engineering phase. The application of materials engineering and cost principles to the design of processes and products including societal, aesthetic, environmental and safety considerations. Prereq.: ISEN 3724 and senior standing.

5868. Failure Analysis Using the SEM. Advanced methods in failure analysis of products and structures. Failure modes and mechanisms. Characteristics of fracture surfaces. Failure analysis investigations using the stereomicroscope and the Scanning Electron Microscope (SEM). Two hours lecture, three hours lab per week. Prereq.: 96 s.h. of degree credit and permission of instructor.

MATHEMATICS — MATH
Department of Mathematics and Statistics

Lower-Division Courses

1500. Number Concepts and Beginning Algebra. Activity-based approach to signed numbers, fractions, percentages, solving equations, word problems, proportional reasoning, graphing, slope, Pythagorean theorem and square roots. Does not count toward a degree. 5 s.h.

1501. Elementary Algebraic Models. Arithmetic of integers and of rational numbers; linear equations and inequalities in one variable; polynomials, factoring, algebraic fractions, radicals and quadratic equations; linear systems in two variables; graphs. Prereq.: Level 10 on Math Placement Test or MATH 1500. Does not count toward a degree. 5 s.h.

1502, 1503. Beginning Algebra 1, 2. Topics include arithmetic of integers and rational numbers, linear equations and inequalities, quadratic equations, factoring, systems of linear equations, word problems and graphing quadratic functions. MATH 1502 and MATH 1503 are equivalent to MATH 1501. Prereq.: Level 10 on Math Placement Test or MATH 1500. Does not count toward a degree. 5 s.h.

1504. Intermediate Algebra and Trigonometry. Elementary algebra review, quadratic functions and equations, composition of functions, inverse functions, exponential and logarithmic functions, translation and stretching of graphs. Trigonometry topics include right triangle trigonometry, analytic trigonometry, graphing, and trig identities. Prereq.: Math 1501 or Level 20 on Math Placement Test. Does not count toward a degree. 5 s.h.

1505. Intermediate Algebra with Applications. This course is intended to prepare students for their college-level mathematics requirement. Topics include linear and nonlinear equations and inequalities; problem solving; relations of function types that include linear, polynomial, radical, rational, exponential, and logarithmic; applications. Does not count toward a degree. 5 s.h.

1507. Intermediate Algebra. Topics include functions of the following: linear, polynomial, rational, exponential, and logarithmic. Emphasis on function relations and graphing by algebraic techniques and technology. Solving linear, nonlinear equations and inequalities. Prereq.: MATH 1501 or Level 20 on Math Placement Test. Does not count toward a degree. 3 s.h.

1508. Introduction to Trigonometry. Angle measurement, similar triangles, trigonometric ratios in the plane, right triangle trigonometry, cosine and sine laws. Sine, cosine, and tangent functions and their graphs. Fundamental trigonometric identities, equation solving, and inverse trigonometric functions. Prereq.: MATH 1501 or Level 2 on the Math Placement Exam. 2 s.h.

1510. College Algebra. This course is primarily intended to prepare STEM students for MATH 1513. Topics include real numbers, equations and inequalities, linear, quadratic, polynomial, exponential, and logarithmic functions, graphing techniques, systems of equations, matrices, determinants, permutations and combinations, the Binomial Theorem, and applications. The course fulfills the general education requirements for mathematics. 5 s.h.

1513. Algebraic and Transcendental Functions. Function concepts including trigonometric, exponential, and logarithmic functions. Application problems
and graphing. Supplemental topics. Prereq.: At least Level 40 on the Mathematics Placement Test or MATH 1507 and MATH 1508.  

1552. Applied Mathematics for Management. Apply functions, linear systems, linear programming to business including use of technology; mathematics of finance and an introduction to limits, derivatives and integrals with business applications. No credit for students who have completed MATH 1570 or 1571. Prereq.: MATH 1507 or at least Level 40 on the Mathematics Placement Test. 4 s.h.

1564, 2665. Foundations of Middle School Mathematics 1, 2. Conceptual foundations of topics from number theory, operations, functions, algebra, geometry, measurement, probability, and data analysis. Emphasis on multiple approaches and representations, problem solving, and communication of mathematical reasoning. Includes inquiry-based laboratory experiences with manipulatives and computing technology. Prereq.: At least Level 40 on the Mathematics Placement Test or concurrent registration in MATH 1507 (for both). 4-4 s.h.

1570, 2670. Applied Calculus 1, 2. The elements of differential and integral calculus, with emphasis on applications. Analytical geometry, differentiation and integration techniques and series representations. Introduction to differential equations, transform calculus, and Fourier analysis. This is a basic methods course particularly adapted for those who require applied topics in mathematics. Not applicable toward the Mathematics major. Credit will not be given for both MATH 1549 and 1570. Prereq.: MATH 1513 or at least Level 50 on the Mathematics Placement Test. MATH 1570 for MATH 2670. 4-5 s.h.

1571, 1572, 2673. Calculus 1, 2, 3. A sequence of integrated courses in analytic geometry and calculus. A detailed study of limits, derivatives, and integrals of functions of one and several variables with applications. Prereq.: MATH 1571 requires at least Level 70 on the Mathematics Placement Test, or MATH 1513. MATH 1571 for MATH 1572, MATH 1572 for MATH 2673. 4-4+4 s.h.

1580H. Biomathematics 1. Counting techniques, probability, matrices and linear systems. Emphasis on the role of mathematical models in explaining and predicting phenomena in life sciences. Prereq.: Admission to NEOMED-YSU program. 2 s.h.

1581H. Biomathematics 2. A study of functions, differential and integral calculus. Emphasis on the role of mathematical models in explaining and predicting phenomena in life sciences. Credit will not be given for both MATH 1581H and 1571. Prereq.: Admission to NEOMED-YSU program 4 s.h.

1585H, 2686H. Calculus 1, 2 Honors. A sequence of honors courses in analytical geometry and calculus which cover essentially the same material as MATH 1571, 1572, 2673, in two semesters instead of three. A detailed study of limits, derivatives, and integrals of functions of one and several variables and their applications. Prereq.: Level 90 on the Mathematics Placement Test for MATH 1585H. MATH 1585H for MATH 2686H. This sequence will be offered at most once during each academic year. 5+5 s.h.

1586H, 2687H. Honors Calculus Laboratory 1, 2. Introduction to mathematical modeling of topics covered in calculus. Emphasizes the use of technology such as computer algebra systems, technical document processing, and graphics software for solving problems and reporting solutions. Prereq.: MATH 1571 or concurrent with 1585H for MATH 1586H. MATH 1572 or concurrent with MATH 1586H for MATH 2687H. 1+1 s.h.

2623. Survey of Mathematics. Mathematics models emphasizing basic ideas in mathematics and statistics, stressing concept formation rather than manipulative skills. Prereq.: MATH 1501 or Level 20 on the Mathematics Placement Test. Credit will not be given for both MATH 2623 and 2625. 3 s.h.

2624. Probability and Critical Reasoning. Finite probability with supportive material from logic and set language. Connection between critical reasoning in probability and in deterministic settings. Prereq.: MATH 1507 and MATH 1508 or at least Level 40 on the Mathematics Placement Test. 3 s.h.

2625. Mathematical Literacy and Critical Reasoning. An introduction to contemporary mathematics and its applications. Topics include basic scientific methods and a variety of practical problems that can be modeled and solved by quantitative means. Prereq.: Math 1501 or at least Level 20 on the Mathematics Placement Test. Credit will not be given for both MATH 2623 and 2625. 4 s.h.

2651, 2652. Mathematics for Early Childhood Teachers 1, 2. A conceptual development of mathematics topics underlying today’s Pre-K-grade 3 curriculum. Emphasis on multiple approaches, problem solving, and communication of mathematics. Incorporates classroom activities, manipulatives, technology, and activities developmentally appropriate for young children. Prereq.: MATH 1501 or at least Level 20 on the Mathematics Placement Test. Credit will not be given for both MATH 2651 and 2652. 3 s.h.

Upper-Division Courses

3701. Biomathematics Seminar. Introduction to interdisciplinary research in biology and mathematics. Topics include current research by faculty and students, cross disciplinary communication, report writing, technical presentations, literature reading, laboratory techniques and safety. May be repeated once. Listed also as BIOL 3701. Prereq.: MATH 1571 or BIOL 2601 or BIOL 2602. 1 s.h.

3702. Problem Solving Seminar for Secondary Mathematics. Approaches to and practice with problem solving with examples from a broad spectrum of mathematics. Emphasizes include problems at the level of the Praxis II examination for mathematics and problems suitable for high school contests such
3705. **Differential Equations.** Methods and theory of solving differential equations with applications. Existence, uniqueness. First order equations. Higher order linear equations. Introduction to partial differential equations and boundary value problems, including Laplace’s equation. Prereq.: MATH 2673. 3 s.h.

3715. **Discrete Mathematics.** A course in discrete mathematical structures to prepare students for advanced courses. Topics include set theory, functions and relations, logic and quantifiers, truth tables and Boolean expressions, induction and other techniques of proof, and graphs. Credit will not be given for both CSCI 3710 and MATH 3715. Prereq.: MATH 1572. 3 s.h.

3720. **Linear Algebra and Matrix Theory.** Matrices; matrix operations; linear transformations; applications. Prereq.: MATH 1572. 3 s.h.

3721. **Abstract Algebra 1.** Introduction to abstract algebra investigating fundamental concepts in group and ring theory. Topics include groups, subgroups, cyclic groups, permutation groups, cosets, direct products, homomorphisms, factor groups, rings, integral domains and polynomial rings. Prereq.: MATH 3715 and 3720. 3 s.h.

3750. **History of Mathematics.** A survey of the historical development of mathematics. Prereq.: MATH 2673 or 3715. 3 s.h.

3751. **Real Analysis 1.** Introduction to the properties of the real number system and metrics and metric properties, with critical analysis of limits, continuity, differentiability, integration, and other fundamental concepts underlying the calculus. Prereq.: MATH 2673 and 3715. 4 s.h.

3760. **Numerical Analysis 1.** The theory and techniques of numerical computation. The solution of a single equation, interpolation methods, numerical differentiation and integration, direct methods for solving linear systems. Prereq.: MATH 3720 and CSIS 2610. 3 s.h.

3767, 3768. **Algebra/Geometry for Middle School Teachers.** An integrated, conceptual, and function-centered approach to the foundations of algebra, geometry, and trigonometry for preservice middle childhood mathematics specialists. Emphasis on multiple approaches and representations, problem solving, and communication of mathematical reasoning. Includes inquiry-based laboratory experiences. Not applicable to the mathematics major. Prereq.: MATH 1564 for MATH 3767; MATH 2655 for MATH 3768 and either 40 on the Mathematics Placement test or MATH 1507 for both. 4+4 s.h.

3785. **Numerical Methods.** Matrices, matrix operations, and the application of numerical methods. Not applicable to the Mathematics major. Prereq.: MATH 2670 and ENTC 1505, or equivalent. 3 s.h.

3795. **Topics in Mathematics.** The study of a mathematical topic or the development of a special area of mathematics. May be repeated once. Prereq.: MATH 1549 or 1570 or 1571 or 2623 or 2631. 2-3 s.h.

4830. **Foundations of Geometry.** The development of Euclidean and non-Euclidean geometries from postulate systems. Prereq.: MATH 3715. 3 s.h.

4869. **Functions, Calculus, and Applications for Middle School Teachers.** Polynomial and exponential functions, limits, derivatives, integrals, and applications. Interpretation of slope and area in graphs of functions from applied settings. Applications of limits to the derivations of geometric formulas. Relations between tables, graphs, and the symbolic representation of functions. Prereq.: MATH 3767 or consent of instructor. 3 s.h.

4870. **Mathematics Seminar for Middle School Teachers.** Approaches to and practice with problem solving from a broad spectrum of mathematics. Equal emphasis on problems suitable for contests in the seventh or eighth grade (such as the American Mathematics Competition 8 and MathCounts) and at the level of the Praxis II examination for Middle School Mathematics. May be repeated 2 times. Prereq.: MATH 2624 or MATH 2625 or STAT 2601; MATH 3767; MATH 3768; and either MATH 4869 or concurrent registration in MATH 4869. 2 s.h.

4882. **Biomathematics Research.** Interdisciplinary and individualized study of a topic in biology and mathematics. Student project mentored jointly by faculty in biology and mathematics. May be repeated once. Grading is Traditional/PR. Listed also as BIOL 4882. Prereq.: MATH/BIOL 3701, senior status and permission of the department chairperson. 1-2 s.h.

4893. **Mathematics Internship.** A program of work and study in the public or private sector centered upon the development of a significant mathematics project, under the direction of University faculty member(s) and designated member(s) of the participating agency. This course can be substituted for MATH 4896 to fulfill the major requirements with approval from the department chairperson. See department for more details. Prereq.: 24 s.h. of mathematics applicable to the mathematics major including either MATH 3721 or 3751 and consent of the department chairperson. May be repeated twice. 2 s.h.

4896. **Senior Undergraduate Research Project.** Individualized study of a topic in mathematics culminating in a written report and an oral presentation at a national or regional meeting or a local seminar. May be repeated once. Prereq.: 24 s.h. of mathematics applicable to the mathematics major including either MATH 3721 or 3751 and permission of the department chairperson. 2 s.h.

4897H. **Thesis.** Individualized study of a topic in mathematics culminating in a written report and an oral presentation at a national or regional meeting or a local seminar. Prereq.: 24 s.h. of mathematics applicable to the mathematics major including both MATH 3721 and 3751 and permission of the department chairperson. 2 s.h.
5821. Topics in Abstract Algebra. A course in abstract algebra aimed at developing a broad understanding of the subject. Credit will not be given for both MATH 3721 and 4821. Prereq.: MATH 3715 and 3720. 3 s.h.

5822. Abstract Algebra 2. A continuation of MATH 3721 with special emphasis of fields. Additional topics in pure or applied algebra. Prereq.: MATH 3721 or equivalent. 3 s.h.

5823. Abstract Algebra 3. This course introduces advanced topics in field theory. Topics may include principal ideal domains, irreducibility, quotient rings, algebraic extensions, finite fields, splitting fields, and the Galois group. Prereq.: MATH 4822. 3 s.h.

5825. Advanced Linear Algebra. A study of abstract vector spaces, linear transformations, duality, canonical forms, the spectral theorem, and inner product spaces. Prereq.: MATH 3721. 3 s.h.

5828. Number Theory. A study of congruences, Diophantine equations, quadratic residues, special number theory functions, and selected applications. Prereq.: MATH 3721. 3 s.h.

5832. Euclidean Transformations. General properties of functions and transformations; isometries and transformations of the Euclidean plane; the complex plane, its geometry and subfields; transformational, analytical, and vector approaches to Euclidean geometry; connections to other branches of mathematics and applications. Prereq.: MATH 3720 and 4830. 3 s.h.

5835. Introduction to Combinatorics and Graph Theory. The pigeonhole principle; permutations, combinations, the binomial theorem; the inclusion-exclusion principle; recurrence relations; graphs and digraphs, paths and cycles, trees, bipartite graphs and matchings. Prereq.: MATH 3715 and 3720. 3 s.h.

5843. Theory of Probability. The mathematical foundation of probability theory including the study of discrete and continuous distributions. Other topics selected from limit theorems, generating functions, applications. Credit will not be given for MATH 5843 and STAT 5843. Prereq.: STAT 3743 and MATH 2673. 3 s.h.

5845. Operations Research. An introduction to operations research with emphasis on mathematical methods. Topics may include: linear programming, sensitivity analysis, duality theory, transportation problems, assignment problems, transshipment problems, and network problems. Prereq.: MATH 3715 and 3720. 3 s.h.

5851. Topics in Analysis. A course in analysis aimed at developing a broad understanding of the subject. Credit will not be given for both MATH 3751 and 5851. Prereq.: MATH 2673, 3720, and 3715. 3 s.h.

5852. Real Analysis 2. Uniform convergence of sequences of functions and some consequences; functions on n-space: derivatives in vector spaces, mean value theorem, Taylor’s formula, inverse mapping theorem, implicit mapping theorem. Prereq.: MATH 3720 and 3751 or equivalent. 3 s.h.

5855. Ordinary Differential Equations. A second course in differential equations with emphasis on nonlinear problems and qualitative methods or on boundary value problems. Topics are chosen from: proofs of fundamental theorems, phase plane analysis, limit cycles and the Poincare-Bendixon theorem, biological models, stability via Liapunov functions, asymptotic methods, and boundary value problems. Prereq.: MATH 3705 and 3720. 3 s.h.

5857. Partial Differential Equations. Introduction to partial differential equations (PDE) including solution techniques and applications. Classifications of the basic types of PDE’s (hyperbolic, parabolic and elliptic) and dependence on boundary and initial conditions. Topics include Fourier series, integral transforms (Fourier, Laplace), and applications in vibrations, electricity, heat transfer, fluids or other selected topics. Prereq.: MATH 3705 and MATH 3720. 3 s.h.

5860. Topics in Numerical Analysis. A course in numerical analysis aimed at developing a broad understanding of the subject. Credit will not be given for both MATH 3760 and 5860. Prereq.: MATH 3720 and CSIS 2610. 3 s.h.

5861. Numerical Analysis 2. Numerical methods of initial-value problems, eigenvalue problems, iterative methods for linear and nonlinear systems of equations, and methods involving least squares, orthogonal polynomials, and fast Fourier transforms. Prereq.: MATH 2673 and 3760 or equivalent. 3 s.h.

5875. Complex Variables. Complex numbers and their geometric representation, analytic functions of a complex variable, contour integration, Taylor and Laurent series, residues and poles, conformal mapping. Prereq.: MATH 3751 or equivalent. 3 s.h.

5880. Introduction to Topology. An introduction to the basic concepts of general topology: compactness, connectedness, and continuity in topological spaces. Prereq.: MATH 3721 and 3751. 3 s.h.

5884. Mathematical Logic. An introduction to the study of theories in formalized languages and to the theory of models. Prereq.: MATH 3721 or PHIL 3719. 3 s.h.

5895. Selected Topics in Mathematics. The study of a standard mathematical topic in depth or the development of a special area of mathematics. May be repeated twice. Prereq.: 24 s.h. of mathematics applicable to the mathematics major including either MATH 3721 or 3751. 2-3 s.h.
MECHANICAL ENGINEERING—MECH
Department of Mechanical and Industrial Engineering

Lower-Division Courses

1500. Drawing Fundamentals. Visualization of objects for engineering communication. Freehand sketching, orthographic projection, multiview drawing, auxiliary views, sectional views, and dimensioning. Prereq.: High school geometry or equivalent. 3 s.h.

1501. Engineering Communication with CAD. Computer-aided drawing for engineering communication. 2D multiview drawings, 3D modeling including wire frame, solid, and surface models. Final design project using these tools is required. Two hours lecture, three hours laboratory per week. Prereq.: MECH 1500 or equivalent. 3 s.h.

1560. Engineering Communication with CAD. Commercially available software typically used in engineering practice will be used to develop traditional 2D engineering drawings and 3D solid models representing engineering components and systems. Teams of students will complete an engineering design project. One hour lecture and three hours laboratory per week. Prereq.: ENGR 1555 or concurrent. 2 s.h.

2603. Thermodynamics 1. Thermodynamic properties of gases and vapors, and their relationships in energy transformations. The First and Second Laws of thermodynamics. Introduction to thermodynamic cycles and efficiencies of power and refrigeration systems. Prereq.: MATH 1572, CHEM 1515. 3 s.h.

2604. Thermodynamics 2. Irreversibility and exergy, mixtures and solutions; psychometry. Introduction to phase and chemical equilibrium. Prereq.: MECH 2603. 3 s.h.

2606. Engineering Materials. Properties and uses of engineering materials, manufacturing processes, including heat treatments and forming operations. Introduction to mechanical testing methods. Listed also as MTEN 2606. Prereq.: MATH 1571. 3 s.h.

2620. Statics and Dynamics. Principles of engineering mechanics as applied to statics and dynamics, Vector applications to forces and moments; centroid and center of gravity; static equilibrium. Kinematics of particles; Newton’s laws; work-energy; and impulse momentum techniques using vector approach, Prereq.: MATH 1572 and PHYS 2610 or concurrent. 3 s.h.

2641. Dynamics. Kinematics of particles and rigid bodies. Newton’s laws of motion, work-energy, and impulse momentum techniques applied to particle and rigid body motion using a vector approach. Prereq.: CEEN 2601. 3 s.h.

Upper-Division Courses

3708. Dynamic Systems Modeling. Mathematical modeling of linear mechanical, electrical, thermal, fluid, and mixed systems. State space variables. Frequency response. Computer simulation using modern computer tools. Three hours lecture and three hours laboratory per week. Prereq.: MECH 2641, ECEN 2614, MATH 3705. 4 s.h.

3720. Fluid Dynamics. Study of stationary fluids, and fluid dynamics of compressible and incompressible flows; dimensional analysis; boundary layers; subsonic and supersonic flows; lift and drag on bodies immersed in incompressible flows. Prereq.: MECH 2604, MATH 3705, MECH 2641. 3 s.h.

3720L. Fluid Dynamics Laboratory. Experiments on incompressible and compressible fluid flows in the subsonic and supersonic regions. Three hours laboratory per week. Prereq.: MECH 3720 or concurrent. 1 s.h.

3725/L. Heat Transfer 1. Fundamentals of heat transfer by conduction, convection, and radiation. Heat transfer by combined modes. Prereq.: MECH 3720 or concurrent. 3+1 s.h.

3742. Kinematics of Machines. Position, velocity, and acceleration analysis of mechanisms. Design of link and cam mechanisms to perform desired machine functions. Graphical, analytical, and commercial software applications. Prereq.: MECH 2641, ENGR 1560 or MECH 1560. 3 s.h.

3751. Stress and Strain Analysis 1. Analysis of internal forces, stresses, strains, and deflections in three dimensions. Dynamic loading including impact and fatigue. Theories of failure and energy methods. Prereq.: CEEN 2602, MECH 2606. Must be taken concurrently with MECH 3751L. 3 s.h.

3751L. Stress and Strain Analysis 1 Laboratory. Transmission and reflection photoelasticity. State and dynamic strain gage applications using computer-aided data acquisition. Three hours laboratory per week. Concurrent with MECH 3751. 1 s.h.

3762. Design of Machine Elements. Application of fundamental engineering principles to the design of various elements found in machines. Elements include connections, shafts, keys, couplings, springs, gears, belts, chains, bearings, clutches, brakes, screws, etc. Prereq.: MECH 2641 and 3751. Must be taken concurrently with MECH 3762L. 3 s.h.

3762L. Design of Machine Elements Laboratory. Practical design problems incorporating analysis, material selection, and sizing of machine components utilizing the computer. Three hours laboratory per week. Must be taken concurrently with MECH 3762. 1 s.h.

4800. Special Topics. Special topics and new developments in mechanical engineering. Subject matter, credit hours, and special prerequisites are announced in advance of each offering. May be repeated to a maximum of 8 s.h. with different content. Prereq.: Junior standing in Mechanical Engineering, or consent of instructor. 3 s.h.
4808. 4809. Mechanical Systems Design 1, 2. Detailed design of a mechanical engineering system utilizing expertise expected of a new graduate in an industry setting. Design methodology, case studies, oral presentations, and written reports prepare the student to function as part of a design team on a capstone project. MECH 4809 must be taken at the next offering after completing 4808. Grading in MECH 4808 is Traditional/PR. Two hours lecture per week for 4808, three hours for 4809. Prereq. for 4808: MECH 3708, 3725, 3742, and 3762. Prereq. for 4809: MECH 4808. 2+3 s.h.

4808L. Mechanical Systems Design Laboratory. Supplemental activities related to MECH 4808, such as discussions and seminars on industry practices and standards, computer software applications, experimental verification, etc. Three hours laboratory per week. Must be taken concurrently with MECH 4808. 1 s.h.

4809L. Mechanical Systems Design Laboratory. Supplemental activities related to MECH 4808 and MECH 4809, such as discussions and seminars on industry practices and standards, computer software applications, experimental verifications, etc. Three hours laboratory per week. MECH 4809L must be taken concurrently with MECH 4808 and MECH 4809L. Must be taken concurrently with MECH 4809. 1 s.h.


4825L. Heat Transfer and Thermodynamics Laboratory. Experiments involving basic measurement techniques, power and refrigeration cycles, heat transfer, heat exchangers, and energy systems. Three hours laboratory per week. Prereq.: MECH 3720, 3725. 1 s.h.

4835. Thermal Fluid Applications. Application of the principles of thermodynamics, fluid dynamics, and heat transfer to design. Design, analysis and computer simulation of thermal fluid systems and components. Prereq.: MECH 3725. 3 s.h.

4872L. Engineering Acoustics Laboratory. Applications of acoustics instrumentation to problems involving room acoustics, sounds in pipes, noise barriers, and machinery noise. Taken concurrently with MECH 5872. Three hours laboratory a week. 1 s.h.

5811. Solar Engineering. Radiational characteristics of solar energy, glass materials and selective coatings. Analysis of flat plate collectors, concentrators, and thermal storage. System simulation and economic analysis for optimization of basic solar systems. Prereq.: PHYS 2611, MECH 3725 or consent of chairperson. 3 s.h.

5825. Heat Transfer 2. Advanced topics in heat transfer. Multi-dimensional conduction, free convection, phase change heat transfer and thermal radiation. Integration of analytical, numerical, and computational methods into design projects. Prereq.: MECH 3708 and 3725. 3 s.h.


5842. Kinetics of Machines. Three dimensional kinematics and dynamics of machines. Dynamic analysis and design; balancing of machines. Prereq.: MECH 3742. 3 s.h.

5852. Stress and Strain Analysis 2. Continuation of MECH 3751. Introduction to applied elasticity theory including plate stress and strain and stress functions. Plastic and creep behavior of materials. Introduction to instability. Emphasis on design applications. Prereq.: MECH 3751, MECH 3751L, MATH 3705. 3 s.h.

5872. Engineering Acoustics. The nature of sound and its propagation; analysis and control of sound and noise production in mechanical equipment; transmission and absorption of sound in engineering materials, ultrasonics, structural acoustics, base measurements, and equipment. Prereq.: MECH 3708. 3 s.h.

5881. Mechanical Vibrations. Introduction to mechanical vibrations: single and multi-degree of freedom systems, free and forced vibrations, impedance and modal analysis including applications. Prereq.: MECH 3708. 3 s.h.

5881L. Mechanical Vibrations Laboratory. Introduction to vibrations measurements. Experiments with mechanical systems, computer simulation of vibration systems. Experimental determination of component models and parameters. Three hours laboratory per week. Prereq.: MECH 4881. 1 s.h.

5884. Finite Element Analysis. Fundamental principles of finite element analysis with emphasis on applications to design in areas of stress analysis, vibrations, and heat transfer. Use of commercial software. Prereq.: MECH 3708, 3725, 3751. 3 s.h.

5885. Computational Fluid Dynamics. Applied numerical analysis, including solution of linear algebraic equations and ordinary and partial differential equations; modeling of physical processes, including fluid flow and heat and mass transfer; use of general purpose computer codes, including commercial computational fluid dynamics software packages. Prereq.: MECH 3720 and 3725. 3 s.h.

5892. Control of Mechanical Systems. Introduction to theory of feedback and control. Performance and stability of linear systems. Design of feedback control systems. Practical application and introduction to state-space methods. Two hours lecture and three hours laboratory per week. Prereq.: MECH 3708. 3 s.h.
MECHANICAL ENGINEERING TECHNOLOGY—MET
Engineering Technology

Lower-Division Courses

1515. Mechanics 1. Study of forces as vector quantities; resultants of force systems; principles of mechanical equilibrium; application of principles to problems, devices and structures commonly encountered in industry. Two hours lecture, three hours lab per week. Prereq.: C or better in ENTC 1505, or concurrent: MATH 1513. 3 s.h.

2616. Mechanics 2. Continuation of MET 1515 with further application of statics, introduction to dynamics of solids, study of various types of motion, Newton’s second law, work and energy, impulse and momentum. Two hours lecture, three hours lab per week. Prereq.: MET 1515 C or better. 3 s.h.

2630. Manufacturing Techniques. The study of materials and processes used in manufacturing, including casting, heat treatment, hot and cold working, plastics processing and machining, Geometric Dimensioning and Tolerancing. Prereq.: C or better in ENTC 1505. 3 s.h.

2630L. Manufacturing Techniques Laboratory. Practice and procedures of machine tool operation including lathes, drill presses, shapers, and milling machines. Two hours lab per week. Concurrent with MET 2630. 1 s.h.

Upper-Division Courses

3705. Thermodynamics. Properties of ideal and real gases, first and second laws of thermodynamics, application to thermodynamic cycles involving power plants and cyclic machinery. Prereq.: C or better in CHEM 1515 or CHEM 1505, C or better in EET 3725. 4 s.h.

3706. Machine Design 1. Principles of stresses and deflections, shear and moment diagrams, combined stresses, fatigue, measurement of strain, and theories of failure. Application of these principles to design of machine components. Prereq.: C or better in CCET 2604, C or better in DDT 1503. 4 s.h.

3707. Machine Design 2. Continuation of MET 3706, progressing to the design of machine elements such as gears, belts, clutches, chains, bearings, welded and bolted joints. Two hours lecture, three hours lab per week. Prereq.: C or better in MET 3706. 3 s.h.

3710. Tool Design. Design and selection of cutting tools, fixtures, bending and forming dies, inspection and gauging instruments, and material feed mechanisms. Two hours lecture, three hours lab per week. Prereq.: C or better in MET 3707. 3 s.h.

3711. Heat and Power Cycles. A continuation of MET 3705, including the study of heat transfer, the Rankine cycle, the Otto cycle, the Diesel cycle, and the performance of pumps and heat exchangers. Prereq.: C or better in MET 3714, C or better in MET 3705. 4 s.h.

3714. Fluid Mechanics. Principles of fluid statics and fluid dynamics and their application to incompressible flow in pipes and channels; Bernoulli’s equation, laminar and turbulent flow; energy and momentum in fluid flow. Prereq.: C or better in MET 1515. 4 s.h.

3714L. Fluid Mechanics Laboratory. Tests and applications of concepts covered in MET 3714. Three hours lab per week. Concurrent with MET 3714. 1 s.h.

3720. Mechanisms. Graphical and analytical solution of problems involving displacement, velocity, and acceleration in machine mechanisms. Design of linkages with drafting software to provide required motions of machine members. Two hours lecture, three hours lab per week. Prereq.: C or better in MET 2616, C or better in MATH 1570 or C or better in MATH 1571. 3 s.h.

3730. Energy and Financial Modeling. The analysis and evaluation of financial factors that affect alternative energy systems explored in several common systems, such as solar, fuel cells, biodiesel, and wind, along with existing fuels such as coal, oil, natural gas, and nuclear. Prereq.: MET 3705. 4 s.h.

3731. Grant Proposal. The field of Alternative Energy Technologies requires significant writing skills to prepare the many parts of a proposal. Students will learn about funding sources for grants, prepare all portions of a grant proposal including Statement of Need, Work Plans, Budgets, Outcomes and Periodic Reports. Prereq.: ENGL 1551 and MET 3730. 4 s.h.

3735. Hydrogen Production and Storage. The methods of hydrogen production are discussed, including steam reforming, coal gasification, fermentation, and electrolysis. Storage systems are presented, along with national codes for the storage equipment, and best practices. Three hours lecture and 1-1½ lab. Prereq. or concurrent with MET 3705 and Prereq. of CHEM 1505/L or CHEM 1515/L. 4 s.h.

3736. Design of Solar Systems 1. Use of the sun as an energy source is explored in forms of electricity or heat. Topics include regions that are best suited for solar, solar energy capture methods, energy conversion to electricity, steam or hot water. Actual systems are evaluated, including electrical and mechanical design, economic calculations, and related codes. Three hours lecture and 1-1½ lab. Prereq. or concurrent with EET 1502/L and Prereq. of CHEM 1505/L or CHEM 1515/L. 4 s.h.

3737. Design of Solar Systems 2. This course builds upon MET 3736 Design of Solar Systems I and adds more detailed analysis to the capture and use of solar energy. The radiation spectrum is defined and integration methods presented. Further discussion
of solar use in heat pumps and absorption systems is explored. Three hours lecture and 1-1 1/2 computational lab. Prereq. MATH 2670 and MET 3736.

4 s.h.

3739. Geothermal Processes. This course provides students with basic knowledge on geothermal systems, the most-favorable areas for geothermal principles of heat pumps and geothermal steam systems, common design principles, followed by economics, code requirements and LEED contributions. Three hours lecture and 1-1/2 computational lab. Prereq.: MET 3705.

4 s.h.

3740. Design of Wind Systems I. Evaluation of wind energy as a low-impact alternative energy source. Topics include selection of an appropriate wind site, types of turbines, and capture efficiency of wind devices. The electrical and mechanical systems are reviewed in detail, along with economic calculations and discussion of related codes. Three hours lecture and 1-1/2 computational lab. Prereq. or concurrent with EET 1502/L.

4 s.h.

3742. Biodeisel Processes. Several methods of biodiesel production are surveyed, such as algae, palm, and soy. The chemical process of each method is explored and analyzed. Existing production systems and campus research projects are used in class demonstrations. Three hours lecture and 1-1/2 computational lab. Prereq. CHEM 1505/L or CHEM 1515/L, BIOL 2601/L, and MET 3705.

4 s.h.

3743. Fuel Cell Systems. Several methods of fuel cells are explored including Proton Exchange Membrane Fuel Cells (PEMFC), Solid Polymer Electrolyte Fuel Cells (SPEC) and Solid Oxide Fuel Cells (SOFC). The principles of operation existing barriers for each system will be presented, along with the current reach and economical feasibility. Three hours lecture and 1-1/2 computational lab. Prereq.: MET 3705 and CHEM 1515/L or CHEM 1505/L.

4 s.h.

4810. Manufacturing Systems Analysis. Study of manufacturing systems including manufacturing process design, analysis, selection and sequencing: value analysis, machine tool cost and functions; computer and statistical simulation of production systems. Two hours lecture and three hours of computational lab per week. Prereq.: C or better in MET 3707.

3 s.h.

4812. Numerical Control. A study of the programming of numerically-controlled machine tools. Students program NC machines using manual and computer-assisted techniques. Prereq.: C or better in DDT 2606, and C or better in MET 3707.

3 s.h.

4812L. Numerical Control Lab. A study of the programming of numerically-controlled machine tools. Students program NC machines using manual and computer-assisted techniques. Three hours lab per week. Coreq. or Prereq.: MET 4812.

1 s.h.

4820. Machine Systems. Analysis and design of complex machine systems incorporating hydraulic and pneumatic subsystems and electrical controls, including PLCs. Comprehensive design projects. Two hours lecture, three hours lab per week. Prereq.: C or better in MET 3720, and C or better in MET 4810.

3 s.h.

4850. Air Conditioning Principles and Practice. The practical techniques used in the design of heating, ventilating, and air conditioning systems, including load calculations, unit selection, and duct system layout. The laboratory work includes the use of design charts and manufacturer's catalogs in a project. Two hours lecture, two hours lab per week. Prereq.: MET 3711.

3 s.h.

4860. Robotics Technology. An application-oriented course on the technology and use of industrial robots, including classification, tooling, sensors, workcell design, safety, and programming. Prereq.: MET 3714 C or better.

2 s.h.

4860L. Robotics Technology Laboratory. Practice in the programming and application of industrial robots and associated equipment. Construction of simulated robotic workcells using actual industrial robots, programmable controllers, sensors, and grippers. Two hours lab per week. Concurrent with MET 4860. Prereq.: MET 3714 C or better.

1 s.h.

4870. Applied Finite Element Method. Principles of the finite element method and its application to the analysis of stress, strain, and heat transfer. Computer aided solutions to two- and three-dimensional problems in structural analysis, mechanical design and heat transfer. Two hours lecture, three hours lab per week. Prereq.: or coreq with MET 3707 or C or better in CCET 3709.

3 s.h.

4890. Special Topics in Mechanical Engineering Technology. New developments in Mechanical Engineering Technology. Subject matter, special prerequisites, and credit hours to be announced in advance of each offering. May be repeated with different subject matter to a maximum of 8 s.h. Prereq.: Senior standing in MET or consent of the instructor.

1-4 s.h.

4895. Capstone Design Project. The course provides an overview of the requirements and design procedures for alternative energy projects. Systems will be designed using all the tools presented in previous course work. Actual systems that may include wind, solar, biodiesel, or geothermal components will be built, tested, and evaluated. Includes a major interdisciplinary group project. Three hours lecture and 3 hours lab. Prereq.: senior standing in MET (AET option) and permission of the instructor.

4 s.h.

MEDICAL ASSISTING TECHNOLOGY—MATC
Department of Health Professions


3 s.h.

1502. Medical Law and Ethics. Types of medical practices. Legal relationship of physician to patient, i.e., professional liability, implied and informed
2600. Medical Insurance Forms. A study of private group and government insurance programs; Medicare, Medicaid, Worker's Compensation and Disability Insurance and the completion of required forms. Prereq.: MATC 1501. 3 s.h.

2602. Diagnostic and Procedural Coding. Emphasis on identifying and use of coding systems (ID-9-CM, CPT) directly related to medical practices and current government regulations. Prereq.: MATC 1501. 2 s.h.

2604. Intermediate Diagnostic and Procedure Coding. Higher level of ICD-9-CM and CPT/HCPCS coding, knowledge of Prospective Payment System (PPS) to confirm DRG assignment and professional fee billing. Two hours lecture. Prereq.: MATC 1501 and 2602. 2 s.h.

2605. Introduction to Pharmacology. Identification and interactions of drugs used in patient care including the pharmacological action and effects on the patient. Various modes of administration and patient education regarding the effects of common drugs. Prereq.: MATC 1501, BIOL 1551. 3 s.h.

2606. Automated Coding Systems. Integration of computer system packages that incorporate the text and logic of coding systems in an automated form. Two hours lecture and three hour lab. Prereq.: MATC 1501 and 2602. 3 s.h.

2610. Introduction to Disease Processes. Introduction to the disease process including diagnostic symptoms and treatment aspects. Emphasis on the physical, psychological, and environmental conditions which influence the individual's well being. Prereq.: MATC 1501. 3 s.h.

2611L. Clinical Procedures Lab. Techniques of patient interviewing and history taking, performance of patient assessment, application of principles of body mechanics, and instructions for examinations and diagnostic procedures. Three hours lab. Prereq.: MATC 1501 and 1502. 1 s.h.

2612. Medical Records Management. Includes medical record administration in order to create, maintain, protect, and preserve records. Emphasis on the development and maintenance of appropriate filing systems and the ethical and legal requirements and restrictions of medical records. Prereq.: MATC 1501 and 1502. 2 s.h.

2614. Medical Office Procedures. Fundamentals in patient reception, appointment scheduling, communication techniques, office management systems and preparation of an office policy manual. Three hours lecture, six hours assigned practicum per week. Prereq.: MATC 1501 and 1502. 3 s.h.

2616. Coding Specialist Internship. The student will be assigned to a hospital, physician's office, clinic and/or health care setting to practice coding and interface with the billing methodologies. Fourteen hours at the assigned clinical site and one-hour seminar class on campus per week. Prereq.: MATC 2604. 3 s.h.

2620. Advanced Clinical Procedures. Orientation to minor surgical and specialized examination techniques, physical examinations, preparation and administration of medication, performing electrocardiograms, application of physical therapy, and x-ray techniques including maintaining medical supplies and inventory. Prereq.: MATC 2610, 2611L. 3 s.h.

2620L. Advanced Clinical Procedures Lab. Laboratory experiences in minor surgical and specialized examination techniques, preparation and administration of medication, electrocardiograms, physical therapy, and x-ray procedure. Concurrent with MATC 2620. Three hours of lab per week. 1 s.h.

2680. Medical Laboratory Procedures. An introduction to diagnostic laboratory procedures performed in the physician's office. Principles and techniques of laboratory procedures. Prereq.: MATC 2610, 2611L. 1 s.h.

2680L. Medical Laboratory Procedures Lab. Practice in diagnostic laboratory procedures. Emphasis on collection, proper handling, and identification of specimens. Basic hematologic procedures, urinalysis, bacteriological exams, serology, and pregnancy tests. Concurrent with MATC 2680. Three hours of lab per week. 1 s.h.

2692. Medical Assisting Externship. A practical experience in the offices of qualified physicians, accredited hospitals, and/or clinics. This is a non-paid experience. 20 hours per week for a total of 300 hours per semester at the site. One-hour weekly seminar. Prereq.: MATC 2620, 2614, 2680. 3 s.h.

**MERCHANDISING: FASHION & INTERIORS — MRCH**

**Department of Human Ecology**

1506. Clothing and Image Development. Purpose and meaning of dress and adornment as a means of communication and social identity. 3 s.h.

1508. Apparel Production. Methods, materials and the fundamental techniques and skills required in the production of apparel. Two hours lecture, four hours lab per week. 3 s.h.

1510. Apparel Evaluation. Analysis and evaluation of aspects of garment construction and styling relating to making merchandising decisions. 3 s.h.

2625. The World of Fashion. Overview of fashion-influenced industries: Textiles, Apparel, Accessories, and Home Furnishings. 3 s.h.

2661. Fundamentals of Interior Design. Studio course in theory, elements and principles of interior design. An introduction to planning, materials, furnishings, work methods, and problem solving to meet human
needs. Introduces architectural drawing including plans, elevations, details and basic drafting skills within the context of interior design. 3 s.h.

2662. Computer Applications for Housing and Interiors. Computer-aided drafting and design using the basic commands of AutoCAD to produce architectural and interior drawings, including dimensional plans, evaluations, and details. Two hours lecture and 3 hours lab per week. 3 s.h.

2663. Materials and Methods. Principles and functions of materials and methods used in the construction of furnishings and housing materials. Raw materials, selection, use, care, and selling points of paper, leather, fur, woods, metals, glass, ceramics, and plastics. Examines the furnishings industry with emphasis on forecasting, planning, selecting, negotiating, pricing, and recording merchandise. Prereq.: MRCH 2662. 3 s.h.

3705. Fashion Textiles. Study of textiles, including their characteristics, functions, purposes, and care. Fibers, yarns, construction, finishes, and textile legislation. Two hours lecture, two hours lab. Prereq.: CHEM 1500/1500L or CHEM 1505/1505L. 3 s.h.

3713. Merchandise Buying. Strategies and philosophies of merchandise selection. Topics examined include the organization of the buying function, determining what to buy based on customer needs, visiting the market, vendor analysis and selection, and the buyer’s responsibilities in other areas of the firm. The product dimension and global sourcing are explored in depth. Prereq.: MATH 2623 or 1570; CSIS 1514 and MRCH 2625. 3 s.h.

3730. Social Psychology of Clothing and Appearance. Interdisciplinary study of clothing and appearance within contexts of cultural, social-psychological, physical, and aesthetic relationships. Emphasize origins and motives of dress and adornment, relationship of clothing and appearance to self, and appearance as a factor in interpersonal and collective behavior. Explicitly connects the fields of fashion and social psychology. Prereq.: ENGL 1551, PSYC 1560 and SOC 1500. 3 s.h.

3740L. Computer Applications for Textiles & Apparel Lab. Exploration of computer and software applications used in the fashion industry. The use of computer-aided design (CAD) to produce technical drawings, sketches, color stories and textile prints for design and merchandising presentations. Two hours lecture, three hours lab. Prereq.: MRCH 1506 or MRCH 2661. 3 s.h.

3742. Applied Textile Design. Use of color application and needlework processes in production of clothing and home furnishings. Exploration into the process of fabric design as a part of textile end product development. Students will design their own fabrics and textile products using dyeing, printing and needlework methods. Two hours lecture, three hours lab. Prereq.: MRCH 1506. 3 s.h.

3745. Product Line Development. The theory and practice of sewn products development. Includes technology applications and practical experience in product development for fashion influenced textile goods. 2 hours lecture & 3 hours lab. Prereq.: MRCH 1508 or MRCH 1506 or MRCH 2661. 3 s.h.

3760. Visual Merchandising. Evaluation and creation of visual displays for the purpose of selling fashion, home furnishings, and other merchandise. Independent and cooperative work in analyzing store displays in the field, making recommendations for fixtures and displays, creating class projects, and working on visual displays and plans. Two hours lecture, two hours lab. Prereq.: MRCH 1506 or MRCH 2661. 3 s.h.

3764. Family Housing and Technology. Planning the home environment to meet family needs and resources; consumer decisions in selection of residences, floor plans, and household technology. Prereq.: SOC 1500. 3 s.h.

3795. Fashion Industry Tour. Concentrated on-site study of the fashion industry including tours of laboratories, designer workrooms, showrooms, buying offices and related organizations. Pre-tour orientations and written report of experiences required. Prereq.: MRCH 1506 or MRCH 1510 or MRCH 2625. 1 s.h.

4870. Global Fashion Economy. Exploration of the nature of the global textile and apparel economy. Identifying the challenges of sourcing textiles and apparel products internationally. Discussion of the various countries and regions that buy and manufacture fashion goods. Prereq.: MRCH 2625. Junior standing. 3 s.h.

4877. History of Fashion. Chronological study of fashion from antiquity through the twentieth century. The focus will be on style identification as well as the influence of social, political, and economic conditions as well as cultural and technological changes upon fashion and appearance. Prereq.: Junior standing and any one of the following: MRCH 2625, junior standing. 3 s.h.

4879. History of Furnishings and Interiors. A chronological study of interiors and furnishings from antiquity to the twentieth century will be explored. The focus will be on style identification as well as the influence of social, political, and economic conditions upon furnishings and development. Prereq.: MRCH 2663 or 2625. 3 s.h.

4880. Merchandising Management. Principles of merchandising applied to planning, development, and presentation of product lines in both the production and marketing of apparel, soft line, and other consumer goods. Relates the role of merchandising to other business fundamentals. Prereq.: MRCH 13713, MGT 3725. 3 s.h.
MILITARY SCIENCE—MSCI
Department of Military Science

1510. Introduction to ROTC. Team and individual study and activities in basic drill, physical fitness, rappelling, leadership recreation course, first aid, making presentations, and basic marksmanship. Fundamental concepts of leadership in a profession in both classroom and outside laboratory environments. One hour lecture and Leadership Laboratory (MSCI 1530L) per week. 1 s.h.

1520. Introduction to Leadership. Learn/apply principles of effective leading. Reinforce self confidence through participation in physically and mentally challenging exercises. Develop communication skills to improve individual performance and group interaction. Relate organizational ethical values to the effectiveness of a leader. One hour lecture and Leadership Laboratory (MSCI 1530L) per week. 1 s.h.

1530L or 2630L. Basic Course Leadership Laboratories. Practical exercises with different roles for students at different levels in the program. Build self confidence, and team-building leadership skills that can be applied throughout life. Open only to (and required of) students in the respective MSCI courses. For MSCI 1510 and 1520 it is MSCI 1530L. For MSCI 2610 and 2620 it is 2630L. 0 s.h.

2610. Self Team Development. Apply ethics-based leadership skills that develop individual abilities and contribute to the building of effective teams. Develop skills in oral presentations, writing concisely, planning of events, coordination of group efforts, advanced first aid, land navigation, and basic military tactics. Fundamentals of ROTC’s Leadership Development Program. Two hours lecture and leadership lab (MSCI 2630L) per week. 2 s.h.

2620. Individual/Team Military Tactics. Introduction to individual and team aspects of military tactics in small unit operations. Includes use of radio communications, safety assessments, movement techniques, planning for team safety/security and methods of pre-execution checks. Practical exercises with upper-division ROTC students. Techniques for training others. Two hours lecture and leadership lab (MSCI 2630L) per week. 2 s.h.

2640. Basic ROTC Summer Camp Challenge. A five-week summer camp conducted at an army post. The student receives pay. Travel, lodging, and most meal costs are defrayed by the Army. The environment is rigorous, and similar to Army Basic Training. No military obligation is incurred. 3 s.h.

2650. American Military Operations. American Military Operations teaches the development and implementation of United States Army doctrine, philosophy, strategy, tactics, logistics, leadership, and battle and campaign analysis in an historical context. Prereq.: none. 2 s.h.

3710. Leading Small Organizations 1. Practical opportunities to lead small groups and lead again in situations of increasing complexity. Uses small unit tactics and opportunities to plan and conduct training for lower-division students both to develop such skills and as vehicles for practicing leading. Three hours lecture and leadership lab (MSCI 3730L) per week. Prereq.: Permission of department chairperson. 3 s.h.

3720. Leading Small Organizations 2. Continues methodology of MSCI 3710. Analyze tasks; prepare written/oral guidance for team to accomplish tasks. Delegate tasks and supervise. Plan for the unexpected in organizations under stress. Apply lessons from leadership studies. Examine importance of ethical decision making in setting a positive climate that enhances team performance. Three hours lecture and leadership lab (MSCI 3730L) per week. Prereq.: Permission of department chairperson. 3 s.h.

3730L or 4830L. Advanced Course Leadership Laboratories. Practical exercises with different roles for students at different levels in the program. Involves leadership responsibilities for the planning, coordination, execution, and evaluation of training and activities. Open only to students in the respective MSCI courses. For MSCI 3710 and 3720 it is 3730L; for MSCI 4810 and 4820 it is 4830L. 0 s.h.

3740. ROTC Advanced Camp. A five-week camp conducted at an Army post. Student receives pay. Travel, lodging and meal costs are defrayed by the Army. The Advanced Camp environment is structured and demanding, stressing leadership at small unit levels under varying conditions. Individual leadership and basic skills performance are evaluated. 4 s.h.

3750. Individual Study. The individual study of a particular military problem or review of the literature relating to a specific military problem. May be repeated with a different problem for a maximum of 3 s.h. Prereq.: Six s.h. of Military Science and consent of the instructor. 1-3 s.h.

4810. Leadership Challenges and Goal-Setting. Plan, conduct and evaluate activities of the ROTC cadet organization. Articulate goals, put plans into action. Assess organizational cohesion and develop strategies to improve it. Develop confidence in skills to lead people and manage resources. Learn/apply various Army policies and programs. Two hours lecture and leadership lab (MSCI 4830L) per week. Prereq.: Permission of department chairperson. 3 s.h.

4820. Transition to Lieutenant. Continues the methodology from MSCI 4810. Identify and resolve ethical dilemmas. Refine counseling and motivation techniques. Examine aspects of tradition and law as related to leading as an officer in the Army. Prepare for a future as a successful Army lieutenant. Two hours lecture and leadership lab (MSCI 4830L) per week. Prereq.: Permission of department chairperson. 3 s.h.
MULTI-AGE EDUCATION—MULT
Department of Teacher Education

4807. Teaching Across the Curriculum. An investigation of cross-curricular teaching to develop an understanding of relationships among the PreK-12 disciplines. Conceptual knowledge, skills, creativity, and aesthetics will be integrated in planning and implementing interdisciplinary units of instruction in schools. Prereq.: One of the following ART 4837 or 4838; HPES 3767, HPES 3702; MUED 4823, 4824, or 4825. 2 s.h.

MUSIC, APPLIED CLASSES—MUAC
Dana School of Music

A series of instrumental and vocal classes at the beginning level to explore techniques and approaches appropriate to school music instruction. Music education majors select varying numbers of these courses in addition to pedagogy as described in the curriculum outline section. A minimum level of performance is required. Each class meets two hours a week.

1556. Singer’s Diction: English/Italian.
1557. Singer’s Diction: German.
1558. Singer’s Diction: French.

Application of the principles of Lyric diction; utilization of the International Phonetic Alphabet in developing and reading phonetics transcriptions of English, Italian, German, and French song texts. 1 s.h. each

3732. Brass Methods. Designed to prepare students for instrumental music teaching relative to brass instruments. Emphasis on tone production, the harmonic series, technique development, ranges and transposition, pedagogy, troubleshooting, and arranging techniques for brass instruments. Prereq.: FOUN 1501 and MUTC 1532. Meets 2 hours per week. 1 s.h.

3733. Woodwind Methods. Designed to prepare students for instrumental music teaching relative to woodwind instruments (flute, clarinet, oboe, bassoon, saxophone). Components include concepts of tone production, embouchure, articulation, and technique. Study material stresses common features as well as differences. Prereq.: FOUN 1501. 1 s.h.

3734. String Methods. Designed to prepare students for instrumental music teaching relative to string instruments (violin, viola, cello, string bass). Components include concepts of tone production, bowing, fingering as well as appropriate evaluation of pedagogy. Study material stresses common features as well as differences. Prereq.: FOUN 1501. 1 s.h.

3755. Guitar Class. Study of the guitar at the beginning level to explore techniques and approaches appropriate to school music instruction. A minimum level of performance is required. Prereq.: FOUN 1501. 1 s.h.

3759. Voice Class. A study of voice at the beginning level to explore techniques and approaches appropriate to school music instruction. A minimum level of performance is required. May be repeated. Prereq.: FOUN 1501. 1 s.h.

3763. Percussion Methods. Study of snare drum, marching percussion, timpani, jazz drum set, keyboard, Latin percussion, and orchestral accessories. Topics include instrument selection and maintenance techniques as well as pedagogical approaches. Designed to prepare students for instrumental music teaching careers. Prereq.: FOUN 1501. 1 s.h.

Keyboard Musicianship Classes

1581. Keyboard Musicianship 1. Elements of keyboard techniques, with emphasis on sight reading, interpretation of simple music, transposition and analysis. All major and minor scales and related chords, hands together. Required of all non-keyboard majors. 1 s.h.

1582. Keyboard Musicianship 2. Continuation of MUAC 1581; Emphasis on sight reading, interpretation, transposition and analysis. All major and minor scales and related chords, hands together. Required of all non-keyboard majors. Prereq.: MUAC 1582 or equivalent. 1 s.h.

2681. Keyboard Musicianship 3. A continuation and intensification of studies begun in MUAC 1581 and 1582, with emphasis on accompanying, modulation, repertoire, and stylistic analysis. Prereq.: MUAC 1582 or equivalent. 1 s.h.

2682. Keyboard Musicianship 4. Emphasis on accompanying, modulation, more advanced repertoire, and stylistic analysis. Prereq.: MUAC 2681 or equivalent. 1 s.h.

2691, 2692. Accompanying 1. A study of techniques useful in playing the piano for vocalists, with supervised studio and recital experience. May be repeated for credit. 1+1 s.h.

2693, 2694. Accompanying 2. A study of techniques useful in playing the piano for instrumentalists, with supervised studio and recital experience. May be repeated for credit. 1+1 s.h.

Jazz

2667, 2668. Jazz Improvisation 1, 2. Jazz techniques with emphasis on analysis of harmonic progressions, form, style, and performance requirements of the jazz idiom. Prereq.: MUAC 1525 or a grade of B or better on the Jazz Placement Test. Classes must be taken in sequence. 3+3 s.h.

3735. Jazz Methods. Designed to prepare students jazz teaching relative to instruments and voice. Components include fundamental techniques and
approaches for directing small and large jazz ensembles, teaching of basic improvisation skills, rhythms section/soloist interaction, and stylistic interpretation. Students will demonstrate basic performance proficiencies in jazz on their applied instruments and/or voices. Prereq.: FOUN 1501 or MUTC 1532. Meets 2 hours per week. 1 s.h.

3775. Jazz History. Students will study and develop an understanding of jazz origins, influences, performers, compositions, and stylistic features from the turn of the century to the present. This will include study of early jazz, the swing era, bebop, cool, hard bop, post bop, modal music, modal chromatic music, free jazz, and fusion. Prereq.: MUTC 1520 or minimum 80% on the music theory placement exam. 3 s.h.

3781, 3782. Jazz Keyboard 1, 2. (For keyboard and non-keyboard majors). Class instruction and keyboard experience in jazz chordal voicing techniques and jazz accompanying techniques. Prereq.: MUAC 1582, MUAC 1525, a grade of B or better on the Jazz Placement Test, or permission of instructor. Classes must be taken in sequence. Meets two days per week. 1+1 s.h.

4867, 4868. Jazz Improvisation 3, 4. Advanced jazz techniques with emphasis on analysis of harmonic progressions, form, style, and performance requirements of the jazz idiom. Prereq: MUAC 2668. Courses must be taken in sequence. 3+3 s.h.

Applied Studio Instruction

An audition is required for placement in applied studio instruction. Applied instruction is offered in the following areas:

**Keyboard**

Harpsichord  HARP  Organ  ORGN  Piano  PIAN

**Voice**

VOIC

**String Instruments**

Cello  CELL  Guitar  GUIT  String Bass  SBSS  Viola  VIOL  Violin  VION

**Woodwind Instruments**

Bassoon  BASS  Clarinet  CLAR  Flute  FLUT  Oboe  OBOE  Saxophone  SAX

Brass Instruments

Baritone Horn/ Euphonium  BHRN  French Horn  FHRN  Trombone  TROM  Trumpet  TRUM  Tuba  TUBA

**Percussion**

PERC

Minor level applied studio instruction is intended for approved music minors who have not met the requirements for major level study and for students who need minor level applied instruction for their degree program. All minor level studio instruction must be approved by both the appropriate faculty member and the Director of the Dana School of Music. Minor level applied studio instruction carries one (1) semester hour of credit and is offered at the following levels.

1500A.  Freshman level  2 s.h.
1500B.  Freshman level  2 s.h.
2600A.  Sophomore level  2 s.h.
2600B.  Sophomore level  2 s.h.
3700A.  Junior level  2 s.h.
3700B.  Junior level  2 s.h.
5800A.  Senior/graduate level  2 s.h.
5800B.  Senior/graduate level  2 s.h.

Major level applied studio instruction is intended for a student majoring in one of the programs offered by the Dana School of Music. A student may progress to the next level in applied studio instruction by successfully completing an applied jury. Applied juries take place each semester during finals weeks. Specific requirements for each jury are available through the applied teacher in each performance area and on a syllabus for each applied course. Major level applied studio instruction courses are:

**Music Theater**

1501 T.  Freshman level  2 s.h.
1502 T.  Freshman level  2 s.h.
2601 T.  Sophomore level  2 s.h.
2602 T.  Sophomore level  2 s.h.

**Music Education & Music Recording**

1501.  Freshman level  2 s.h.
1502.  Freshman level  2 s.h.
2601.  Sophomore level  2 s.h.
2602.  Sophomore level  2 s.h.
3701.  Junior level  2 s.h.
3702.  Junior level  2 s.h.
4801.**  Senior level  2 s.h.
4802.**  Senior level  2 s.h.
Music Composition
1501. Freshman level 2 s.h.
1502. Freshman level 2 s.h.
2601. Sophomore level 2 s.h.
2602. Sophomore level 2 s.h.
3703. Junior level 3 s.h.
3704.* Junior level 3 s.h.
4803. Senior level 3 s.h.
4804.** Senior level 3 s.h.

Jazz Performance
1501. Freshman level 2 s.h.
1502. Freshman level 2 s.h.
2603. Sophomore level 3 s.h.
2604. Sophomore level 3 s.h.
3703. Junior level 3 s.h.
3704.* Junior level 3 s.h.
4803. Senior level 3 s.h.
4804.** Senior level 3 s.h.

Performance
1501. Freshman level 2 s.h.
1502. Freshman level 2 s.h.
2605. Sophomore level 4 s.h.
2606. Sophomore level 4 s.h.
3705. Junior level 4 s.h.
3706.* Junior level 4 s.h.
4805. Senior level 4 s.h.
4806.** Senior level 4 s.h.

* junior recital
** senior recital

MUSIC, CONDUCTING — MUCO
Dana School of Music

3715. Choral and Instrumental Conducting. Designed to develop skills, hone competencies, and share conceptual knowledge relative to the art and pedagogy of conducting. Students develop skills in conducting, score analysis and preparation, rehearsal techniques, and error detection, and create artistic interpretation with peer-lab ensemble. Prereq.: MUTC 1532. 2 s.h.

3722. Music in Early Childhood. Fundamental skills, repertoire, materials, and techniques for teaching music to pre-kindergarten through third grade children. For non-music majors. Prereq.: CHFM 2633. 3 s.h.

5814. Selected Topics in Music Education. Course title will be listed each semester in the Schedule of Classes. May be repeated for credit with different topics. Prereq.: MUED 4823 or 4825. 2 s.h.

Topics may include:

Vocal Ensembles in the High School. A study of methods and materials for small vocal groups at the high school level including madrigals, swing choirs, and other small chamber ensembles.

Orff and Kodaly for the Classroom. A study of the philosophies, materials, and methods of Carl Orff and Zoltan Kodaly with applications to the elementary school classroom.

Music and the Related Arts. Techniques and materials for teaching humanities or related-arts classes at the elementary or secondary level. Relationships among music, art, architecture, literature, drama, and film.

Marching Band Arranging. A study of the instrumentation, suitable instrumental ranges, and scoring procedures for attaining the sound power for outdoor performance.

Instrument Repair. Practical experience in the basic skills needed by the prospective instrumental teacher in repairing string, brass, woodwind, and percussion instruments.

Jazz Ensemble in the Secondary School. Organizing, scheduling, and rehearsing the jazz ensemble, and a study of suitable jazz materials for the secondary school with emphasis on interpretation, style characteristics, and improvisation procedures.

4823. Music Teaching in Early Childhood (Pre-K-4). A study of the role of music in the life of the child. An examination of principles, repertoire, and techniques of teaching music to children (ages pre-k through third grade). Prereq.: Upper-division status in the College of Education. 2 s.h.

4824. Music Teaching in the Middle School. Music materials and methods of instruction in middle schools with emphasis on understanding the physiological and psychological development of early adolescents in the context of the general music class. Course content includes managing the learning environment, motivating students, developing music curricula, planning musical experiences and assessing musical behaviors. Prereq.: Upper-division status in the College of Education. 2 s.h.

4825. Music Teaching in the High School. Methods of organizing, administering, and conducting music in the high schools; instruction methods, library

MUSIC EDUCATION — MUED
Dana School of Music

2611. Computer Applications in Music Education. An overview of computer applications as they relate to the music educator. Specific hardware and software in music education will be discussed. Project topics: administrative software, music notation, MIDI, arranging and improvisation with computers, and designing multimedia. Meets two hours per week. Prereq.: MUTC 1532. 2 s.h.
organization, scheduling, curriculum, philosophy, technology, classroom management, festivals and competitive events. Includes an average of two hours of field experience or laboratory work per week. Prereq.: Upper-division status in the College of Education and MUED 3715. 2 s.h.

4826. Instrumental Music Education. Materials, methods and literature for teaching and administering elementary, middle school, and high school instrumental music programs. Emphasis on curriculum design, pedagogy, orchestration/arranging techniques, and learning theories related to jazz, concert, marching band, and orchestra. Prereq.: Upper-division status in the College of Education and completion or concurrent enrollment in MUED 4823 or MUED 4824 or MUED 4825. 2 s.h.

4827. Choral Music Education. Materials, methods and literature for school vocal ensembles. Additional emphasis is on vocal pedagogy, show choir curriculum, and show design, including arranging/adapting literature for show choir ensemble. Prereq.: Upper-division status in the College of Education and completion or concurrent enrollment in MUED 4823 or MUED 4824 or MUED 4825. 2 s.h.

5841. Music Workshop. For students and teachers in service; topics may vary from year to year. Specific topics are announced each time the workshop is offered. May be repeated with different topic. 1-3 s.h.

5858. Piano Pedagogy. Methods and materials involved in teaching piano in private and classroom settings. Fundamentals of technique as well as repertoire. Supervised practice teaching. Prereq.: Two years of applied keyboard. 3 s.h.

5880. Vocal Pedagogy. A comparative study of physiological and psychological approaches to voice instruction and their application to private and class instruction. Prereq.: Two years of applied voice classes. 1 s.h.

MUSIC ENSEMBLES—MUEN
Dana School of Music

Major Ensembles

0002. Dana Chorale 0-1 s.h.
0003. Dana Madrigal 0-1 s.h.
0004. University Chorus* 0-1 s.h.
0005. Concert Band 0-1 s.h.
0006. Marching Band (full only)* 0-1 s.h.
0007. Wind Ensemble 0-1 s.h.
0008. Symphony Orchestra 0-1 s.h.
0023. Jazz Ensemble 0-1 s.h.
0040. Symphonic Band (spring only) 0-1 s.h.

Chamber Ensembles

0009. Percussion Ensemble 0-1 s.h.
0010. String Ensemble 0-1 s.h.
0012. Opera Workshop 0-3 s.h.
0013. Studio Ensemble 0-1 s.h.
0014. Women’s Chorus 0-1 s.h.
0015. Early Music Ensemble 0-1 s.h.
0016. Flute Ensemble 0-1 s.h.
0017. Brass Ensemble 0-1 s.h.
0018. Horn Choir 0-1 s.h.
0019. Trombone Ensemble 0-1 s.h.
0020. Tuba Ensemble 0-1 s.h.
0021. Brass Chamber Ensemble 0-1 s.h.
0022. Trumpet Ensemble 0-1 s.h.
0024. Composer’s Ensemble 0-1 s.h.
0026. Chamber Orchestra 0-1 s.h.
0028. Chamber Winds 0-1 s.h.
0029. Guitar Ensemble 0-1 s.h.
0030. Jazz Combo 0-1 s.h.
0035. Saxophone Quartet 0-1 s.h.
0036. Clarinet Choir 0-1 s.h.
0041. Basketball Pep Band (spring only) 0-1 s.h.
0051. Piano Chamber Ensemble 0-1 s.h.

*MUSIC HISTORY AND LITERATURE—MUHL
Dana School of Music

2616. Survey of Jazz. A historical survey of the origins, influences, and stylistic features of jazz from its beginnings to the present, with emphasis on performers, compositions, and innovations. 3 s.h.

2617. Film Music. A historical survey of the use of music in the motion picture. Examination of different styles in works by major composers. 3 s.h.

2618. Rock n’ Roll to Rock. A historical survey of the evolution of rock n’ roll into rock with emphasis on the interrelationships of the music and social and political influences and the interaction of rock with other musical styles. 3 s.h.

2619. Music of Non-Western Societies. A historical survey of music as it relates to the different cultures, with emphasis on the development of instruments, vocal practices and performance media within specific cultures. 3 s.h.

2621. Music Literature and Appreciation. The development of listening techniques applicable to Western and non-Western music through the comparison and contrast of the music of significant historical periods. For non-music majors. 3 s.h.
2622. Popular Music in America. The changing styles in American popular music from its origins to the present day studied through an examination of representative compositions and performers. 3 s.h.

3771. Music History and Literature 1. An exploration of musical style in Medieval and Renaissance Europe. Representative vocal and instrumental works are examined from historical perspectives of music theory and practice, while closely considering the social, political, and artistic contexts that produced them. Prereq.: sophomore standing and MUTC 1520 or 80% on music theory diagnostic exam. 3 s.h.

3772. Music History and Literature 2. An exploration of baroque musical style. Representative vocal and instrumental works are examined from historical perspectives of music theory and practice, while closely considering the social, political, and artistic contexts that produced them. Prereq.: sophomore standing and MUTC 1520 or 80% on music theory diagnostic exam. 3 s.h.

3773. Music History and Literature 3. An exploration of European musical style from the Classic era through the 19th century. Representative vocal and instrumental works are examined from historical perspectives of music theory and practice, while closely considering the social, political, and artistic contexts that produced them. Prereq.: sophomore standing and MUTC 1520 or 80% on music theory diagnostic exam. 3 s.h.

3774. Music History and Literature 4. An exploration of 20th century European and American musical styles and of selected non-Western musics. Representative vocal and instrumental works are examined from historical perspectives of music theory and practice, while closely considering the social, political, and artistic contexts that produced them. Prereq.: sophomore standing and MUTC 1520 or 80% on music theory diagnostic exam. 3 s.h.

3787. History and Appreciation of Art and Music. (General) Illustrated lectures on art and music to develop the cultural growth of the non-art and non-music student. Art and music forms, comparisons of compositional styles, and discussion of the developments, influences, and experiments of the important periods to date. No prior training in art or music required. Not intended for Art majors. Listed also as ART 3787. 3 s.h.

5860. Keyboard Literature. An investigation of the solo keyboard works of major composers from the earliest times to the present day. Prereq.: MUTC 2632. 3 s.h.

5871. Baroque Music. The evolution of musical styles during the period 1600-1750. A historical survey of documents and music literature of the time: opera from Monteverdi to Handel; keyboard and instrumental works; significant choral works, etc. Prereq.: MUTC 2632, MUHL 3771, MUHL 3772, MUHL 3773, and MUHL 3774. 3 s.h.

5872. Eighteenth Century and the Viennese Classical School. Musical developments from the decline of the baroque to the turn of the century; historical and stylistic elements contributing to the rise of classicism and culminating in the works of Mozart, Haydn, Beethoven. Prereq.: MUTC 2632, MUHL 3771, MUHL 3772, MUHL 3773 and MUHL 3774. 3 s.h.

5873. Opera History. A historical survey of opera: its development as an art form from its beginnings to the present. Prereq.: MUTC 2632, MUHL 3771, MUHL 3772, MUHL 3773 and MUHL 3774. 3 s.h.

5874. Nineteenth Century. Musical developments from Beethoven through Wagner; aesthetic, formal, technical and historical trends with special emphasis on nationalism and the music drama. Prereq.: MUTC 2632, MUHL 3771, MUHL 3772, MUHL 3773 and MUHL 3774. 3 s.h.

5878. Selected Topics in Music History. A study of a specific topic to be announced each time the course is offered. May be repeated once with different topic. Prereq.: MUTC 2632, MUHL 3771, MUHL 3772, MUHL 3773, and MUHL 3774. 3 s.h.

5879. Vocal Literature. A study of vocal literature from all periods. Special emphasis on English language repertoire and on material especially suitable for high school students. Songs are prepared for performance in class. Prereq.: MUTC 2632, MUHL 3771, MUHL 3772, MUHL 3773, and MUHL 3774. 3 s.h.

MUSIC RECORDING—MURC
Dana School of Music

1561. Music Recording Workshop. Introduction to the music recording process and the recording studio. An overview of music recording grounded in History and the principles of acoustics. An exploration of analog and digital technology involved in music recording. Two hours lecture, two hours lab. 4 s.h.

3762. Digital Sound Production. An overview of MIDI and electronic musical instrument technology. Sequencers and mixing in the MIDI environment. Basic compositional techniques using MIDI and the computer, and the application of MIDI in the music recording environment. Prereq.: MURC 1561. 2 s.h.

3763. Digital Recording and Editing. A study of both linear and non-linear music recording and editing. Various hardware and software options, as well as the production of recording projects in both domains. Prereq.: MURC 1561. 2 s.h.

3764. Advanced Microphone Techniques. Investigation of the characteristics of different microphones, microphone design, microphone selection, and microphone placement. The accessories of various miking situations will be investigated. Experiments with different microphone techniques in both the analogue and digital domains. Prereq.: MURC 3763. 2 s.h.
3765. Advanced Recording Techniques. Investigates advanced elements of music recording from the recording session procedures to product manufacture. Advanced techniques in noise reduction, amplification, sound compression, and synchronization. Prereq.: 3764. 2 s.h.

4866. Recording Internship. Practicum in appropriate music recording environments. Addresses all aspects of the music recording industry. Students meet once a week on campus to share and discuss experiences from the intern position. A minimum of 12 hours per week will be spent in the field. Prereq.: MURC 3765 and senior standing in MURC. 6 s.h.

4867. Senior Project. Independent student project to showcase skills and techniques learned in the content courses. Presentation of project in a public exhibition required. Prereq.: MURC 3765 and senior standing in MURC. 4 s.h.

MUSIC THEORY AND COMPOSITION—MUTC Dana School of Music

1501. Applied Theory. Applications of theory of diatonic harmony; development of independent study and research projects in such areas as analysis, aural perception, scoring, and arranging. May be repeated once. Prereq.: Permission of instructor. 2 s.h.

1520. Materials of Music. Musical styles, listening concepts, and harmonic technics as they relate to the literature of music. For students who do not qualify for MUTC 1531. 3 s.h.

1531. Musicianship 1. Materials in tonal music. Harmonic progression, voice leading, counterpoint, harmonic and formal analysis, composition and arranging. Prereq.: MUTC 1520 with a grade of B or better or a minimum score of 80% on the theory placement test. 2 s.h.

1531L. Musicianship 1 Laboratory. Practice and mastery of the fundamental skills of musicianship. Sight singing with practice in score-reading transpositions, aural recognition, and functional keyboard. Prereq.: Concurrent enrollment in MUTC 1531 expected. MUTC 1520 with a grade of B or better or a minimum of 80% on the theory placement test. 2 s.h.

1532. Musicianship 2. Materials in tonal music. Harmonic progression, voice leading, counterpoint, harmonic and formal analysis, composition and arranging. Prereq.: MUTC 1531 and MUTC 1531L with grades of C or better. 2 s.h.

1532L. Musicianship 2 Laboratory. Practice and mastery of the fundamental skills of musicianship. Sight singing with practice in score-reading transpositions, aural recognition, and functional keyboard. Prereq.: MUTC 1531 and MUTC 1531L with grades of C or better. Concurrent enrollment in MUTC 1532. 2 s.h.

2631. Musicianship 3. Chromatic materials in tonal music. Part writing, harmonization, harmonic and formal analysis, and score-reading transpositions. Prereq.: MUTC 1532 and MUTC 1532L with grades of C or better. 2 s.h.

2631L. Musicianship 3 Laboratory. Practice and mastery of advanced sight singing, aural recognition and piano skills. Prereq.: MUTC 1532 and MUTC 1532L, both with grades of C or better. Concurrent enrollment in MUTC 2631. 2 s.h.

2632. Musicianship 4. Chromatic materials in tonal music. Part writing, harmonization, harmonic and formal analysis, and score-reading transpositions. Prereq.: MUTC 2631 and MUTC 2631L with grades of C or better. 2 s.h.

2632L. Musicianship 4 Laboratory. Practice and mastery of advanced sight singing, aural recognition and piano skills. Prereq.: MUTC 2631 and MUTC 2631L, both with grades of C or better. Concurrent enrollment in MUTC 2632. 2 s.h.

3712, 3713. Jazz Arranging 1, 2. Scoring in the jazz idiom with emphasis on harmonic concepts, voicing procedures, form, and stylistic trends developed by major jazz composer-arrangers. Detailed study of instrumental techniques with projects scored for various size ensembles. Student arrangements are performed in reading sessions and concerts. Prereq.: MUTC 1532 and MUAC 2668 or permission of instructor. Classes must be taken in sequence. 3+3 s.h.

3750. Analytical Techniques. Analysis of representative repertoire from the Renaissance, Baroque, Classical, Romantic, and Contemporary periods. Prereq.: MUTC 2632 and MUTC 2632L with grades of C or better. 3 s.h.

5821, 5822. Composition for Minors. Composition in two- and three-part forms, and other compositions of small scope, such as variation and sonatina. Works are composed both for piano alone, and in combination with other instruments or voice. May be repeated by composition majors to meet requirements for freshman and sophomore composition for majors. Prereq.: MUTC 2632 with a grade of C or better, or permission of instructor for composition majors. 2+2 s.h.

5828. Music Technology. An exploration of the use of computers and technology in music. Applications related to composition, performance, analysis, teaching, and research. Prereq.: MUTC 2632 with grade of C or better or permission of instructor. 3 s.h.

5830. Materials of 20th Century Music. Study of the various elements of 20th century compositions, including melody, harmony, rhythm, texture, and form. Prereq.: MUTC 2632 with a grade of C or better. 3 s.h.

5831. Modal Counterpoint. Sixteenth century contrapuntal style including introduction of species technique; analysis of liturgical and secular repertoire; writing of imitative counterpoint with stylistic
rhythms and cadences. Prereq.: MUTC 2632 with a grade of C or better. 3 s.h.

5832. Tonal Counterpoint. Contrapuntal style of baroque music including an analysis of examples in imitative and invertible counterpoint; writing two- and three-part inventions and three- and four-part fugal expositions. Prereq.: MUTC 2632 with a grade of C or better. 3 s.h.

5833. Theory Seminar. Topics in music theory not covered in regular upper-division offerings. May be repeated once with different topic. Prereq.: MUTC 2632 with a grade of C or better. 3 s.h.

5834. Electronic Music. Techniques of analog and digital synthesis including tape composition, musique concrete; advanced MIDI applications such as sequencing and sampling; and digital audio editing. Composition in electronic and mixed media. Prereq.: For composition majors, COMP 1502 or equivalent; for non-composition majors, MUTC 2632 with a grade of C or better; for non-majors, permission of instructor. 3 s.h.

5840. Instrumentation. Ranges, transposition, technical characteristics, and tonal features of the instruments. Scoring for large and small ensembles which are available as laboratory reading groups. Prereq.: MUTC 2632 with a grade of C or better. 3 s.h.

**NURSING — NURS**

**Department of Nursing**

**Lower-Division Courses**

2601. Long-Term Care Agency. Introductory course to Nursing Home Administration including functions and qualifications of personnel in providing an environment of civility and safety. 3 s.h.

2610. Contemporary Nursing. Concepts related to professional nursing practice including nursing as a developing profession; educational perspectives and patterns; legal and ethical accountability; economic and political aspects; health care delivery systems; and nursing management and leadership roles. Open to nursing and non-nursing majors. 3 s.h.

2643/2643L. Health Assessment. Development of communication and assessment skills for obtaining health data from various age groups, as well as reporting and recording findings. Three hours lecture, three hours clinical experience in a variety of settings per week. 3 s.h.

2645/2645L. Professional Nursing 1. Applications of the nursing process for the care of clients with emphasis on health assessment, health promotion, and psychosocial and psychomotor skills. Three hours lecture, 15 hours clinical experience in a variety of settings per week. Prereq.: NURS 2643, 2610, 2646 and BIOL 1560/L. 3 s.h.

2646. Pathophysiology. Concepts related to pathophysiologic mechanisms of illness. Emphasis on application to nursing using the nursing process. Prereq.: BIOL 1552/L and CHEM 1506/L. 4 s.h.

2650. Pharmacology. Concepts of pharmacology applies to major drug classes. Emphasis on application of nursing process to drug therapy across the lifespan. Prereq.: NURS 2646. 3 s.h.

**Upper-Division Courses**

3705. Ethics, Legals, & Responsibilities for RNs. Discourse of case study scenarios exploring legal and ethical rights, practice responsibilities, professional obligations, accessible healthcare resources, and outcomes on patients, nurses, the profession, and society. Prereq: RN-to-BSN students only. 3 s.h.

3710/3710L. Nursing in the Community. Nursing in the community including families in health and illness needs; culturally competent health care; teaching and learning aspects; psychosocial concepts, spirituality, and home health concepts and skills. Three hours lecture, six hours clinical experience in a variety of settings per week. Prereq.: NURS 2645, BSN Generic Program. 5 s.h.+0 s.h.

3720. Contemporary Nursing for RNs. Concepts related to professional nursing practice for graduates of ADN and diploma programs. Prereq.: Valid RN Licensure. 3 s.h.

3731/3731L. Child Bearing, Family, and Women’s Health Nursing. Family-centered nursing concentrating on health promotion and illness prevention, acute and chronic healthcare needs for parent(s) during the reproductive expanding phase of the family cycle and for women from adolescence through old age. Three hours lecture and six hours clinical experiences in a variety of settings per week. Prereq.: NURS 3741, BSN Generic Program. 5 s.h.+0 s.h.

3741/3741L. Professional Nursing 2. Principles and practices of health promotion and rehabilitation of clients with acute and chronic health needs. Three hours lecture, nine hours clinical experience in a variety of settings per week. Prereq.: NURS 2645, BSN Generic Program. 6 s.h.+0 s.h.

3743/3743L. Professional Nursing 3. Advanced principles and practices of health promotion and rehabilitation of patients with acute and chronic health needs. Three hours lecture, six hours clinical experience in a variety of settings per week. Prereq.: NURS 3741, BSN Generic Program. 5 s.h.+0 s.h.

3749. Nursing Research. Process of research using reasoning and scientific rigor in critical analysis of nursing research. Prereq.: MATH 2625, BSN Generic Program. 3 s.h.

3770. Pathophysiology and Pharmacology I. Coordinates drugs in context with therapeutic use emphasizing connection between pharmacology, pathophysiology, and nursing care. The content
focuses on core concepts and neuropharmacology. Prereq.: Valid RN license. 3 s.h.

3772. Pathophysiology and Pharmacology 2. Coordinates drugs in context with therapeutic use emphasizing connection between pharmacology, pathophysiology, and nursing care. The content focuses on core concepts and body systems—cardiac, respiratory, immune, endocrine, renal, and integumentary. Prereq.: Valid RN license and NURS 3770. 3 s.h.

4800/4800L. Legal Nurse Consulting. Theory and practical components of legal nurse consulting are explained. This course fulfills requirements to sit for the American Association of Legal Nurse Consultant’s Certification examination. Prereq.: Valid RN Licensure. 5 s.h.+0 s.h.

4804. Health Assessment for RNs. Increase clinical knowledge and skills in health assessment of clients of various age groups, and the reporting and recording of findings. (Content will be online with lab meeting 4-5 times per semester for practicing assessment skills). Prereq.: Valid RN license. 3 s.h.

4832/4832L. Nursing Care of Children and Families. Family-centered nursing concentrating on health promotion/illness and prevention and acute/chronic health care needs of the developing child and family. Three hours lecture and six hours clinical experience in a variety of settings per week. Prereq.: NURS 3743, BSN Generic Program. 5 s.h.+0 s.h.

4833. Health Assessment Practices for RNs. Knowledge and application necessary for registered nurses to conduct a comprehensive health history and physical assessment. Prereq.: RN status. 3 s.h.

4840/4840L. Complex Care. High acuity, restorative, and health promoting care of clients with complex health problems. Three hours lecture, six hours clinical experience in a variety of settings per week. Prereq.: NURS 3743, BSN Generic Program. 5 s.h.+0 s.h.

4842/4842L. Mental Health Nursing. Mental health theories and strategies as the foundation in the management of individuals, families, and groups experiencing acute and chronic mental illness. Emphasis on the promotion of optimal level functioning and mental wellness. Three hours lecture, six hours clinical experience in a variety of settings per week. Prereq.: NURS 3743, BSN Generic Program. 5 s.h.+0 s.h.

4844. Community Health Nursing. Synthesis of nursing and public health sciences with emphasis on promotion and maintenance of healthy communities through the assessment and analysis of at-risk population groups. Includes nursing role in health care policy. Prereq.: NURS 3743, BSN Generic Program. 3 s.h.

4846/4846L. Community Health Nursing for RNs. A synthesis of nursing and public health sciences emphasizing health of communities through assessment analysis of at-risk population groups. Includes nursing role in healthcare policy. Three hours of lecture and three hours clinical experience in a variety of settings per week. Prereq.: Valid RN Licensure and NURS 3720, 4804, 3770, and 3772. 4 s.h.+0 s.h.

4852. Senior Capstone Seminar. Provides students with opportunities to integrate and synthesize nursing knowledge through research, writing, and presentations on current topics and issues. Prereq.: Last semester in program, BSN Generic Program. 1 s.h.

4853/4853L. Nursing Transitions. Analysis, synthesis, and evaluation of care delivered by the healthcare team with emphasis on development of leadership and research roles. Two hours lecture and eight hours clinical experience in a variety of settings per week. Prereq.: NURS 4840 or concurrent, BSN Generic Program. 4 s.h.+0 s.h.

4854/4854L. Nursing Transitions for Registered Nurses. Analysis, synthesis, and evaluation of care delivered by the healthcare team with emphasis on development of leadership and research roles for the registered nurse. Three hours lecture per week and 4 hours of clinical hours experience per week, totalling 60 hours. Prereq.: Completion of all other curriculum requirements except NURS 4852. 4 s.h.+0 s.h.

4855. Comprehensive Nursing Summary. Identifies individual strengths and weaknesses with emphasis on improving students’ understanding and demonstration of essential nursing knowledge. Must be taken concurrently with NURS 4853 and NURS 4852. Prereq.: Senior standing in nursing. 2 s.h.

Nursing Electives

3746. Geriatric Health. An examination of the aging person’s physical changes with implications for determining healthcare needs and for interpreting the impact of these upon the elder’s life and current health practices. Prereq: Junior status. 2 s.h.

3747. Individual Studies. The study of special problems or a review of the literature relating to specific problems or issues. May be repeated for a maximum of 6 s.h. with different problems. Prereq: Admission to program or permission of department chairperson. 1-3 s.h.

4860. Home Health Nursing. Current trends, issues, and approaches related to caring for clients in the home environment. Emphasis on the nursing role in client transition from the acute care setting to home. Three hours lecture, three hours clinical experience in a variety of settings per week. Prereq.: NURS 3741 or permission of instructor. 4 s.h.

5870. School Nurse Role Development. Contemporary topics related to the professional school nurse role, including standards of practice, certification, ethical, legal, and practice issues. Prereq.: NURS 4833 or RN status. 3 s.h.

5871. Health Problems of School-Age Children. Concepts related to specialized skills for conducting comprehensive assessments of children in a school
setting, with special attention to children with disabilities. School nurse responsibilities in management of common health problems. Prereq.: NURS 4831 or RN status.

3 s.h.

5872. School Nurse Practicum. Supervised clinical experience in school settings for RN students participating in the delivery of school health services. Includes one hour per week on campus. Field experience of 300 hours required for state of Ohio certification eligibility. 300 hours equals 9 s.h. May be taken in segments of 3-9 s.h. per semester. Prereq.: NURS 4870 and 5871 and RN status.

3-9 s.h.

PHILOSOPHY—PHIL
Department of Philosophy and Religious Studies

Lower-Division Courses

1560. Introduction to Philosophy. The nature of philosophy and its relation to science, religion, and art; study of the philosophical approach and attitude, the basic problem areas in philosophy, and some typical philosophical viewpoints.

3 s.h.

1561. Technology and Human Values. An examination of the impact of technology and science on contemporary human values and investigations of social and political perspectives on modern technocracy, based on case studies in science, medicine, and engineering.

3 s.h.

1565. Critical Thinking. An examination of the logical skills needed for critical thinking in practical situations. Topics include procedures and guidelines for identifying and evaluating arguments, recognizing and eliminating informal fallacies, and writing and critiquing argumentative essays.

3 s.h.

2608. The Examined Life. Considers the nature of happiness and well-being and their relation to social institutions. Addresses the roles that civic and personal relations, morality, aesthetics, education, and religion play in providing happiness, purpose, and meaning in one’s life. Cross listed as REL 2608.

3 s.h.

2610. Global Ethics. Examination of morality and justice from a global perspective, including such topics as war, terrorism, and states; poverty and the global economy; religion, gender, and identity; globalization and the environment; and markets and intellectual property. Cross-listed as REL 2610.

3 s.h.

2612. Ancient & Medieval Philosophy. An examination of philosophers and philosophical systems in Western civilization from the pre-Socratics until the Renaissance.

3 s.h.

2619. Introduction to Logic. Introduction to syllogistic or classical logic, symbolic and inductive logic. Emphasis on the rules of syllogism, immediate inferences, propositional functions, classes, truth tables, Venn diagrams; the use of analogy, generalization, the verification of hypotheses, and scientific method. Prereq.: MATH 1501 or at least Level 20 on the Mathematics Placement Test.

3 s.h.

2625. Introduction to Professional Ethics. An examination of the ideals and virtues central to professionalism; study of selected codes of professional ethics and their roots in classical ethical traditions; and analysis of selected ethical issues and problems in a variety of professions.

3 s.h.

2626. Engineering Ethics. An examination of ethical problems in the major fields of engineering and an explanation of the methodology needed to address them; an analysis of the rights and duties of engineers in their relations to clients, employers, the public, and the engineering profession. Prereq.: One 2600-level PHIL course, or PHIL 1560 or ENTC 1505 or ENGR 1550.

3 s.h.

2627. Law and Criminal Justice Ethics. Examination of major theories in philosophy of law and justice, and the study of ethical issues and professional standards in criminal justice practice. Prereq.: Any 2600-level PHIL course or PHIL 1560 or CJFS 2601, 2602 or 2603.

3 s.h.

2628. Business Ethics. Examines ethical problems in business, ethical responsibilities of business professional, and business as a global institution. Topics include the corporation, at-will employment, unions, technology, privacy, advertising, whistle-blowing, globalization, environmental impact, human rights, just distribution, affirmative action and cultural diversity.

3 s.h.

2631. Environmental Ethics. Application of ethical theories in evaluating human interaction with the natural environment, analysis of rights and duties regarding other species and future generations, the ethics of environmental activism, and philosophical and religious perspectives on environmental issues.

3 s.h.

2635. Ethics of War and Peace. Examines reasons for making war, for restraint on the conduct of war, and for rejecting war as an instrument of national policy as understood within a variety of moral traditions, both secular and religious.

3 s.h.

2698. Introductory Individual Study in Philosophy. Introductory study of a philosophical problem, movement, thinker, or the relationship of philosophy to problems in other disciplines. Intended to be an independent study course with subject matter dependent upon approval of the faculty member and student. May be repeated up to 3 s.h.

1 s.h.

Upper-Division Courses

3702. History of Modern Philosophy. Study of major Western philosophical figures and movements from the Renaissance through the 19th century. Prereq.: One 2600-level PHIL course or PHIL 1560.

3 s.h.

3705. 20th Century Philosophy. A survey of Western philosophy in the 20th century, including American pragmatism, British analytic and scientific philosophy, ordinary language and conventionalist theories,
continental movements in phenomenology and existentialism, and the emergence of cognitive science. Prereq.: One 2600-level PHIL course or PHIL 1560. 3 s.h.

3708. Social and Political Philosophy. A study of the philosophical foundations of democracy, dictatorship, and communism, especially their views of reality, knowledge, human nature, and morality, with attention to rights, duties, freedom, authority, dissent, censorship, crime and punishment, and religion. Prereq.: PHIL 1560. 3 s.h.

3709. Feminist Philosophy. Examination of feminist philosophical theory and issues concerning women, including gender and socialization, sexuality and reproduction, self-image, and the dialogue among various feminist philosophical movements. Prereq.: PHIL 1560 or WMST 2601. 3 s.h.

3711. General Ethics. Examination and evaluation of the major ethical theories in classical, dialectic, pragmatic and naturalistic, analytic and positivist, and existentialist thought. Prereq.: PHIL 1560. 3 s.h.

3712. Philosophy of Religion. The philosophical investigation of religious questions such as existence and nature of the divine, the problem of evil, death and immortality, religion and science, and religious experience. Cross listed with REL 3712. Prereq.: PHIL 1560 or REL 2601. 3 s.h.

3713. Philosophy of the Family. Examines the family from philosophical, political, and historical perspectives and considers issues of justice in familial relationships. Explores the relationship among parents, children, and the state, and reviews the evolving conceptions of childhood, child well-being, and children's rights. Prereq.: ENGL 1551. 3 s.h.

3714. Language and Mind. Introduction to the study of traditional philosophical problems in the analysis of linguistic structures and functions and of their implications for the nature of mind, including meaning, mental representation and causation, information processing, and psychological explanation. Prereq.: One 2600-level PHIL course or PHIL 1560. 3 s.h.

3715. Philosophy of Science. A philosophical consideration of some of the fundamental concepts and assumptions of the sciences: the nature of scientific knowledge; the relation of scientific to other kinds of knowledge and experience. Prereq.: PHIL 1560. 3 s.h.

3719. Symbolic Logic. The structure and properties of axiomatic systems; the theory of propositional and relational logic; the algebra of classes; related topics. Prereq.: PHIL 1560. 3 s.h.

3723. Philosophy of Law. Examination of the nature and limits of law, the justification of the legal system, the relationship between law and morality, state punishment of individuals, the justification for punishment, citizens' rights and issues of privacy, liberty, discrimination, and civil disobedience. Prereq.: One 2600-level PHIL course or PHIL 1560. 3 s.h.

3725. Biomedical Ethics. An examination of ethical issues posed by biomedical research and technology, including issues of informed consent, patients' rights, experimentation, genetic research and intervention, death and dying, and the allocation of scarce resources. Prereq.: One 2600-level PHIL course or SOC 3703 or SOC 3745 or PSYC 3780 or admission to the NEOMED-YSU program or the B.S. in Nursing program. 3 s.h.

3735. Ethics and Scientific Research. Definition and examination of the ethical basis of scientific conduct in reporting experimental results, using human and animal subjects, adopting protocols, and pursuing research with broad impact on human rights and social welfare. Prereq.: PHIL 1560 or 2625. 3 s.h.

3740. Muslim Thinkers. Examination of the theological, philosophical, legal, and political writings and ideas of major Muslim thinkers from the classical through the modern period, covering the continuities and differences. Cross listed with REL 3740. Prereq.: One 2600-level REL course or PHIL 1560. 3 s.h.

3798. Intensive Individual Study of Philosophy. Intensive study of a philosophical problem, movement, thinker, or the relationship of philosophy to problems in other disciplines. Intended to be an independent study course with subject matter dependent upon approval of the faculty member and student. Prereq.: One 3700-level PHIL course. May be repeated up to 3 s.h. 1 s.h.

4805. Direct Readings in Philosophy. Independent study course with subject matter dependent upon approval of the faculty member in consultation with student. Prereq.: Any 3700 level PHIL course. 3 s.h.

4820. Seminar in Philosophy. Study in depth of a particular philosopher, topic, or area in philosophy, as determined by the instructor; may be repeated once with different course content. Prereq.: One 3700-level PHIL course. 3 s.h.

4861. Senior Capstone Project. Research and writing of a paper, or other committee approved project, on a philosophical topic, under the supervision of a full-time faculty member and in consultation with a committee of at least two other members of the department. Prereq.: Philosophy major with senior standing and completion of at least 21 s.h. of PHIL courses. 3 s.h.

4870. Internship in Ethical Practice. Students work with professionals in a local organization, thereby gaining direct access to the ethical issues involved in such an environment. Students will be supervised by an appropriate working professional and either a faculty member of the Dr. James Dale Ethics Center or another faculty member in the department selected for this purpose. The course grade shall be assigned by the YSU supervisor, based on the project journal, an evaluation of the student's on-site work by the participating professional and the YSU supervisor, and a final project paper. Registration by permit only. Prereq.: One 3700-level PHIL or REL course. 1 s.h., repeatable to a total of 1-3 s.h.
PHYSICAL THERAPY—PHYT
Department of Physical Therapy

4802. Research. Research under the supervision of a graduate faculty member. Prereq.: Permission of the instructor and department chair. May be repeated for a total of 6 s.h. Prereq.: Admission to MPT program. 1-6 s.h.

5800. Pathology. Disease processes and trauma in humans from a structural and functional level; relationship between pathology and clinical signs and systems, etiology, differential diagnosis, prognosis, and treatment. Prereq.: Admission to MPT program. 4 s.h.

PHYSICS—PHYS
Department of Physics and Astronomy
Lower-Division Courses

1500. Conceptual Physics. A conceptual treatment of selected theories and laws of classical and modern physics and their application to the understanding of natural phenomena. The evolution of these laws from hypotheses to functional relationships examined in a historical context. Not applicable to the major in Physics or to the combined major in Physics and Astronomy. 3 s.h.

1500L. Conceptual Physics Laboratory. Experimental work designed to supplement PHYS 1500. Three hours per week. Prereq. or concurrent: PHYS 1500. 1 s.h.

1501. Fundamentals of Physics 1. Topics include kinematics, forces, energy, momentum, rotational kinematics, torque, angular momentum, simple harmonic motion, and mechanical waves. Not recommended for mathematics, chemistry, physics, or engineering majors. Prereq.: C or better in MATH 1507 and 1508 or equivalent or at least level 40 on the Mathematics Placement Test. 4 s.h.

1501L, 1502L. Fundamentals of Physics Laboratory 1, 2. Experimental work designed to supplement the PHYS 1501, 1502 sequence. Two hours per week. Prereq. or concurrent: PHYS 1501 for 1501L, PHYS 1502 for 1502L. 1+1 s.h.

1501R. Fundamentals of Physics 1 Recitation. Discussion and problem solving based on current material in PHYS 1501. Concurrent with PHYS 1501. 1 s.h.

1502. Fundamentals of Physics 2. Study of electricity, magnetism, and light. Topics include electric charge, electric forces and fields, electric potential, capacitance and resistance, simple circuits, equivalent circuits, magnetic forces and fields, induced emf, inductance, reflections, refraction, geometric optics as applied to lenses and mirrors, interference, and diffraction. Prereq.: PHYS 1501 or equivalent. 3 s.h.

1506. Physics for Health Care. The basic laws of physics applied to various biological and physiological problems. Designed for majors in the allied health fields, e.g., Respiratory care. Not applicable to the major in Physics or to the combined major in Physics and Astronomy. 3 s.h.

1507. Energy and the Environment. Broad survey of the origin and distribution of the various forms of energy found in nature. Examination of the physical laws governing society’s use of energy and environmental consequences resulting therefrom. Not applicable to the major in Physics or to the combined major in Physics and Astronomy. 3 s.h.

1520H. Perspectives in Physics. Introduction to past and recent ideas in physics with specific emphasis on their impact on historical and contemporary thought. The treatment, largely non-mathematical, is enhanced by selected readings suitable for the beginning honors student in any field. Not applicable to the major in Physics or to the combined major in Physics and Astronomy. Prereq.: Admission to the Honors Program or permission of instructor and Director of Honors. 3 s.h.

2601. General Physics for Applied Medical Studies 1. Description and analysis of motion including kinematics and dynamics of translation and rotation; analysis of equilibrium, energy, and momentum of objects; gravity; mechanical oscillations and waves. This course is designed primarily for students enrolled in the NEOMED-YSU program or in premedical curricula. Prereq.: MATH 1507 and 1508 or equivalent. Prereq. or concurrent: MATH 1571, 1581H, or 1585H. 4 s.h.

2602. General Physics for Applied Medical Studies 2. Description and analysis of electrical and magnetic effects; geometric and physical optics and the wave nature of light; introduction to atomic physics, quantum mechanics, nuclear structure and radiation. Prereq.: PHYS 2601. 4 s.h.

2607. Physical Science for Middle and Secondary Education. Selected topics in physical science appropriate to the middle- and secondary-level curriculum. Emphasis on diverse hands-on classroom activities, and multiple approaches to communicating basic concepts in physical science. Topics include simple machines, light and sound, batteries and bulbs, physical properties of solids, liquids and gases. Prereq.: MATH 1501 or at least level 3 on the Mathematics Placement Test and admission to BCOE upper-division status. 4 s.h.

2608. Sound. The physical principles accounting for the production, propagation, and perception of sound waves. The relevance of these principles to phenomena ranging from hearing to the operation of various musical instruments. Introduction to auditorium acoustics. This course is designed for Music majors. Not applicable to the Physics major or to the combined Astronomy and Physics major. 3 s.h.
2610. *General Physics 1.* A course in mechanics; the kinematics and dynamics of masses in translation and rotation; Newton’s Laws; gravity; the conservation laws of energy and momentum; simple harmonic motion and introduction to wave motion and sound. Prereq.: High school physics or PHYS 1501. Prereq. or concurrent: MATH 1571. 4 s.h.

2610L, 2611L. *General Physics Laboratory 1, 2.* Experimental work designed to supplement the PHYS 2610, 2611 sequence. Three hours per week. Prereq. or concurrent: PHYS 2610 or 2601 for 2610L, PHYS 2611 or 2602 for 2611L. 1-1 s.h.

2611. *General Physics 2.* Study of electric and magnetic fields and their effects; introduction to electric circuits; light as an electromagnetic wave; introduction to geometrical and physical optics. Prereq.: PHYS 2610. Prereq. or concurrent: MATH 1572. 4 s.h.

### Upper-Division Courses


3704L. *Modern Physics Laboratory.* Experimental work designed to supplement PHYS 3704. Three hours per week. Prereq. or concurrent: PHYS 3704. 1 s.h.

3705. *Thermodynamics and Classical Statistical Dynamics.* Principles and theorems of thermodynamics derived from the observable macroscopic properties related to temperature, heat, and the underlying statistical origins of thermodynamic processes. Includes the laws of thermodynamics, entropy, state functions, differential equations of state, Maxwell relations, and Maxwell-Boltzmann statistics. Prereq.: PHYS 2611 and Prereq. or concurrent MATH 2673. 3 s.h.

3705L. *Thermodynamics and Classical Statistical Mechanics Laboratory.* Experimental work designed to supplement PHYS 3705. Three hours per week. Prereq. or concurrent: PHYS 3705. 1 s.h.

3722. *Advanced Optics and Light.* Sources and detection of light; intermediate geometrical and physical optics, including dispersion, scattering, absorption, polarization, coherence, interference, Fresnel and Fraunhofer diffraction. Prereq.: PHYS 2611 and MATH 2673. 3 s.h.

3722L. *Advanced Optics Laboratory.* Experimental work designed to supplement PHYS 3722. Three hours per week. Prereq. or concurrent: PHYS 3722. 1 s.h.

3730. *Electronic Instrumentation.* Laboratory-based course in digital and analog electronics. Topics include AC and DC circuit theory; digital and analog electronics including filters, op amps, counters, digital integrated logic circuits, and A/D and D/A conversion; computer interfacing. Prereq.: PHYS 2611. 3 s.h.

3741, 3742. *Electromagnetic Field Theory 1, 2.* Intermediate theory of electric and magnetic fields. Topics include electric field, scalar potential, techniques for calculating scalar potential (method of images, Laplace’s and Poisson’s equations, multipole expansion, Green’s Function approach), dielectrics and polarization, Maxwell’s equations and their application to the propagation of electromagnetic waves including reflection, refraction, transmission, and absorption; guided waves, retarded potentials, radiating systems, special relativity. Prereq.: PHYS 2611 and MATH 3705. Must be taken in sequence. 3 s.h.

3750. *Mathematical Physics.* The mathematics techniques required in the study of classical, statistical, and quantum mechanics, and field theory. Prereq.: PHYS 2611 and MATH 3705. 3 s.h.

4805. *Undergraduate Physics Research.* Research conducted under the direction of a faculty member. The grading is Traditional/PR. Prereq.: PHYS 3702 and 3704. 3 s.h.

5810, 5811. *Quantum Mechanics and Quantum Statistical Mechanics 1, 2.* The postulates of wave mechanics, Matrix mechanics, angular momentum coupling, scattering, perturbation theory, intrinsic spin, emission and absorption of radiation. Fermi-Dirac and Bose-Einstein statistics with applications in quantum theory. Prereq.: PHYS 3702 and 3704, MATH 3705. Must be taken in sequence. 3 s.h.

5823. *Lasers and Photonics.* Emission and absorption of radiation, including stimulated emission. Optical cavities and wave guides. Introduction to lasers. Modulation and detection of light. Applications of lasers to information processing and other technologies. Introduction to nonlinear optical and opto-electronic phenomena and nonlinear optical materials. Prereq.: PHYS 3722. 3 s.h.

5826. *Nuclear Physics.* General properties and behavior of the nucleus; nuclear models; nuclear reactions; radioactivity and decay processes; accelerators; current topics; elementary particles. Laboratory experiments. Prereq. PHYS 3704, 3704L, and MATH 3705. 3 s.h.

5830. *Condensed Matter Physics.* Selected topics in condensed matter physics: mechanical, thermal, electrical, and magnetic properties of amorphous and crystalline materials; crystal structures. Prereq.: PHYS 3704. 3 s.h.
5835. Spectroscopy. Treatment of atomic, molecular, and nuclear structure based on the analysis of electromagnetic and other spectra. Prereq.: PHYS 3704. 3 s.h.

5835L. Spectroscopy Laboratory. Experimental work designed to supplement PHYS 5835. Three hours per week. Prereq. or concurrent: PHYS 5835. 1 s.h.

5850. Special Topics in Physics. The study of a standard topic at greater depth, of the development of a correlated background for areas of physical knowledge, or the physical and educational experimentation necessary to develop new physics courses. Prereq.: Senior standing in Physics, Electrical Engineering, or Education. May be repeated twice. 2-4 s.h.

5890. Physics and Astronomy for Educators. Intensive study of selected topics of current interest in Physics education. Not applicable to the major in Physics or the combined Astronomy and Physics major. Prereq.: Admission to upper-division status in the College of Education or to the Graduate School. May be repeated for different topics. 1-4 s.h.

POLITICAL SCIENCE—POL
Department of Political Sciences

Lower-Division Courses

1550. Introduction to Political Science. Study of politics, government, and societal institutions at both national and international levels. 3 s.h.

1560. American Government. The foundations of American democratic government with an emphasis on the responsibilities of citizenship, civil rights, and civil liberties, parties and elections, and American political institutions. Students are encouraged to understand and discuss issues of social justice, equality and freedom, and majoritarianism. Topics include the civil rights movement, campaign finance reform, federalism, and affirmative action. 3 s.h.

2640. Contemporary World Governments. A comparative analysis of the development of institutions, attitudes, public policy, economic, and social systems of a number of foreign political systems. Prereq.: POL 1550 or 1560. 3 s.h.

2660. International Relations. An examination of theoretical and practical issues in the development of modern international politics, law and organization and political economy, with special attention to contemporary global and regional issues. Prereq.: POL 1550 or 1560. 3 s.h.

2695. Model United Nations. A comparative study of foreign policy, contemporary global issues, international law, and international governmental organizations. Stresses interactive and role playing educational methodologies. Students are required to participate in one or more approved conferences or field trips. May be repeated to a maximum of 3 s.h. Prereq.: Consent of instructor. 1 s.h.

Upper-Division Courses

3700. American Presidency. An examination of the role of the chief executive officer within the governmental framework. The offices of mayor and governor are treated, but the primary emphasis is on critical evaluation of the American presidency. Prereq.: POL 1560. 3 s.h.


3702. Law and Society. The American judicial system, its institutional development and its role in policy determination, as evidenced in leading Supreme Court decisions. Limited coverage of state judicial systems. Prereq.: POL 1560. 3 s.h.

3703. American Constitutional Law. An inquiry into constitutional interpretation by the Supreme Court based on examination of leading cases, with particular emphasis on questions of federalism, executive power, civil liberties, and economic regulation. Prereq.: POL 3702. 3 s.h.

3704. American Political Parties and Elections. A descriptive analysis of the role of political parties in a democratic society, with emphasis on development of a theory of party, an examination of the history and characteristics of the American party system, and a quantitatively structured description of the national electorate. Prereq.: POL 1560. 3 s.h.

3706. African-American Politics. The politics of African Americans within American society in terms of organization, behavior, objectives, relative influence and power. Prereq.: POL 1560 or AFST 2600. 3 s.h.

3707. Moot Court 1. An introduction to appellate advocacy through the practical application of legal analysis and synthesis. This course analyzes one or two specific constitutional issues based on predetermined U.S. Supreme Court cases. Students will analyze and synthesize Supreme Court decisions and present simulated oral argument as if before the U.S. Supreme Court based on those decisions. May be repeated for a maximum of 6 s.h. Prereq.: POL 3702 and consent of chairperson. 3 s.h.

3712. Political Behavior. An introduction to the primary research theories, perspectives and methodologies common to the study of government and global affairs, including computerize quantitative analysis. Prereq.: POL 1550 or 1560. 3 s.h.

3714. American Public Opinion. An introduction to the origins, uses, effects, and analysis of public opinion, including a practicum in opinion polling requiring field work and computerized quantitative analysis. Prereq.: POL 1550 or 1560. 3 s.h.

3717. Health Care Policy. Seminar on the politics of health care formation and alternative proposals for the organization of health care delivery, manpower, and finance systems; interviews with administrative
and planning personnel. Prereq.: POL 1560, or admission to NEOMED-YSU, or junior standing in a health field. 3 s.h.

3718. *American Public Policy and Policy Analysis*. The formation, implementation, and evaluation of contemporary American public policy. Prereq.: POL 1560. 3 s.h.

3720. *Public Management*. A study of administrative organizations in American federal and state governments, with special attention to their role in the formulation and implementation of public policy as demonstrated in case studies. Prereq.: POL 1560. 3 s.h.

3721. *Urban Government*. The structure and politics of urban government, with special attention to intergovernmental relationships. Prereq.: POL 1560. 3 s.h.

3722. *State and Local Government*. The political processes and institutions of state and local governments, with special attention to Ohio government. Prereq.: POL 1560. 3 s.h.

3724. *Public Budgeting*. Study of the politics, theories, and techniques of public budgeting. Includes the process of budget preparation, adoption and execution. Topics include debt management and capital budgets. This course is cross-listed with ECON 3724. Prereq.: POL 3720. 3 s.h.

3725. *Individualized Study*. A supervised individual study of a special topic or issue in any area of contemporary politics and political science. An academic plan of study including a syllabus is required and will be placed in the student's file. May be repeated for up to 6 s.h. Prereq.: POL 1560 or 2640 or 2660, and permission of the chairperson. 1-3 s.h.

3741. *Russia and China: From Revolution to Reform*. A comparative analysis of politics in the Russian Federation and the People's Republic of China, emphasizing contemporary issues of domestic governance and regional international relations as seen in the context of revolutionary Communism and the appearance of post-Communist reform politics. Prereq.: POL 2640 or 2660. 3 s.h.

3742. *Political Development and Political Regimes*. A comparative analysis of political development of selected states, with a focus on the social and political forces that lead to the formation of democracies and dictatorships. Prereq.: POL 2640 or 2660. 3 s.h.

3744. *European Politics*. Comparative analysis of the political development, governing systems, political behavior, public policy, and interrelations of selected European states, emphasizing the role of the European Union and the formation of new democracies in Eastern Europe. Prereq.: POL 2640 or 2660. 3 s.h.

3751. *Latin American Politics*. A comparative analysis of the political development, governing systems, political behavior, public policy, and international relations of selected Latin American states. Prereq.: POL 2640 or 2660. 3 s.h.

3757. *Aging and Social Policy*. Critical examination of the social policies and social systems which affect aging and retirement. Prereq.: SOC 1500, GERO 1501, or POL 1560. 3 s.h.

3760. *International Political Economy*. Study of the relationship between global capitalism and the interstate political system, with emphasis on post-Cold War issues and American policy. Prereq.: POL 2660. 3 s.h.

3761. *U.S. Foreign Policy*. Examination of the domestic political formulation and international execution of U.S. foreign policy, emphasizing regional issues of security and political economy and the changing U.S. role in the post-Cold War world. Prereq.: POL 2640 or 2660. 3 s.h.

3763. *International Law*. Analysis of the principles and formation of international law as it has developed through customs and international agreement. Prereq.: POL 2640 or 2660. 3 s.h.

3764. *International Organizations*. Analysis of the development, organizational structure, public policy and political behavior of regional and international organizations, with focus on the United Nations. Prereq.: POL 2640 or 2660. 3 s.h.

3767. *Asian Politics*. A comparative analysis of the political development, governing systems, political behavior, public policy, and international relations of selected Asian states, with emphasis on their role in the global economy relative to the U.S. Prereq.: POL 2640 or 2660. 3 s.h.

3768. *International Conflict*. Examination of the dynamics of international political conflict, with special attention to issues of the use of force, the nature of ethnopolitical conflict, and the relative effectiveness of various approaches to negotiation, conflict management, and conflict resolution. Prereq.: POL 2660. 3 s.h.

3785. *Political Thought 1*. The development of western political thought from the time of classical Greece through the Medieval period. Among major figures treated: Plato, Aristotle, Cicero, Augustine, Aquinas, and Machiavelli. Prereq.: 9 s.h. of Political Science. 3 s.h.

3786. *Political Thought 2*. The development of western political thought from the Renaissance to the Modern period. Among the major figures treated: Hobbes, Locke, Rousseau, Burke, Smith, Publius, Tocqueville, and Mill. Prereq.: 9 s.h. of Political Science. 3 s.h.

3787. *Political Thought 3*. The development of western political thought of the 19th and 20th centuries. Among the major figures treated: Hegel, Marx, Nietzsche, Arendt, and Rawls. Prereq.: 9 s.h. of Political Science. 3 s.h.

4801. *Senior Research Seminar*. Investigation and presentation of a research project. Students explore a research topic, using appropriate political science methods, and present their results in oral and written form. Prereq.: 24 hours of political science. 3 s.h.
4805. Public Administration and the Political Process. Political factors which condition the structure and function of public agencies, including the public interest, agency constituencies, and political influence. Prereq.: YSU/CSU MPA or permission of chair. 4 s.h.

4850. Sustainability, Climate Change, and Society. Explores environmental, economic, and social aspects of sustainable development, with an emphasis on economy and society. Examines the roles of institutions, humans and policies in sustainable development as well as reconfiguring relationships between our institutions and the natural world. Listed also as ENST 5850. Prereq.: Minimum junior standing. 3 s.h.

5800. Select Problems, American Government. Seminar/capstone course examining topical issues of American Government. Prereq.: 15 s.h. of Political Science and consent of chairperson. 2-4 s.h.

5830. Public Human Resource Management. The issues and public policies that have an impact on the management of human resources in the public sector. Differences between public and private personnel administration; the American civil service system; recruitment, placement, promotion, training, and compensation; performance assessment; rights and duties of public employees. Prereq.: YSU/CSU MPA or permission of the chair. 4 s.h.

5860. Select Problems of Global Affairs. Seminar/capstone course examining topical issues of contemporary global affairs and international relations. This course may be repeated once. Prereq.: 15 s.h. of Political Science and consent of chairperson. 2-4 s.h.

5865. Global Environmental Policy and Law. An analysis of the development, foundations, and principles of international environmental policy and law; includes consideration of the relationship between domestic and international environmental law, and the role of international organizations in the implementation of international environmental policy and law. Prereq.: POL 3760, or 3742, or ENST 3760. 3 s.h.

5880. Select Problems, Political Thought. Seminar/capstone course examining selected political issues and ideologies within the context of the broader traditions of political thought. Prereq.: 15 s.h. of Political Science and consent of chairperson. 2-4 s.h.

PSYCHOLOGY—PSYC

Department of Psychology

Lower-Division Courses

1502. Workshop in Applied Psychology. Study of selected contemporary psychology-related topics requiring no previous exposure to psychological theory. The department announces the topic and determines the credit, based on frequency and duration of workshop meetings. May be repeated for a total of 4 s.h. with change in topics. Not applicable to the psychology major nor the social studies area requirement. 1-2 s.h.

1560. General Psychology. An examination of scientific and clinical approaches to understanding the relationships between one’s physical, mental, and emotional well-being, and quality of life, including the basic principles governing the growth and maintenance of behavior, emotion, and cognition. 3 s.h.

1560H. Honors General Psychology. An examination of scientific and clinical approaches to understanding the relationships between one’s physical, mental, and emotional well-being, and quality of life, including the basic principles governing the growth and maintenance of behavior, emotion, and cognition. 3 s.h.

2617. Research Methods and Statistics 1. An introduction to psychological research methods and descriptive statistics. Students learn how to conduct ethical research and report their findings as well as to critically evaluate the research of others. Three hours of lecture, two hours of lab per week. Prereq.: C or better in PSYC 1560 and psychology major, or consent of instructor. 4 s.h.

2618. Research Methods and Statistics 2. Further exploration of psychological research methods and statistical analysis, with emphasis on inferential techniques. Prereq.: C or better in PSYC 2617 and psychology major, or consent of instructor. 3 s.h.

2692. Human Sexuality. An interdisciplinary approach to the study of human sexuality. Listed also as PHLT 2692. 3 s.h.

Upper-Division Courses

3700. Social Psychology. Examination of the influence of social interactions on the thoughts, feelings, and behaviors of the individual and the group. Prereq.: PSYC 1560 or SOC 1500. 3 s.h.

3700H. Honors Social Psychology. Examination of the influence of social interactions on the thoughts, feelings, and behaviors of the individual and the group. Prereq.: PSYC 1560 or SOC 1500. 3 s.h.

3700L. Social Psychology Laboratory. An introduction to planning and conducting social psychological research. Topics include creating participant impact while minimizing loss of control, reducing demand characteristics and experimenter bias, and enhancing mundane and experimental realism. Two hours per week. Concurrent: PSYC 3700. 1 s.h.

3701. Psychology of Music. Examines psychological research and theories pertaining to music. Topics include perception of musical attributes such as pitch, musical illusions, cognitive organization of music, and music and emotion. Previous musical knowledge is not required. Prereq.: PSYC 1560. 3 s.h.

3702. Abnormal Psychology. Patterns of deviant behavior, including current systems of classification;
classic syndromes; the nature and trend of major maladjustments; possible causative factors; and methods of prevention and treatment. Prereq.: PSYC 1560. 3 s.h.

3702L. Abnormal Psychology Laboratory. An introduction to conducting research on psychological disorders, to include a critical review of research literature, examination of case studies, and gathering field-based data. Two hours per week. Prereq.: PSYC 2617 with C or better; and Prereq. or Concurrent: PSYC 3702 or 3702H. 1 s.h.

3705. Psychology of Learning. A study of the learning process with emphasis on factors such as reinforcement, respondent conditioning, discrimination, generalization, transfer, etc.; an introduction to modern learning theory. Prereq.: PSYC 2618. 3 s.h.

3705L. Psychology of Learning Laboratory. Laboratory studies of learning processes. Students use observational and data-recording techniques as they apply to investigations of learning processes. Laboratory activities include investigations of classical conditioning, reinforcement, shaping, extinction, practice effects or other phenomena. Two hours per week. Concurrent: PSYC 3705. 1 s.h.

3707. Psychology of Intimate Relationships. Psychological principles pertaining to intimate relationships, both marital and non-marital, and family dynamics. Includes topics such as communication, problem solving, domestic violence, and sexuality. Prereq.: PSYC 1560. 3 s.h.

3709. Psychology of Education. Principles of psychology as applied to the educational process, including characteristics of the individual learner, the classroom, the instructor, methods and techniques, and other factors in the learning process. Prereq.: PSYC 1560. 3 s.h.

3709L. Psychology of Education Lab. Application of principles of psychology in a K-12 educational setting. Evaluation and synthesis of psychological principles, theories, and research. Three hours per week, one hour to be arranged. Concurrent: PSYC 3709 or consent of instructor. Prereq.: PSYC 1560. 2 s.h.

3710. Psychophysiology. An introduction to the relationship between the psychological and physiological basis of behavior. Response systems, such as cardiovascular, respiratory, and gastrointestinal, as well as applications of principles and theories. Prereq.: PSYC 2617, concurrent with 3710L. 3 s.h.

3710L. Psychophysiology Laboratory. Measurement and research techniques in basic and applied psychophysiology. Two hours laboratory-discussion. Prereq.: PSYC 2617, concurrent with 3710L. 1 s.h.

3712. Industrial/Organizational Psychology. Principles of psychology applied to business and industry with emphasis upon both personnel and organizational behavior. Topics include job analysis, selection, performance appraisal, organizational development, job satisfaction, motivation, and leadership. Prereq.: PSYC 2617 or equivalent. 3 s.h.

3724. Advanced Statistical Methods in Psychology. A continuation of inferential statistics: complex analysis of variance and nonparametric statistics; additional study of special correlational techniques and concepts of regression and prediction. Recommended for the student preparing to seek an advanced degree. Prereq.: C or better in PSYC 2618. 3 s.h.

3728. Physiological Psychology. The structural-functional relationships of the various divisions of the neural system, their relationship to the organism as a whole, and their contributions to human behavior. Prereq.: PSYC 2617. 3 s.h.

3728L. Physiological Psychology Laboratory. An introduction to experimental methods for studying effects of environmental stimuli on brain function and behavior in animals. Two hours per week. Prereq.: PSYC 3728 with C or above or concurrent. Permit required. 1 s.h.

3730. Psychology of Women. An exploration of psychological research and theories as they apply to girls and women. A critical examination of gender similarities and differences. Prereq.: PSYC 1560. 3 s.h.

3730L. Psychology of Women Laboratory. Laboratory and field-based research techniques relating to the study of women and to gender similarities and differences. Two hours per week. Prereq.: PSYC 2617 and 2618 with C or better; PSYC 3730 must be taken concurrently. 1 s.h.

3734. ABA Principles I: Applied Behavior Analysis. Scientific and conceptual foundations of applied behavior analysis. Basic principles of behavior analysis and application in applied settings are emphasized. The behavioral approach is contrasted with other approaches to the understanding and treatment of behavior, with a focus on scientific criteria and methodological differences. Ethical standards are covered. Prereq.: PSYC 1560. 3 s.h.

3740. Psychological Measurement. Theories and principles of test construction, and an overview of psychological tests and questionnaires use in mental health, educational, and vocational settings. Prereq.: PSYC 2618. 3 s.h.

3745. The Minority Individual. Psychological research on the intrapersonal, interperson, and intergroup dynamics of being labeled a minority individual as the result of one's race, ethnicity, religion, or gender. The behavioral effects of minority group membership and its impact on the relationship between the individual and the society. Prereq.: PSYC 3700, and either 3755, 3756, or 3757. 3 s.h.

3748. Stress: Theoretical and Clinical Models. Theories and empirical research on the role of stress in physical and emotional illnesses, and an examination of the psychological and physiological aspects of stress. Prereq.: PSYC 3700 or 3702. 3 s.h.
3750. Special Topics in Psychology. Selected areas of study not covered in the mainstream curriculum. May be repeated with different topics to a maximum of 9 s.h. toward the major. Prereq.: PSYC 1560.

3755. Child Development. Foundations of human development from conception through approximately the first decade of life. Fundamental issues of developmental processes in biological, cognitive, and social-emotional domains and their broader implications for society and later development of the individual. Prereq.: PSYC 1560. 3 s.h.

3755L. Child Development Laboratory. Experimental and nonexperimental research methods for gathering data on the development of children. Two hours per week. Prereq.: PSYC 2617 with C or better and 3755 (may be taken concurrently). A criminal background check is required to take the course. 1 s.h.

3756. Adolescent Development. Human development from preteen to young adulthood. Prereq.: PSYC 1560. 3 s.h.

3757. Adult Development. Human development from adulthood through old age. Prereq.: PSYC 1560. 3 s.h.

3758. Lifespan Development. Study of theory and research on development from conception to death. Focus upon psychological, physiological, social and cultural influences. May not be taken for credit if the student has received credit for two or more of PSYC 755, 756, 757, 3755, 3756, 3757. Prereq.: PSYC 1560. 3 s.h.

3760. Perception. Theories and experimental evidence on how environmental, physiological, and personal factors influence the reception, organization, and interpretation of sensory input. Concurrent: PSYC 3760L. Prereq.: PSYC 2618. 3 s.h.

3760L. Perception Laboratory. Laboratory demonstrations and experiments using research techniques in perception. Two hours per week. Concurrent: PSYC 3760. 1 s.h.

3761. Cognition. Experimental methods, research findings, and current theories concerned with human cognitive processes. The information-processing approach, focusing on how information is transformed, stored, manipulated, and retrieved. Topics include attention, pattern recognition and categorization, memory, and language. Concurrent: PSYC 3761L. Prereq.: PSYC 2618. 3 s.h.

3761L. Cognition Laboratory. Laboratory demonstrations and experiments using research techniques in cognition. Two hours per week. Concurrent: PSYC 3761. 1 s.h.

3763. Comparative Psychology. The variety of behaviors within the animal world. Prereq.: PSYC 2618. 3 s.h.

3764. Psycholinguistics. An overview of language production, use, and comprehension including the biological basis of speech and language development, social aspects of language, and bilingualism. Prereq.: PSYC 2618 or ENGL 3755. 3 s.h.

3764L. Psycholinguistics Laboratory. Research techniques in basic and applied psycholinguistics. Two hours per week. Concurrent: PSYC 3764. 1 s.h.

3765. Experimental Social Psychology. Problems, principles, methods and techniques of experimental social psychology including field and laboratory work culmination in the presentation of an individual project. Two hours lecture, two hours laboratory per week. Prereq.: PSYC 2618 and 3700. 3 s.h.

3770. Individual Study. Individual study of a special problem, or a review of the literature relating to a specific psychological problem or issue. A written report is required, one copy of which remains on file in the department. May be repeated for a maximum of 4 s.h. with different problems. Prereq.: PSYC 1560 and consent of the chairperson. 1-2 s.h.

3775. Personality. A critical overview of the major personality theories and theorists in the field of psychology, their application to the understanding of everyday life and a description of the pertinent research applicable to the evaluation of personality theories. Prereq.: PSYC 1560. 3 s.h.

3777. Cross-Cultural Social Psychology. A psychological examination of the impact of culture on individual social behavior as applied to topics such as attribution, moral reasoning, gender differences, and group dynamics. Prereq.: A minimum of 15 s.h. of Psychology including PSYC 3700. 3 s.h.

3779. Careers in Psychology. Overview of career preparation and professional development. Students obtain information on career preparation, job search strategies, and graduate studies. Prereq.: PSYC 1560 and PSYC 2617. 3 s.h.

3780. Psychological Aspects of Disease and Death. The primary factors affecting an individual's attitude toward illness, bereavement, and mortality. The psychological and physiological aspects of disease processes and death. Prereq.: PSYC 1560. 3 s.h.

3785H. Honors Seminar in Psychology. Study of selected topics within psychology suitable to the honors program. Prereq.: Admission to the Psychology Honors Program, permit required. 1 s.h.

3790. Field Work in Psychology. Exploration of different types of work and issues encountered in professional positions within the field of psychology. Supervised field work hours (approximately 4 hours per week) will be arranged. Criminal background check required. May be repeated one time. Prereq.: 9 s.h. in Psychology, junior/senior standing, and consent of chair. 3 s.h.

4800. Introduction to Psychotherapy. A critical overview of major psychotherapeutic approaches to mental health including an evaluation of empirical validity. Students will develop an increased sensitivity to multicultural and ethical issues. Prereq.: PSYC 3702 or 3775. 3 s.h.
4804. Conflict and Group Dynamics. Social psychological research and theory as applied to topics of conflict and group dynamics. Topics include: integrative bargaining, mediation, coalition formation, distributive and procedural justice, PD game, social facilitation, leadership, social dilemmas, group polarization and cohesiveness. Prereq.: PSYC 3700 or consent of chairperson. 3 s.h.

4804L. Conflict Laboratory. Experimental research methods used to gather data in group dynamics, bargaining, and conflict settings. Two hours per week. Prereq.: PSYC 2617 with C or better; PSYC 3700 with C or better; and PSYC 4804 (may be taken concurrently). 1 s.h.

4815. Health Psychology. Psychosocial factors that affect the promotion and maintenance of health, as well as the prevention and treatment of illness. Prereq.: 6 s.h. of 3700-level PSYC courses. 3 s.h.

4833. Principles of Operant Behavior. Experimental Analysis of behavior from an operant viewpoint, emphasizing simple and complex schedules of reinforcement and stimulus control. Concurrent: PSYC 4833L. Prereq.: PSYC 3705. 3 s.h.

4833L. Principles of Operant Behavior Laboratory. Experimental techniques for controlling the behavior of organisms with positive reinforcement. Laboratories include computer simulations. Two hours laboratory-discussion per week. Concurrent: PSYC 4833. 1 s.h.

4835. Special Topics in Developmental Psychology. Advanced and specialized topics in developmental psychology. Topics vary over semesters, and may include the study of infancy, the development of exceptional children, cross-cultural developmental psychology, among others. May be repeated with different topics to a maximum of 6 s.h. toward the major. Prereq.: PSYC 3755 or 3756 or 3757 or 3758. 3 s.h.

4836. ABA Principles 2: Behavioral Assessment and Methodology. Behavior analytic techniques of functional analysis and descriptive analysis, demonstrating functional relationships and basic ABA research designs. Appropriate measurement, display, and interpretation of data with focus on research and evaluation methodology to evaluate interventions with single systems, including individuals, families, organizations, or other social systems. Prereq.: PSYC 3734. 3 s.h.

4837. ABA Principles 3: Behavior Change Procedures. Behavior analytic techniques of functional analysis, functional assessment, descriptive analysis, establishing, strengthening, and weakening behaviors in applied settings. Guidelines on the selection of target behaviors, outcomes, the selection of effective procedures, management of emergency situations, and methods of maintenance and generalization of successful behavior change. Emphasis on ethical conduct. Prereq.: PSYC 4834. 3 s.h.

4841. History of Psychology. The development of scientific psychology, with major emphasis on trends since the mid-19th century. Prereq.: 9 s.h. of psychology. 3 s.h.

4850. Seminar. Major topics in psychology not covered in listed courses. Two s.h. may be applied to the psychology major. Prereq.: Senior standing in psychology, or consent of instructor. 2 s.h.

4857. Biopsychological Aspects of Health and Aging. Broad overview of development and change across the adult lifespan, focusing on an examination and understanding of biological aging and how they affect functioning, adjustment, and wellness. Distinction between primary aging (normal, universal biological changes) and secondary aging (disease, lifestyle-determined changes) will be made. Prereq.: PSYC 3757 or 3758. 3 s.h.

4860. Motivation. Classical and contemporary theories of motivation. Overview of research and theory on the interactive role of biological, learned, and cognitive components in motivation of human behavior, including emotion, need for achievement, affiliation, and power. Prereq.: PSYC 3705. 3 s.h.

4890. Senior Thesis. Data collection and a research paper on a topic approved by the thesis advisor. This project takes two semesters to complete. Must be repeated for a maximum of 2 s.h. Prereq.: 16 s.h. in psychology, including a C or better in PSYC 2618, and consent of thesis advisor and departmental chairperson. 1 s.h.

4891H. Honors Thesis. The student prepares an empirical research paper on a topic approved by an honors thesis advisor and honors thesis committee. May be repeated for a maximum of 4 s.h. Prereq.: Admission to the Psychology Honors Program. 1 s.h.

4895. Senior Psychology Capstone Experience. A capstone experience for the major in psychology. Prereq.: Senior status in psychology, PSYC 2618, and completion in one psychology laboratory course. 2 s.h.

**PUBLIC HEALTH — PHLT**

**Department of Health Professions**

1531. Fundamentals of Public Health. Provides an introduction to public health concepts and practice by examining the philosophy, purpose, history, organization, functions, tools, activities, and results of public health at the national, state, and community levels. Introduces the core disciplines of public health, and current events and issues in the field. 3 s.h.

1568. Healthy Lifestyles. Personal and consumer health issues and prevention of premature death analyzed from physical, emotional, social and spiritual perspectives. Plans for disease prevention and healthful living. Importance of health promotion to the individual, region, nation and world. 3 s.h.

3701. Pre-Professional Field Experience. Students participate in an approved community health education program under faculty supervision. Students observe and assist in the organization and/or delivery of programs. Prereq.: PHLT 1568. 1 s.h.

3702. Health Education Theory and Methods. Overview of health education theory, history, ethics, and methods for the community, school, workplace and health care setting. Provides a foundation in teaching methods. Prereq.: PHLT 1568. Also listed as HPES 3702. 3 s.h.

3703. Health Education for Grades PreK-3. Comprehensive School Health Education curricula, methods and materials for teaching pre-kindergarten through third grade students. Prereq.: PHLT 1568, 3702 and BIOL 1545 or AHLT 1500 and 1501. 3 s.h.

3704. Health Education for Grades 4-6. Comprehensive School Health Education curricula, methods and materials for teaching fourth through sixth grade students. Prereq.: PHLT 1568, 3702 and BIOL 1545 or AHLT 1500 and 1501. 3 s.h.

3705. Health Education for Grades 7-12. Comprehensive School Health Education curricula, methods and materials for teaching seventh through twelfth grade students. Prereq.: PHLT 1568, 3702 and BIOL 1545 or AHLT 1500 and 1501. 3 s.h.

3706. Health Education for Grades 7-12. Comprehensive School Health Education curricula, methods and materials for teaching seventh through twelfth grade students. Prereq.: PHLT 1568, 3702 and BIOL 1545 or AHLT 1500 and 1501. Also listed as AHLT 3708. 3 s.h.

3709. Elements of Urban Environmental Health Practices. Focus on development and implementation issues of environmental and public health programs necessary for urban and rural communities to meet acceptable public health standards at the local health department level with emphasis on resources and staffing. AHLT 3708, or permission of instructor. Also listed as AHLT 3709. 3 s.h.

3710. Health Education for Grades PreK-6. Comprehensive School Health Education curricula, methods and materials for teaching pre-kindergarten through sixth grade students. Prereq.: PHLT 1568, 3702 and BIOL 1545 or AHLT 1500 and 1501. Also listed as HPES 3710. 3 s.h.

3711. Health Education for Grades PreK-3. Comprehensive School Health Education curricula, methods and materials for teaching pre-kindergarten through third grade students. Prereq.: PHLT 1568, 3702 and BIOL 1545 or AHLT 1500 and 1501. Also listed as AHLT 3711. 3 s.h.

3725. Topics in Public Health. Examines topics of relevance to public health. Specific topics include current issues and emerging research findings, with a focus on health behavior and health promotion, epidemiology, public health administration, environmental health, biostatistics, through analysis of public health problems, and application of principles and practices of public health. Prereq: PHLT 1531. 1 s.h.

3731. Drug Use and Abuse. Alcohol, tobacco, and other drug use and their relationship to behavior and society. Emphasis on prevention, early intervention, and treatment in the behavioral medicine, health care, educational and criminal justice systems. Prereq.: PHLT 1568. 3 s.h.

3757. Health and Disease. Study of the major chronic and communicable diseases affecting humans. Emphasis on etiology, prevention through health education and health promotion methods, and materials. Prereq.: PHLT 1568, BIOL 1545 or AHLT 1500 and 1501. 4 s.h.

3791. Community Health. Study of the need for organized community health efforts: problems of chronic and communicable diseases, environmental health, world health, and the public and private agencies involved in their solutions. Prereq.: PHLT 1568. 3 s.h.

4801. Field Work in Health Education. Provides the health education major with a supervised teaching or agency experience. Three hours per week. Prereq.: PHLT 3701I and 3791. 1 s.h.

4826. Community Health Planning and Promotion. Fundamental techniques for assessing needs, planning, marketing and implementing health promotion programs in the workplace and community. Prereq.: PHLT 3791 and AHLT 5807. 4 s.h.

4827. Evaluation of Health Promotion Programs. Theories and methods of program evaluation for assessing the quality of health promotion programs. Prereq.: PHLT 4826. 3 s.h.

4828. Grant Writing. Methods and techniques for writing grant proposals related to health. Emphasis on competence in development of narrative, program plan, evaluation design, time line, identifying grant sources and managing funded projects. Prereq.: PHLT 4826 and PHLT 4827. 3 s.h.

4891. Community Health Internship. Supervised experience designed to provide an opportunity to plan, implement and evaluate a program in an approved community health setting. Approximately 35 hours per week. Prereq.: PHLT 4828. 8 s.h.

4899. Senior Seminar. Capstone course for synthesis of professional course work. Development of resume and professional portfolio; preparation for internship; administration of outcome assessment instruments for the community health majors and school health majors; preparation for the CHES and PRAXIS certification exams. Prereq.: Senior standing and consent of instructor. 3 s.h.

5893. Workshop in Health Education. Concentrated study of a selected topic related to health education. The department will select and announce the topic and determine the credit hours based on the frequency and duration of workshop meetings. May be repeated for a maximum of 6 s.h. with change in topic. Prereq.: PHLT 3701, 3791 or permission of instructor. 1-3 s.h.

PUBLIC RELATIONS—PREL

Department of Marketing

3710. Basic Public Relations. Study of the management function which investigates and evaluates public attitudes, policies, means, and techniques used in the field to earn public understanding and acceptance. Prereq.: ENGL 1551 and GPA of 2.5. 3 s.h.
READING AND STUDY SKILLS—RSS
Department of Counseling

1510A. Advanced College Success Skills. A course designed to develop students’ skills essential for college studying. The primary focus is improving the comprehension and retention of college textbooks. Major topics include reading rate flexibility, vocabulary growth, learning style preferences, and critical reading skills. Students meet for classroom instruction, computer-aided instruction, and small group tutoring sessions to discuss and practice strategies. Open to students based on Composition and Reading Placement Test (CRPT). Grading is A, B, C, NC. Does not count toward a degree. 3 s.h.

1510B. Basic College Success Skills. A course designed to acquaint and assist students in their transition to studying at the college level. Course content stresses development of skills in word recognition, vocabulary, and reading to find main ideas, supporting evidence and conclusions in college textbooks. Students meet for classroom instruction and small group tutoring sessions to discuss and practice various thinking, listening, and reading strategies to improve college performance. Open to students based on Composition and Reading Placement Test (CRPT). Grading is A, B, C, NC. Does not count toward a degree. 3 s.h.

1510C. STEM Advanced College Success Skills. Develops study skills in STEM disciplines by improving comprehension and retention of textbook and lecture materials. Covers reading rate flexibility, vocabulary growth, learning style preferences, critical reading, and problem solving. Uses classroom instruction, computer-aided instruction, and small-group tutoring sessions to apply strategies, including STEM-based lecture applications. Prerequisites: placement into MATH 1501 and ENGL 1540 and RSS 1510A. Grading: A, B, C, N/C. Does not count toward a degree. 4 s.h.

1570. Approaches to Professional Assessments. A course designed to assist students in preparation for graduate and professional-level standardized tests. Students will critically analyze the basic components of such tests. Emphasis will be placed on test requirements, test formats, guidelines for answering and scoring, and test-taking strategies. 2 s.h.

1571. Approaches to Professional Assessments—Applications. A course designed to prepare students for graduate and professional-level standardized tests. In study groups, students will critically analyze the basic components of the test for which they are preparing, including requirements, test formats, guideline for answering and scoring, and test-taking strategies, in conjunction with effective pedagogical procedures. 1 s.h.

RELI GIOUS STUDIES—REL
Department of Philosophy and Religious Studies

Lower-Division Courses

2601. Introduction to World Religions. A survey of the major world religions exploring their distinctive features and common threads. A study of their founders, systems of thought, symbols, and sacred literatures. 3 s.h.

2605. Myth, Symbol, and Ritual. An introduction to the nature and function of myth, symbol, and ritual. Myth interpretation, the relationship between societies and their myths, and the cultural use of myths, symbols, and rituals in religious and spiritual contexts. 3 s.h.

2608. The Examined Life. Considers the nature of happiness and well-being, their relation to social institutions, and the roles that civic and personal relations, morality, aesthetics, education, and religion play in providing happiness, purpose, and meaning in one’s life. Cross listed as PHIL 2608. 3 s.h.

2610. Global Ethics. Examination of morality and justice from a global perspective, including such topics as war, terrorism, and states; poverty and the global economy; religion, gender, and identity; globalization and the environment; and markets and intellectual property. Cross-listed as PHIL 2610. 3 s.h.

2617. Introduction to Eastern Religions. A survey of the religions of India, China, and Japan, their systems of thought, moral values, and methods of personal transformation. 3 s.h.

2621. Religion and Moral Issues. The relation of specific religious and moral issues to questions of personal conduct and social policy. 3 s.h.

2631. Religion and the Earth. A cross-cultural survey of the religious beliefs and values that have shaped our thinking about the earth. An exploration of the shifts in religious thought called for by the ecological crisis of sustainability. 3 s.h.

2699. Introductory Individual Study in Religious Studies. Introductory study of a religious studies problem, movement, thinker, or the relationship of religious studies to problems in other disciplines. Intended to be an independent study course with subject matter dependent upon approval of the faculty member and student. May be repeated up to 3 s.h. 1 s.h.

Upper-Division Courses

3708. African-American Religion. Development of African-American religion and theology from the days of slavery to the present. Prereq: One 2600-level REL or AFST course. 3 s.h.

3710. African and Neo-African Religion. A study of African religious traditions and their pivotal role in the formation of African civilizations and communi-
ties in the African diaspora, including their adaptations of Islam and Christianity. Prereq.: REL 2601 or PHIL 1560 or AFST 2600. 3 s.h.

3712. Philosophy of Religion. The philosophical investigation of religious questions such as existence and nature of the divine, the problem of evil, death and immortality, religion and science, and religious experience. Cross listed with PHIL 3712. Prereq.: PHIL 1560 or REL 2601. 3 s.h.

3720. Islam. The study of the origins and development of classical and modern Islam, including the Prophet Muhammad, the Qur’an, and Muslims in America. Prereq.: REL 2601. 3 s.h.

3722. Christianity. The origin and development of Christianity; examination of the life and teachings of Jesus; Christian theology, liturgy, and symbolism; discussion of divisions of contemporary Christianity. Prereq.: REL 2601 or PHIL 1560. 3 s.h.

3724. Judaism. The study of the origin and development of Judaism, including scriptural legacy, the Talmudic period, and the transformations of the classical tradition in modern times. Prereq.: REL 2601. 3 s.h.

3726. Buddhism. A study of the origin of Buddhism in India and its development through East Asia and Tibet, its systems of thought, institutions, and meditational practices; and Buddhists in America. Prereq.: REL 2601 or 2617. 3 s.h.

3731. Hebrew Scriptures. A critical analysis of the Hebrew scriptures in terms of historical background, textual development, and religious and ethical themes. Prereq.: One 2600-level REL or PHIL course 3740. Muslim Thinkers. Examination of the theological, philosophical, legal, and political writings and ideas of major Muslim thinkers from the classical through the modern period, covering the continuities and differences. Cross listed with REL 3740. Prereq.: any 2600-level REL course or PHIL 1560. 3 s.h.

3742. Islamic Intellectual History. Introduction to the multi-faceted nature of Islamic intellectual activity in history. Topics include Qur’anic exegesis, the Prophetic Tradition, law, theology, philosophy, and historiography. Prereq.: any 2600-level REL course. 3 s.h.

3744. Islamic Culture and Literature. Introduction to the diversity of Muslim culture and literature across the world. Emphasis on classical and premodern literature, art and architecture. Prereq.: any 2600-level REL course. 3 s.h.

3746. Sufism. Examination of Sufism: basic structure, social significance, and implantation within the larger contexts of other major mystical traditions and Islam. Prereq.: any 2600-level REL course. 3 s.h.

3748. Islam and the West. Examination of the historical relationship between the and Islamic and Western worlds, as well as their interaction in modern contexts. Prereq.: any 2600-level REL course. 3 s.h.

3751. Liberation Theologies and Revolutionary Change. Study of liberation theologies in the Third World and in minority communities in the West, in relation to questions of underdevelopment, poverty, and oppression. Prereq.: REL 2601. 3 s.h.

3754. Feminism, Ecology and Religion. Investigation of religious perspectives related to women and nature, the relationship of the sacred to the natural world, scriptural and theological influences, and deep ecology and other environmental movements from a feminist perspective. Prereq.: REL 2601 or 2631 or WMST 2601. 3 s.h.

3756. Psychology of Religion. Survey of developments in depth psychology that have shaped our understanding of religious experience and spirituality. Prereq.: PSYC 1560 or one 2600-level REL course. 3 s.h.

3758. Transpersonal Studies. A critical study of contemporary developments in consciousness research including such topics as near-death episodes, reincarnation, nonordinary states of consciousness, and the implications of quantum theory. Prereq.: REL 2601 or 2617. 3 s.h.

3799. Intensive Individual Study in Religious Studies. Intensive study of a religious studies problem, thinker, or the relationship of religious studies to problems in other disciplines. Intended to be an independent study course with subject matter dependent upon approval of the faculty member and student. Prereq.: One 3700 level REL course. May be repeated up to 3 s.h. 1 s.h.
4810. Directed Readings in Religious Studies. Independent study course with subject matter dependent upon approval of the faculty member in consultation with student. Prereq.: Any 3700 level REL course. 3 s.h.

4850. Seminar in Religious Studies. Study in depth of a particular figure, topic or area in religious studies, as determined by the instructor; may be repeated once with different course content. Prereq.: One 3700-level REL course. 3 s.h.

4860. On-Site Studies in Religion. An on-site investigation of the beliefs and practices of a particular religion or sect through readings, lectures, interviews, and travel to locations vital to its origin or development. Prereq.: Two 3700-level REL courses. 3 s.h.

4871. Senior Capstone Project. Research and writing of a paper, or other committee approved project, on a topic in religious studies, under the supervision of a full-time faculty member and in consultation with a committee of at least two other members of the department. Prereq.: Religious Studies major with senior standing and completion of at least 21 s.h. of REL courses. 3 s.h.

**RESPIRATORY CARE—RESC**

**Department of Health Professions**

**Lower-Division Courses**

1503. Respiratory Procedures 1. Appropriate use of selected respiratory care procedures. Three hours lecture, three hours lab. Prereq.: RESC 1531. 4 s.h.

1520. Respiratory Care Assessment 1. Diagnostic techniques used in evaluating patients with cardiopulmonary disorders. Two hour lecture, two hours lab. Prereq.: RESC 1530. 3 s.h.

1529. Respiratory Care Orientation. Scope of profession including key organizations, role within health-care system and career options. Includes applied anatomy and physiology of respiratory system and basic assessment and therapeutic procedures. Hospital experiences included. One hour lecture and two hours lab. 2 s.h.

1531. Respiratory Care Essentials. Application of basic scientific principles to the respiratory-care profession. Includes coverage of basic equipment, assessment techniques, and therapeutic procedures. Two hours lecture and two hours lab. 3 s.h.

2620. Respiratory Assessment 2. Advanced techniques in the assessment of cardiopulmonary disorders. Two hours lecture, two hours lab. 3 s.h.

2621. Cardiopulmonary Disease. Comprehensive overview of cardiopulmonary disorders encountered by respiratory therapists. Includes applications to clinical protocols. Prereq.: RESC 2620. 4 s.h.

2699. Clinical Practice 1. Orientation to hospital and department policies, including exposure to and practice with basic respiratory care procedures. Five hours a week in clinics. Prereq.: RESC 2621. 1 s.h.

3706. Respiratory Procedures 2. Airway management techniques and other critical care procedures. Two hours lecture, three hours lab. Prereq.: RESC 2620. 3 s.h.

3708. Respiratory Clinical Specialties. Fundamentals of hemodynamic monitoring, management of burn patients, and assessment of neurotrauma. Two hours lecture, three hours lab. Prereq.: RESC 3706. 3 s.h.

3709. Neonatal/Pediatric Respiratory Care. Respiratory care applications in neonatal/pediatric settings. Three hours lecture, three hours lab. Prereq.: RESC 3706. 4 s.h.

**Upper-Division Courses**

3720. Mechanical Ventilation 1. Basic theory and application of mechanical ventilation in critical care areas. Two hours lecture, three hours lab. Prereq.: RESC 3708. 3 s.h.

3725. Mechanical Ventilation 2. Advanced theory and application of mechanical ventilation. Includes home care ventilators. Two hours lecture, three hours lab. Prereq.: RESC 3720. 3 s.h.

3731. Respiratory Care Management. A study of the basic managerial process, organizational concepts, budgeting, quantitative planning, decision-making, and issues of control as they relate to the manager of a hospital-based respiratory care department. Prereq.: RESC 3725. 2 s.h.

3740. Clinical Practice 2. Application of basic and advanced respiratory care modalities. Three hour lab, twenty clinical hours per week. Prereq.: RESC 2699. 4 s.h.

3741. Clinical Practice 3. Application of basic and advanced respiratory care modalities for pediatric and adult patients. Twenty hours a week. Prereq.: RESC 3740. 3 s.h.

3750. Pulmonary Rehabilitation. Demonstration of the multidisciplinary nature of a pulmonary rehabilitation program. The role of the respiratory care practitioner in preventive care activities. Prereq.: RESC 3706. 3 s.h.

3765. Advanced R.C. Diagnostics. The study of the fundamentals of advanced respiratory care diagnostics. Three hour lecture. Prereq.: RESC 3708 or permission of instructor. 3 s.h.

4831. Pulmonary Care Management. Pathology as it relates to care of patients with pulmonary-related disorders. Prereq.: RESC 3725. 3 s.h.

4835. Clinical Practice 4. Application of advanced respiratory modalities and diagnostics for pediatric and adult patients. Capstone course for RC program. Fifteen hours a week. Prereq.: RESC 3741. 3 s.h.

4838. Respiratory Seminar 1. Review of current aspects of clinical respiratory care. A content analysis of the updated NBRC Entry-Level exam will be included. Prereq.: RESC 3741. 1 s.h.

4842. Respiratory Seminar 2. Review of current aspects of clinical respiratory care. A content analysis
of the updated NBRC Advanced Practitioner exam will be included. Prereq.: RESC 4838. 1 s.h.

4846, 4848. Sleep Diagnostics 1, 2. Scientific theory and clinical techniques needed to perform polysomnography. Two hours lecture, two hours lab. Prereq.: Senior standing and RESC 3740 for 4846, RESC 4846 for 4848. 3+3 s.h.

4847, 4849. Sleep Clinics 1, 2. Polysomnographic techniques in the clinical setting. Approximately 80 contact hours for each course. Prereq.: Senior standing and RESC 4846 for 4847, RESC 4848 and 4847 for 4849. 1+1 s.h.

SCIENCE, TECHNOLOGY, ENGINEERING, AND MATH—STEM
College of Science, Technology, Engineering, and Math

1505. Safety Principles in the STEM College. Topics pertaining to safety in STEM College laboratories with applications to industry, including chemical safety, electrical safety, planning for emergencies, etc. No prerequisite. 1 s.h.

1510. STEM Advanced College Success Skills. Develops study skills in STEM disciplines by improving comprehension and retention of textbook and lecture materials. Covers reading rate flexibility, vocabulary growth, learning style preferences, critical reading, and problem solving. Uses classroom instruction, computer-aided instruction, and small-group tutoring sessions to apply strategies, including STEM-based lecture applications. Also listed as RSS 1510C. Prereq.: placement into MATH 1501 and ENGL 1540 or above and either RSS 1510A or no reading placement. Grading: A, B, C, N/C. 4 s.h.

1511. STEM Preparation Skills 2. Targets success in first year STEM courses in engineering, basic science, and mathematics. Scientific and mathematical ideas important in STEM disciplines are studied in their scientific and engineering contexts to promote success in CHEM 1515-1516, ENGR 1550-1560, PHYS 1501, with special focus on transitioning from intermediate algebra and trigonometry to precalculus to foster success in MATH 1513. Prereq.: Completion of RSS 1510C or STEM 1510C or STEM 1510 and MATH 1501 or MATH 1503 with C or better. Grading: A, B, C, N/C. 5 s.h.

1513. Studies in STEM Connectivity. Develops and studies connections between mathematical concepts and the empirical sciences, and applies these connections to engineering and technology. Prereq.: placement out of RSS 1510A and RSS 1510B (no reading placement) and concurrent registration in MATH 1507 and/or MATH 1508. 3 s.h.

1530. Science of Design. An introductory course offering a design experience for students including visualization and a collaboration in the development to prototype design. Science, engineering, computing, technology, and other modern techniques are emphasized. Prereq.: Concurrent with MATH 1513. 3 s.h.

1550. Introduction to STEM. Introduction to STEM fundamentals including problem solving, data management, modeling of physical systems, and scientific communication skills. One hour lecture and 3 hours lab per week. Prereq.: Eligible to take Math 1513 or higher-level math course. 2 s.h.

1551. STEM Careers. An introduction to the career opportunities available in the different STEM majors. Designed to help students choose a STEM major field of study and understand the relationship between science and technology. To enhance student success. One hour lecture per week. Grading is ABC/NC. 1 s.h.

1599. Medical Professions Seminar. Introduction to the doctoral medical professions. Review of careers including allopathic medicine, osteopathic medicine, dentistry, optometry, podiatric medicine, chiropractic medicine, veterinary medicine, and pharmacy; also entrance requirements for medical programs and advising resources at YSU. Grading is CR/NC. 1 s.h.

2600. Explorations in the Sciences. Student investigations in the natural sciences using a variety of laboratory approaches focused on a single theme or concept; a multidisciplinary study from two of the following science areas (biology, chemistry, physical geography, geology, physics, astronomy, environmental science) segmented in three five-week units (6 hrs/wk including 2 to 3 hours of instruction). 4 s.h.

2601H. BSMD Honors Seminar. An interdisciplinary course dealing with topics appropriate to students in the BSMD program. The subjects include, but are not limited to, MCAT preparation, study skills appropriate for the accelerated curriculum, the organization and function of the university, critical thinking, current events, etc. Prereq.: Acceptance into BSMD program. 2 s.h.

2625. Natural Gas and Water Resources Seminar. Guest lecture forum course designed to provide students with exposure to a broad range of topics and current research relevant to the petroleum industry and water resource issues. Course may be repeated. Prereq.: GEOL 2620 (or concurrent). 1 s.h.

3700. Human Values in Medicine. A behavioral science and humanities perspective on individual and social issues which affect medical care delivery. In addition to classes, seminars, and workshops, it may include field projects, participation in health-related investigations and presentations, and personal development programs. Credit toward fulfillment of the area requirement will be determined by the dean of the College of Arts and Sciences and will be based upon the selection of courses. May be repeated once. Prereq.: PSYC 1560 and PHIL 2600 or consent of dean. For current students. 1-7 s.h.

3789. STEM Professional Practice. Apply theory in professional practice experience overseen by appropri-
ate working professional for employment at approved employer. Students see faculty advisor, submit professional practice proposal for approval and write final project paper. Prereq.: at least sophomore standing, 2.00 GPA in STEM program, and special approval of the STEM Professional Practice Director in consultation with student's department chair. May be repeated for a maximum of 8 s.h.

4857. Statistical Consulting. The objective of this course is to cultivate the skills necessary to competently engage in statistical consulting. Topics include problem solving, study design, power and sample size, data management, selection and application of statistical methods, ethical practice, and effective visual and literal communication of results. Prereq.: STAT 5817 or equivalent. 1-4 s.h.

4890. STEM Internship. Integrate theory and practice jointly supervised by appropriate working professional and College of STEM faculty mentor for part-time employment at approved employer. Students see faculty advisor, participate in orientation/professional practice training, submit internship proposal, receive internship offer from approved employer, maintain journal of their experiences, and submit final project paper. Prereq.: junior or senior standing, 3.00 GPA in STEM program, 2.75 GPA overall, and special approval of the STEM Professional Practice Director in consultation with student's department chair. May be repeated for maximum os 8 s.h.. 1-4 s.h.

4891. STEM Cooperative Education Assignment. Integrate theory and practice jointly supervised by appropriate working professional and College of STEM faculty mentor for 40 hours per week of full-time employment at approved employer. Students see faculty advisor, participate in orientation/professional practice training, submit co-op proposal, receive co-op offer from approved employer, maintain journal of their experiences and submit final project paper. Prereq.: junior or senior standing, 3.00 GPA in a STEM program, 2.75 GPA overall, and special approval of the STEM Professional Practice Director in consultation with student's department chair. May be repeated twice. 0 s.h.

4895. Senior Thesis. Faculty-directed research for students pursuing practical research experience in a STEM-related discipline. Prereq.: use of Statistical Consulting. 1-3 s.h.

SECONDARY EDUCATION—SED

Department of Teacher Education

1509. Orientation to On-Line Learning. This course provides an introduction and orientation to on-line learning, while acquainting students with the platform of BB9, distance education technologies, YSU and BCOE. This course will be taken as a co-requisite with DE ECE 2629. Credit hrs. 1 s.h.

Credit/No Credit

3706. Principles of Teaching Adolescents. Lesson/unit planning using instructional strategies that motivate diverse students. Integrates content knowledge, pedagogy, technology, and cross-disciplinary curriculum exploration. Critical reflection and analysis of teaching experiences through peer teaching and classroom teaching in local secondary schools. Prereq.: BCOE upper-division status and approval of chairperson. Coreq.: TERG 3711, FOUN 3710 and one of SED 4800B, 4800C, 4800E, 4800M, 4800S or HMEC 4800 or FNLG 4801 or PHLT 3703, 3704 and 3705. 3-5 s.h.

4800B. Special Methods: Integrated Business. Techniques used in teaching integrated business subjects. Observation of teaching in a vocational setting, presentation of a lesson in a secondary or vocational school, unit development, reflective writing, Organization, administration, implementation, and evaluation of vocational business education programs at the secondary and adult education levels. Prereq.: BCOE upper-division status and approval of chairperson. Coreq.: SED 3706, TERG 3711 and FOUN 3710. 3 s.h.

4800C. Special Methods: Science. Using NSTA/NCATE and Ohio content standards, candidates establish and maintain learning environments that provide diverse students with a holistic, interdisciplinary understanding of science. Background for teaching science, instructional strategies, classroom management, planning instruction, assessment, professional development, integration of content with inquiry emphasized. Field experience combining pedagogy/methodology in a middle grades or adolescent classroom required. Prereq.: BCOE upper-division status, 24 s.h. science, and approval of chairperson. 3 s.h.


4800S. Special Methods: Social Studies. Theory and practice in learning how to plan, execute, and evaluate social studies lessons that are empowering, interesting, and reflective. Topics include:
4827. *Supervised Student Teaching: Language (K-12).* Grading is CR/NC. See requirements for student teaching under COE. Prereq.: BCOE upper-division status, passing scores on PRAXIS II content and PLT tests, criminal background check, and completion of foreign language program excluding student teaching and student teaching seminar. Coreq.: SED 4842A. 1-10 s.h.

4842. *Supervised Student Teaching: High School.* Full-time 16-week student teaching in grades 7-12 supervised by University faculty and experienced AYA practitioners licensed in the teaching subject of the candidate. To be taken concurrently with SED 4842A. Grading is CR/NC. Prereq.: BCOE upper-division status, passing scores on PRAXIS II content and PLT tests, criminal background check, and completion of adolescent/young adult or career/technical program excluding student teaching and student teaching seminar. Coreq.: SED 4842A. 1-10 s.h.

4842A. *Student Teaching Seminar for Secondary Education.* Seminar topics are based on pedagogy, knowledge and application of professional practice and standards, critical theory, and knowledge of the adolescent and young adult learner. Completion of the Teacher Work Sample is required. Coreq.: One of SED 4827, 4842, 4843, 4844, 4845, or 4846. 1-2 s.h.

4843. *Supervised Student Teaching: Visual Art (K-12).* Grading is CR/NC. See requirements for student teaching under COE. Prereq.: BCOE upper-division status, passing scores on PRAXIS II content and PLT tests, criminal background check, and completion of visual art program excluding student teaching and student teaching seminar. Coreq.: SED 4842A. 1-10 s.h.

4844. *Supervised Student Teaching: Music (K-12).* Grading is CR/NC. See requirements for student teaching under COE. Prereq.: BCOE upper-division status, passing scores on PRAXIS II content and PLT tests, criminal background check, and completion of music program excluding student teaching and student teaching seminar. Coreq.: SED 4842A. 1-10 s.h.

4845. *Supervised Student Teaching: Health (K-12).* Grading is CR/NC. See requirements for student teaching under COE. Prereq.: BCOE upper-division status, passing scores on PRAXIS II content and PLT tests, criminal background check, and completion of health program excluding student teaching and student teaching seminar. Coreq.: SED 4842A. 1-10 s.h.

4846. *Supervised Student Teaching: Physical Education (K-12).* Grading is CR/NC. See requirements for student teaching under COE. Prereq.: BCOE upper-division status, passing scores on PRAXIS II content and PLT tests, criminal background check, and completion of physical education program excluding student teaching and student teaching seminar. Coreq.: SED 4842A. 1-10 s.h.

4850. *Supervised Student Teaching: Career/Technical.* Full-time 16-week student teaching in grades 4-adult supervised by University faculty and experienced career/technical practitioners licensed in the teaching subject of the candidate. Grading is CR/NC. Prereq.: BCOE upper-division status, passing scores on PRAXIS II content and PLT test, criminal background check, and completion of adolescent/young adult or career/technical program excluding student teaching and student teaching seminar. Coreq.: SED 4842A. 1-10 s.h.

**SOCIAL WORK—SCWK**

**Department of Social Work**

**Lower-Division Courses**

1510. *Introduction to Social Work.* An overview of the values, systems, policy, theories and concepts central to the profession of social work. This course will also review roles, licensure requirements and history of the social work profession. This is the first course orienting students to the social work profession. Prereq.: SOC 1500. 3 s.h.

2600. *Health Issues for Social Work Practice.* Explores impact of physical and biological forces on client issues/neces and importance of understanding these factors for professional social work practice. Emphasis given to biological development across the human lifespan, ecological issues, genetic influences, health concerns. Prereq.: ENGL 1550 and SCWK 1510. 3 s.h.

2622. *Social Work Processes.* Addresses the full range of communication skills in systems of all sizes for professional social work practice. Includes principles of effective communication, functions and purposes of communication, and the roles of social workers. Thirty clock hours of volunteer engagement required. Three hours lecture. Prereq.: SCWK 1510. 3 s.h.

2641. *American Social Welfare.* Overview of the history and evolution of social welfare programs and services in America. Emphasis on the identification and interrelationships of social values and structures, political factors, and economic conditions on resource allocation, including meeting the needs of special populations. Prereq.: SCWK 1510. 3 s.h.

2642. *Human Behavior and the Social Environment for Social Workers 1.* A general social systems approach as a conceptual framework to the understanding of culture and society, communities, organizations, groups, families, and individuals as they develop over the lifespan. Application of theory and research to social work. Prereq.: SCWK 1510, PSYC 1560. 3s.h.

2644. *Human Behavior and the Social Environment for Social Workers 2.* An ecosystems perspective in understanding families, groups, organizations and communities. Focus on individuals and their transactions with each other and their environment.
Application of theory and research to social work. Prereq.: SCWK 2642. 3 s.h.

2695. Applied Social Work. A practicum in human service agencies for the Social Services Technology major. The student must spend 225 hours in an agency for a total of 6 s.h. credit. Prereq.: Completion of all courses for admission to the two-year Social Services Technology Internship. 6 s.h.

Upper-Division Courses

3726. Child Welfare and Case Planning. This course provides the knowledge, concepts, and skills needed for beginning level social work practice in public and child welfare settings. Major focus is on protecting at-risk children by strengthening, supporting and empowering families. Prereq.: SCWK 1510. 3 s.h.

3727. Child Welfare Permanency Planning. Provides the knowledge, concepts, and skills needed for beginning level social work practice in public child welfare settings. Major focus is on the developmental needs and permanency planning associated with at-risk children served by the child welfare system. Prereq.: SCWK 1510. 3 s.h.

3728. Social Services for Children. Social welfare agencies and services developed by communities for the care and training of children. Development of a conceptual framework for understanding the issues, problems, and policies in children's services. Prereq.: SCWK 2622. 3 s.h.

3730. Social Services and the Aged. An empirical and analytical base for understanding the policies, problems, and trends in services for the aged. Prereq.: SCWK 2622. 3 s.h.

3731. Social Services and the Disabled. Problems arising from or related to illness and disability; adjustment of disabled persons. General interventive techniques for working with the disabled; recent research and treatment innovations. Prereq.: SCWK 2622. 3 s.h.

3736. Social Work Methods with Individuals. Overview of generalist practice methods with client systems of varying sizes. In-depth analysis of problem solving strategies and skills in working with individuals. Theory and research relating to practice. Social work purposes, functions, and values are addressed from the systems perspective. Prereq.: Admission to SCWK Program. 3 s.h.

3737. Social Work Methods with Groups. In-depth analysis of problem-solving strategies and skills in working with small groups. Theory and research relating to practice. Social work purpose, functions, and values are addressed for the systems perspective. Prereq.: SCWK 3736. 3 s.h.

3738. Social Work Methods with Families. In-depth analysis of problem-solving strategies and skills in working with families. Theory and research relating to practice. Social work purposes, functions, and values are addressed from the systems perspective. Prereq.: SCWK 3736. 3 s.h.

3750. Analysis of Social Work Practice Data. Techniques of data description and introduction to analytical methods used to evaluate service delivery at all levels of social work practice. Prereq.: SCWK 2641 and 2644. 3 s.h.

3760. Research Methods for Social Workers. Quantitative and Qualitative research methodologies for building knowledge for social work practice. Systematic evaluation of outcomes, theoretical bases, relevant technological advances, and ethical standards. Prereq.: SCWK 3750. 3 s.h.

4825. Field Work in Social Services. Professionally supervised practice in an approved social agency. The student must complete 225 hours per semester in an agency for each 6 s.h. of credit. Must be taken two consecutive semesters for a total of 12 s.h. Credit/no credit grade option only. Prereq.: Admission to Social Work Internship. 6 s.h.

4826. Integrated Field Work Seminar. Integration and evaluation of conceptual, affective, and experiential learning achieved from previous social work courses and field-based assignments. Concurrent: SCWK 4825 first enrollment. Prereq.: Completion of courses required to enter field work. 3 s.h.

4827. Integrated Capstone Seminar. Provides opportunities to synthesize and integrate all the previous coursework from social work education. Includes both theoretical and experiential assignments to assist students with increased self awareness and to prepare them for the transition from college to entry-level generalist practice. Concurrent: SCWK 4825 second enrollment; Prereq.: Completion of courses required to enter field work and SCWK 4826. 3 s.h.

4860. Seminar Special Topics in Social Work. Study of selected topics in social work theory, methods and research. May be repeated with different topics. Prereq.: Junior standing or permission of instructor. 1-3 s.h.

5820. Social Policy. Review of the programs,structure, and functions of social services including historical development and social, political, and economic issues. Application of scientific method to analyze and develop social work policies designed to achieve social work goals and purposes. Prereq.: SCWK 2641, POL 1560. 3 s.h.

5822. Social Work Methods with Organizations and Communities. In-depth analysis of problem-solving strategies and skills in working with organizations and communities. Theory and research relating to practice. Social work purpose, functions, and values are addressed from the systems perspective. Prereq.: SCWK 3736. 3 s.h.

5823. Cultural Diversity in Practice. Emphasis on understanding the experiences, beliefs, and inherent problems of racial and ethnic minority groups. Focuses also on populations distinguished by socioeconomic status, gender, age, sexual orientation, religion, and physical or mental disability. Application of theories, differential assessment, and intervention
skills necessary for effective social work practice. Prereq.: SCWK 3736 or permission of instructor. 3 s.h.

**SOCIOMETRY—SOC**

**Department of Sociology and Anthropology**

**Lower-Division Courses**

1500. *Introduction to Sociology.* An introduction to the science of human societies and groups: analysis of the structures, functions, and processes that bring about changes in societies, groups, communities, classes, and institutions. 3 s.h.

2601. *Social Problems.* A sociological overview of various contemporary social issues, analyzing significant discrepancies between standards of expectation and actual social behavior, attempting to ascertain possible causes, and discussing trends and possible changes. 3 s.h.

2630. *Criminology.* Study of the social context of crime in America. Review of historical theories offered in explanation of criminal behavior. 3 s.h.

2640. *Women in Society.* Attention to cross-cultural and historical issues. Major focus on the contemporary status of women in the U.S. Effects of the political and economic institutions upon women, particularly the effect of stratification, gender roles, and the socialization process. Prereq.: SOC 1500. 3 s.h.

2690. *Identities and Differences.* A study of personal and social issues that shape the understanding and development of identity and diversity. 3 s.h.

**Upper-Division Courses**

3700. *Minority Groups.* Survey of the origins and characteristics of ethnic and racial minority groups, with emphasis on the significance of membership in such a group for in-group, out-group, and community solidarity. Cross-listed with AMER 3700. Prereq.: SOC 1500. 3 s.h.

3701. *Social Statistics.* Measurement and interpretation of social data by use of descriptive techniques. Examines methods of probability theory as a basis for statistical inference, hypothesis testing, correlation, chi-square, and variance analysis. Prereq.: SOC 1500 or ANTH 2602, successful completion of ENGL 1551 and MATH 1501 or a level 3 or higher on the math placement exam. Listed also as ANTH 3701. 4 s.h.

3703. *Aging and Society.* An interdisciplinary introduction to studies in aging. Examines the impact of population aging and its effect on the society at large. Also examines individual aging processes and social significance of aging. Prereq.: SOC 1500 or GERO 1501. Listed also as GERO 3703. 3 s.h.

3705. *The Family.* Family and kinship systems as major institutions; their development, functions, and relation to other basic institutions found in different cultures and social strata. Prereq.: SOC 1500 or ANTH 1500. 3 s.h.

3707. *Urban Sociology.* A comparative study of cities of pre-industrial and industrial societies, historical and contemporary. The process of urbanization and changing urban structure and functions. Prereq.: SOC 1500. 3 s.h.

3708. *Political Sociology.* The social conditions that affect government and politics and that may help to determine political order and regulate struggles for power; associations and movements leading to stability or change. Prereq.: SOC 1500. 3 s.h.

3720. *Applied Sociology.* Uses of sociology in practical affairs, providing theory and data for public policy, institutional reform, social action programs, and social inventions. Contributions to architectural design, industrial engineering, community planning, and innovative legislation. Cross-listed with AMER 3720. Prereq.: SOC 1500. 3 s.h.

3735. *Juvenile Delinquency.* Social and psychological factors underlying delinquency; the juvenile court and probation; treatment and preventive measures. Prereq.: SOC 1500. 3 s.h.

3740. *Complex Organizations.* Structures and processes of large-scale organizations: leadership, control techniques, tensions, bureaucratic pathologies, organizational change. Prereq.: SOC 1500. 3 s.h.

3741. *Social Movements.* Analysis of the role of social movements, intellectual criticism, and socioeconomic trends; study of the dynamics of change initiated outside of regular and institutionalized channels, including mobs and crowds. Prereq.: SOC 1500. 3 s.h.

3742. *Small Group Processes.* A study of small group behavior; influence, attitudes, and values of social microsystems. Prereq.: SOC 1500. 3 s.h.

3743. *Social Stratification and Inequality.* Comparative analysis of social stratification systems with major emphasis on modern Western societies. Prereq.: SOC 1500. 3 s.h.

3744. *Social Deviance.* Problems of drug abuse, sexual deviation, crime, and other forms of deviance. Theoretical approaches to deviant behavior; etiologies and methods of social control. Prereq.: SOC 1500. 3 s.h.

3745. *Sociology of Health, Illness, and Healthcare.* Social attitudes toward illness. Cultural and social factors in disease definition of illness, and organization of the health professions and health facilities. Prereq.: SOC 1500, GERO 1501, or admission to NEOMEDYSU program. Listed also as GERO 3745. 3 s.h.

3749. *Sociological Theory.* The major theoretical traditions in Sociology emerging from the enlightenment period and evolving to the present. Prereq.: SOC 1500 or ANTH 2602. 3 s.h.

3752. *Evaluation Research.* Introduction to the field of evaluation research of social policy and programs.
Current procedures, concepts, and techniques. Social and ethical issues of research. Prereq.: SOC 3701. 3 s.h.

3755. *Theories of Gerontology.* Review and critical analysis of current theories of the social aspects of aging, and their use in research. Prereq.: SOC 1500 or GERO 1501. Listed also as GERO 3755. 3 s.h.

3756. *Aging and Ethnicity.* Aging in American subcultures, noting differences in status/role systems, demographic distributions, life styles, methods of dealing with the elderly, and related problems. Listed also as GERO 3756. Prereq.: SOC 1500 or GERO 1501. 3 s.h.

3757. *Aging and Social Policy.* Critical examination of social policies and social systems which affect aging and retirement. Prereq.: SOC 1500, GERO 1501, or POL 1560. Listed also as GERO 3757 and POL 3757. 3 s.h.

3758. *Long-Term Care.* Examines critical issues in long-term care systems, services, and programs. Impacts of social demographic and economic changes on long-term care needs, demands, and supplies. Contemporary trends and future outlooks of long-term care. Prereq.: SOC 1500 or GERO 1501. Listed also as GERO 3758. 3 s.h.

3759. *Sociology of Dementia.* The understanding of the nature, causes, symptoms, and social consequences of dementia. Attention to the status of aging, and to the status of those who suffer from dementia in contemporary society. Prereq.: SOC 1500. 3 s.h.

3760. *Sociology of Death and Dying.* Analysis of the social aspects of human death, dying, and bereavement using various sociological approaches. Explores data from secondary sources, surveys, and field investigations that relate to the institutional contexts of dying and grieving processes. Includes practical application of sociological analysis of dying and death. Prereq.: SOC 1500. 3 s.h.

3789. *Technology and Society.* A critical exploration of how societal needs affect the creation of technologies and how technology affects society. An interdisciplinary approach in examining the complex interactions between humans and their tools. Prereq.: BIOL 2601 or ENGR 1550 or SOC 1500, and junior standing. Listed also as BIOL 3789 and CEEN 3789. 3 s.h.

3790. *Aging in Cross-Cultural Perspectives.* Examines the phenomenon of aging from cross-cultural perspectives with an emphasis on cultural evolution and its impact upon the status, roles, and cultural values associated with aging and the aged. Listed also as ANTH 3790 and GERO 3790. Prereq.: SOC 1500 or ANTH 1500 or GERO 1501. 3 s.h.

3798. *Select Topics in Sociology.* In-depth examination of various sociological topics and issues of both current and long-standing interest. May be taken twice with different topics. Prereq.: 3 s.h. in Sociology. 3 s.h.

4800. *Undergraduate Research.* Research participation under the direction of a faculty member. Designed to acquaint the advanced student with special research problems associated with various aspects of the discipline. May be repeated for a maximum of 4 s.h. Prereq.: Permission of chairperson and 20 s.h. in Sociology. 1-2 s.h.

4801. *Later Life Issues.* An examination of contemporary issues and concerns among the elderly. Topics include family relations, finances, entitlements, Social Security, quality of life, and euthanasia. Prereq.: SOC 3703. 3 s.h.

4804. *Family, Health, and Aging.* Examines family and health related aspects of aging. Positive and negative interactions among family members and caregivers, and their impact on mental and physical quality of life of the elderly. Listed also as GERO 4804. Prereq.: SOC 3703 or GERO 3703. 3 s.h.

4821. *Internship in Sociology.* Application of sociological knowledge in settings such as social agencies, government offices, hospitals, nursing homes, correctional facilities, and industry. Maximum of 6 s.h. may be applied to the Sociology major. Prereq.: Junior standing and at least 9 s.h. of Sociology, and permission of chairperson. 3-9 s.h.

4850. *Research Methods.* An introduction to methods employed in social research. Attention is given to (1) the logic of scientific inquiry and the relationship between theory and methods; (2) the various qualitative and quantitative methods; (3) research design, data collection, organization, analysis, interpretation and application; (4) the social, cultural, political, and ethical context of social research; and (5) computer skills employed in data analysis. Prereq.: SOC 3701, ANTH 3701, or GERO 3701. Listed also as ANTH 4850 and GERO 4850. 3 s.h.

4851. *Social Research.* A seminar in social research wherein participants apply research methods in the theoretical and/or empirical investigation of a social issue and/or problem. Participants are involved in all phases of the research process. Prereq.: SOC 4850. Listed also as ANTH 4851. 3 s.h.

4898. *Selected Problems in Sociology and Anthropology.* Readings in sociology and anthropology dealing with current problems in theory and methods. Credit is given according to the nature and extent of the problems and the readings. For students planning to enter graduate school. Prereq.: Departmental major in senior year. 1-3 s.h.

**SPECIAL EDUCATION—SPED**

**Department of Counseling and Special Education**

2630. *Individuals with Exceptionalities in Society.* Characteristics, adjustment problems, special needs with emphasis on educational solutions, co-teaching, and inclusionary practices. The laws and implementation; placement, programming, due process, resources recommended for accommodation of exceptional learners in diverse settings. 3 s.h.
2631. Intervention Strategies with Special Needs Children in Early Childhood. Development of teaching skills of the regular early childhood educator in meeting the intervention needs of young children with special needs (disabilities, at-risk, and/or gifted) in inclusive classrooms and programs. Emphasis on classroom support for IEP/IFSP goals and objectives. Prereq.: PSYC 3755. 3 s.h.

3715. Characteristics and Needs of Children and Youth with Mild/Moderate Disabilities. Description, classification, development, and academic and social adjustment of children with learning disabilities. Relates the contributions of diverse disciplines to theory and practice. Developmental approach to motor, perceptual, cognitive, language and social-emotional functioning within an educational context. Prereq.: SPED 2630 or 2631. 3 s.h.

4831. Assessment and Referral in Early Childhood. Development of skills in referral and assessment techniques for the regular early childhood educator with emphasis on both formal and informal methods such as observation, authentic assessment, standardized measures and interviewing. Attention to children with disabilities and/or gifts and talents. Prereq.: Upper-division status. 3 s.h.

4839. Supervised Student Teaching: Moderate/Intensive Intervention Specialist. Concurrent with SPED 4869. Grading is CR/NC. Prereq.: FOUN 1501, 3708; PSYC 3709; EDTC 3771; SPED 2630 or 2631, 5828, 5833, 5835, 5851, 5853, 5863, 5864, 5866, 5867; senior status and approval of the chair. 4-12 s.h.

4849. Supervised Student Teaching: Mild/Moderate Disabilities. Concurrent with SPED 4869. Grading is CR/NC. Prereq.: FOUN 3708, completion of the reading block (TERG 2601, 3701, 3702, 3703) & STEP block (SPED 4854, 5835, 5864, TERG 3703) SPED 2630 or 2631, 5853, 5863, 5866, senior status, and approval of the chairperson; see requirements for student teaching under BCOE. 4-12 s.h.

4854. Cross-Curricular Interventions. Field application of principles of reading in the content areas, organization and implementation of cross-curricular content areas across grade levels. Includes management of special education/inclusionary classrooms; part of a ten-week intensive field experience entitled STEP (Special Teacher Education Program). Prereq.: SPED 5828, 5834, or 5868. 4 s.h.

4857. Applied Technology in the Education of Children and Youth with Disabilities. Explores various concepts related to the use of applied technology for children and youth with disabilities. Includes assistive technology and alternative modes of communication as well as the use of appropriate software. Prereq.: Admission to upper-division COE status. 4 s.h.

4869. Student Teaching Seminar for Special Education. Applied behavior management and classroom environment, reflective teaching techniques. Daily lessons, the student teacher’s interactions with children and youth, teachers and administrators. Concurrent with student teaching. Grading is CR/NC. Prereq.: Concurrent with SPED 4839 or 4849. 2 s.h.

5810. Introduction to Sign Language. Deaf Culture, ASL, and English Sign Language differences will be discussed. Students will acquire basic proficiency in sign language. Prereq.: Special approval. 3 s.h.

5828. Education of Seriously Emotionally Disturbed Children and Youth. Instruction, curriculum and program development for youth in serious conflict. Advanced behavior change interventions. Practicum consisting of work in the field with emotionally disturbed youth required. Prereq.: Upper-division status in COE. 4 s.h.

5833. Characteristics and Needs of Exceptional Children and Youth with Moderate/Intensive Disabilities. Identification and intervention in critical areas of development for individuals with moderate/intensive disabilities including autism. Developing objectives, planning and implementing adapted curriculum in consultation with interdisciplinary specialists. Prereq.: Upper-division status in COE, SPED 3715. 3 s.h.

5834. Educational Strategies and Methods for Children and Youth with Moderate/Intensive Disabilities. Curriculum planning, teaching methods, habilitation and rehabilitation for persons with multiple and/or severe developmental disabilities. Practicum included. Prereq.: Upper-division status in COE, SPED 5833. 4 s.h.

5835. Classroom Management for Exceptional Children and Youth. Management of the exceptional person’s behavior; adaptations of the classroom environment to facilitate learning and personal social adjustment. Communicating effective management programs to parents. Prereq.: Upper-division status in COE. 4 s.h.

5851. Transition Planning, Social Skill Development and Health-Related Issues. Emphasis on lifelong career orientation and the development and implementation of a K-12 prevocational/vocational curriculum. Effective teaching of interpersonal communication and social skills. Classroom climate, self-esteem, health-related issues. Integration of practical experiences in the classroom, home, and community. Prereq.: Upper-division status in COE. 3 s.h.

5852. Program Development and Instructional Strategies for Learners with Moderate to Intensive Exceptional Learning Needs. This course is designed to expand technical terminology and applied practices for candidates working towards licensure for students with moderate to intensive exceptional learning needs. Candidates will create individualized objectives, apply evidence-based practices, and report progress. Successful completion of a 30 hour field experience is required. Prereq.: Admission to BCOE Upper Division, SPED 5834. 3 s.h.

5853. Diagnosis and Intervention in Mathematics for Special Education. Principles, practices, materials and aids for teaching mathematics in special education. Diagnostic and evaluation procedures; individualized instructional techniques; observation, tutoring, and participation. Field experience required. Prereq.: Upper-division status in COE. 3 s.h.
5858. Intervention Concepts and Strategies in Early Childhood Special Education. Review and analysis of the methods by which young children construct knowledge about their physical, social and intellectual worlds. Study of patterns of normal and atypical development from birth through age eight, as well as the development of appropriate models for effective intervention. Prereq.: PSYC 3755. 2 s.h.

5864. Service Coordination, Collaboration, and Consultation for Students with Special Needs. Enables teachers of exceptional individuals to gain cooperation and involvement of professionals, parents, and children. Communication skills and sensitivity to individual and cultural differences. Prereq.: Upper-division status in COE. 3 s.h.

5865. Workshop in Special Education. Intensive study and related activities in one or more of the following special education curriculum areas: trainable mentally retarded, educable mentally retarded, learning disability/behavior disorder, multi-handicapped. May be repeated if content is different. Prereq.: Admission to upper-division COE status. 1-4 s.h.

5866. Assessment and Referral of Exceptional Children and Youth for the Intervention Specialist. Development of skills in referral and assessment techniques in the areas of mild/moderate and moderate/intensive disabilities. Informal and formal methods including observation, authentic assessments, standardized measures, interviewing, referral, initial and subsequent evaluation, annual review concerns. Prereq.: Upper-division status in COE. 3 s.h.

5867. Intervention and Remediation of Receptive/Expressive Language Dysfunction. Theory and practice of intervention and remediation of basic cognitive processes especially in the areas of receptive and expressive language and cognitive skills for the intervention specialist. Prereq.: Upper-division status in COE. 3 s.h.

5868. Mild/Moderate Disabilities Practicum. Diagnostic procedures used to develop a comprehensive assessment of a child’s current functioning. Individualized education program/case study developed and partially implemented. Prereq.: Upper-division status in COE; SPED 5866 and 5867. 4 s.h.

5870. Independent Study in Special Education. Individual work under special education staff guidance; curriculum development or special education areas; individual problems in community agencies or school. Prereq.: Admission to upper-division COE status. 1-4 s.h.

5871. Characteristics and Needs of Gifted Children. Introduction to gifted education. Overview of the theoretical and research base for gifted education, including appropriate classroom environments, teacher qualifications, and support services to meet the diverse social, emotional, and intellectual needs of gifted children. Current program standards. Prereq.: Admission to COE upper-division status. 3 s.h.

5872. Assessment and Referral for Children and Youth with Exceptionalities for the Intervention Specialist. Development of skills in referral and assessment techniques for the special educator in the areas of moderate/intensive disabilities. Emphasis will be given to informal and formal methods such as observation, authentic assessment, alternate assessment, rubrics, inventories, interviewing, task analysis, functional behavioral analysis, curriculum based measurement, DIBELS/SWIS, and formal standardized measures. Prereq.: Admission to BCOE Upper Division Status. 3 s.h.

5873. Communication and Literacy Skills for Learners with Significant Disabilities. This course focuses on enhancing functional communication and literacy skills of students with severe disabilities. Assessment and strategies to increase communication form, function and literacy are covered. The course addresses aided and non-aided augmentative systems and alternative communication systems with an emphasis on using a multi-modality approach. Prereq.: Admission to BCOE Upper Division Status. 3 s.h.

5878. Teaching Gifted and Talented Students. Theory and organization of curriculum with design and integration of content subjects into varying models. Wide range of strategies and identification of resources and materials as well as investigations in educational technology and appropriate applications for gifted children. Prereq.: Upper division status in COE; SPED 5871 and permission of instructor. 4 s.h.

STATISTICS—STAT

Department of Mathematics and Statistics

Lower-Division Courses

260l. Introductory Statistics. Designed for students from different disciplines who desire an introduction to statistical reasoning. Topics include collecting and summarizing data, concepts of randomness and sampling, statistical inference and reasoning, correlation and regression. Prereq.: MATH 1507 or level 40 on the Math Placement Test. 3 s.h.

Upper-Division Courses

3717. Statistical Methods. Probability and statistics designed for students majoring in the natural sciences. Topics include descriptive statistics, probability, estimation, testing hypotheses, analysis of variance, regression and nonparametric statistics. Use of personal computers with computer software will be required. Credit will not be given for both STAT 3717 and 3743. Prereq.: Math 1549 or 1571 or 1571 or 1585H or equivalent. 4 s.h.

3743. Probability and Statistics. A calculus-based probability and statistics course. Topics include descriptive statistics, probability models and related concepts and applications, statistical estimation, and
hypothesis testing. Prereq.: MATH 1572 or 1585H. Credit will not be given for both STAT 3717 and 3743. 3 s.h.

3781H. Biostatistics. Descriptive statistics, testing hypotheses, analysis of count data, correlation, regression, nonparametric statistics, and analysis of variance with applications relating to biological and health sciences. Prereq.: MATH 1580H and 1581H, or equivalent. 3 s.h.

4804. Actuarial Models 1. The statistical foundation of actuarial contingency models including the study of survival and severity distributions. Other topics selected from life insurance and annuities, benefit premiums, reserves, and applications. Prereq.: STAT 3743 or consent of department chairperson. 3 s.h.

4805. Actuarial Models 2. The statistical foundation of actuarial contingency models including the analysis of benefit reserves. Other topics selected from multiple life functions and decrement models, insurance models, and applications. Prereq.: STAT 3743 or consent of department chairperson. 3 s.h.

4820. Modern Decision Making. Introduction to the mathematics and statistics of decision making with application to contemporary problems. Topics include: decision trees, influence diagrams, the analytic hierarchy process, risk analysis, and applications. Prereq.: STAT 3717 or 3743 or equivalent. 3 s.h.

4845. Stochastic Process Models. Introduction to the mathematical foundations of the theory and application of stochastic processes. Topics include Markov processes, Poisson processes, queueing theory, and simulation. Other topics selected from limit theorems, Brownian Motion, and stationary processes. Prereq.: STAT/MATH 5843. 3 s.h.

4857. Statistical Consulting. The objective of this course is to cultivate the skills necessary to competently engage in statistical consulting. Topics include problem solving, study design, power and sample size, data management, selection and application of statistical methods, ethical practice, and effective visual and literal communication of results. Prereq.: STAT 5817 or equivalent. 3 s.h.

4888. Actuarial Models in Financial Economics. An introduction to actuarial models in financial economics. Topics include the Black-Scholes framework for pricing derivatives, the binomial pricing model, and interest rate models. Prereq.: STAT 5843. 3 s.h.

4893. Statistical Internship. A program of work and study in the public or private sector centered upon the development of a significant statistics project, under the direction of University faculty member(s) and designated member(s) of the participating agency. May be repeated twice. Prereq.: STAT 5817. 2 s.h.

4896. Statistical Project. Individualized study of a topic in statistics culminating in a written report and an oral presentation. May be repeated once. Prereq.: STAT 5817 and permission of chairperson. 2 s.h.

5800. Mathematical Foundations of Actuarial Science. A survey of probability theory and an introduction to risk management. Emphasis of the course will be on problem solving with applications in actuarial science. Prereq.: MATH/STAT 5843 or consent of instructor. 3 s.h.

5802. Theory of Interest. Mathematical theory and techniques in analysis of interest. Topics include measurement of interest, force of interest, annuities, amortization, pricing of investment products, and applications to actuarial sciences. Prereq.: MATH 1572 and any 3700 level MATH, STAT, ECON, or FIN course. 3 s.h.

5806. Seminar in Actuarial Science. Approaches to and practice with problem solving in actuarial science. Topics may include financial mathematics, financial economics, or actuarial modeling. May be repeated once. Not applicable to the mathematics major. Prereq.: MATH/STAT 5843 or consent of the instructor. 3 s.h.

5814. Statistical Data Mining. A systematic introduction to data mining with emphasis on various data mining problems and their solutions. Topics include data mining processes and issues, exploratory data analysis, supervised and unsupervised learning, classification, and prediction methods. Prereq.: STAT 3717 or 3743, or consent of department chairperson. 2-3 s.h.

5817. Applied Statistics. Application of regression, survey sampling, analysis of variance, design and analysis of experiments, and related topics. Prereq.: STAT 3717 or 3743 or equivalent. 3 s.h.

5840. Statistical Computing. Computational methods used in statistics. Topics include generation and testing of random numbers, computer intensive methods, and simulation studies. Prereq.: STAT 3717 or 3743. 3 s.h.

5843. Theory of Probability. The mathematical foundation of probability theory including the study of discrete and continuous distributions. Other topics selected from limit theorems, generating functions, stochastic processes, and applications. Listed also as MATH 5843. Credit for STAT 5843 will not be given to students with MATH 5843. Prereq.: STAT 3743 and MATH 2673 or consent of department chairperson. 3 s.h.

5844. Theory of Statistics. The mathematical theory of statistical inferences including likelihood principle, sufficient statistics, theory of statistical estimation, hypothesis testing and related topics. Credit will not be given for MATH 5844 and STAT 5844. Prereq.: MATH 5843. 3 s.h.

5846. Categorical Data Analysis. Discrete distributions, contingency table analysis, odds ratios, relative risk, logistic regression, hierarchical models. Prereq.: STAT 5817 or 5844, or MATH 5844. 3 s.h.

5847. Nonparametric Statistics. Nonparametric statistical inference including tests of hypotheses for one sample, two or more related independent samples, dependence, goodness-of-fit, trend, and related topics. Prereq.: STAT 3717 or 3743 or equivalent. 3 s.h.
5848. Applied Regression and Time Series. Statistical methods for regression and time series analysis. Topics include linear regression with model fitting and diagnostics, data analysis, and forecasting with time series models. Prereq.: STAT 3717 or STAT 3743. 3 s.h.

5849. Multivariate Statistical Analysis. The statistical analysis of multivariate observations. Topics include multivariate probability distribution theory, regression, analysis of variance, and techniques in data analysis. Prereq.: MATH 3720 and MATH 5844 or STAT 5844 or equivalent. 3 s.h.

5895. Special Topics in Statistics. The study of a standard statistical topic in depth or the development of a special area of statistics. May be repeated twice. Prereq.: STAT 3717 or STAT 3743. 2-3 s.h.

TEACHER EDUCATION —
TCED
Department of Teacher Education

1509. Orientation to On-Line Learning. This course provides an introduction and orientation to on-line learning, while acquainting students with the platform of BB9, distance education technologies, YSU and BCOE. This course will be taken as a co-requisite with DE ECE 2629. Credit hrs. 1 s.h. Credit/No Credit

4830. Senior Seminar. In place of student teaching, requiring career/field placement and reflection of self in field. Placement(s) are negotiated and secured by candidates. CR/NC. Prereq.: Education as a major, at least junior status. 3 s.h.

TEACHER EDUCATION —
TEM C
Department of Teacher Education

3702. Teaching & Learning in Middle Schools. Physical, social, emotional, intellectual, and moral development within social and cultural contexts to uncover implications for developmentally and culturally responsive curriculum and instruction. Prereq.: BCOE upper-division status. 3 s.h.

3703. Thematic Instruction and Assessment Methods in Social Studies. Investigation and application of principles from history, geography, civics, economics, and related fields to create appropriate learning experiences for early adolescents. Exploration of middle grade level group and individual assessment, thematic, problem-solving instructional approaches, and reflective evaluation of learning in a field-based setting. Prereq.: TEMC 3702, BCOE upper-division status, and approval of chairperson. Coreq.: TEMC 4801 and one of TEMC 3704, 3705, or 3706. 4 s.h.

3704. Teaching Mathematics in the Middle School. Prereq.: Admission to upper-division COE status. 3 s.h. with a mathematics concentration focus on identifying and modeling strategies used for problem solving, communicating, and reasoning in mathematics. Learning to use mathematical connections to stimulate diverse students’ development of math concepts and skills and creating learning environments in which students feel free to take risks. Field experience combining mathematics pedagogy/methodology in a middle grade classroom. Prereq.: TEMC 3702, BCOE upper-division status and approval of chairperson. Coreq.: TEMC 4801 and one of TEMC 3703, 3705, or 3706. 4 s.h.

3705. The Teaching of Science in the Middle School. Using NSTA/NCATE and Ohio Model guidelines as a framework, students focus on establishing and maintaining learning environments that provide diverse students with a holistic, interdisciplinary understanding of science. Topics include goals formation, planning instruction, instructional strategies, resource selection, assessment procedures. Promotion of the use of science processes and problem-solving skills for life-long learning, the integration of science/technology/society. Field experience combining science pedagogy/methodology in a middle grades classroom. Prereq.: TEMC 3702, 12 s.h. science, BCOE upper-division status, and approval of chairperson. Coreq.: TEMC 4801 and one of TEMC 3703, 3704, or 3706. 4 s.h.

3706. Teaching Language Arts in the Middle School. Integrated strategies for enabling diverse students to participate successfully in the activities of a literate society through listening, viewing, and communicating orally and in writing. Emphasis on integration of the language arts, higher order thinking skills, flexibility in applying the language arts in meaningful contexts across the curriculum. Prereq.: TEMC 3702, BCOE upper-division status, and approval of chairperson. Coreq.: TEMC 4801 and one of TEMC 3703, 3704, or 3705. 4 s.h.


4801. The Middle School Learning Community. History, philosophy, and concepts of middle level education, including interdisciplinary instruction, collaborative teams, cooperative learning, classroom management, teacher-based advisory programs, flexible scheduling, cross-age grouping, departmentalized/core curriculum, adapting curriculum to the needs of culturally diverse populations, and working with families, resource persons, and community groups. Concurrent with TEMC 4803. Prereq.: TEMC 3702, BCOE upper-division status, and approval of chairperson. Coreq.: Two of TEMC 3703, 3704, 3705, or 3706. 4 s.h.
TEACHER EDUCATION READING — TERG
Department of Teacher Education

2601. Reading Application in Content Areas, Early Years. Study of the Ohio Academic Content Area Standards, comprehension skills, word attack skills, pre-reading strategies, and writing development as they relate to early years reading in the content area. The role of early childhood language development and literature in the early childhood content-area classroom. 3 s.h.

3701. Phonics in Reading Instruction. PreK-9. Phonics subject matter, instructional strategies and applications, and planning for intensive, phonic-based word analysis in the early and middle stages of literacy acquisition. Prereq.: Admission to BCOE upper-division status. 3 s.h.

3702. Developmental Reading Instruction and Literature Strategies PreK-9. Theories and related models of reading, various approaches to teaching reading, and creative integrative literature strategies to meet the needs of diverse learners. Prereq.: Admission to COE upper-division status. 3 s.h.

3703. Assessment and Instruction in Reading Internship, PreK-9. Application of selected formal and informal assessment tools in the context of reading instruction to identify individual strengths and needs. Strategies for continuing diverse students' growth in reading and the related language arts including home/school connections, integration of reading and writing, self-monitoring strategies, and ongoing assessment. Prereq.: TERG 3701, 3702. 3 s.h.

3704. Assessment and Instruction in Reading Internship. Required of students seeking licensure in Reading and Language Arts. Practicum experience involving assessment of reading needs of the middle school student, planning and carrying out a program of remedial assistance, reporting results. Concurrent with TERG 3703. Prereq.: TERG 3701 and 3702. 1 s.h.

3705. Advanced Literature Strategies. Advanced reading and language arts, holistic teaching strategies with emphasis on non-textbook approaches. Field experience. Prereq.: TERG 3703. 3 s.h.

3706. Reading Practicum. Supervised experiences in reading assessment and instruction in the elementary, middle, or secondary school setting. Six hours per week in a designated school, two hour seminar. Prereq.: TERG 3705. 3 s.h.

3710. Reading Application in Content Areas, Middle Years. Study of the Ohio Academic Content Area Standards, comprehension skills, word attack skills, pre-reading strategies, and writing development as they relate to middle years, multi-age and special education reading in the content area. The role of literature in the content-area classroom. Prereq.: Admission to BCOE upper-division status. 3 s.h.

3711. Reading Application in Content Areas, Secondary Years. Study of the Ohio Academic Content Area Standards, comprehension skills, word attack skills, pre-reading strategies, and writing development as they relate to secondary and career/technical reading in the content area. The role of literature in the content-area classroom. Prereq.: Admission to BCOE upper-division status. 3 s.h.

TELECOMMUNICATION STUDIES — TCOM
Department of Communication

Lower-Division Courses

1500. Orientation to Telecommunication Studies. Survey of University and Department programs, policies, practices and facilities with particular emphasis on needs of telecommunication studies majors. Creation of telecommunication studies portfolio materials and other aspects of the Telecommunication Studies program. To be taken prior to TCOM 2682 and 2683. 1 s.h.

1510. Media Production Staff 1. Assignment to one or more production crew, such as YSU Sports TV, Homework Express, or Light the Wick. Student responsibilities will be determined in light of the student's skills and interests, as well as the production need. May be repeated. 1 s.h.

1555L. Radio Workshop. Application of the principles of radio production and broadcasting skills in student media. 3 s.h.

1570. Elements of Media and Production. A study of electronic Media as business and social forces, as well as an overview of studio production. 3 s.h.

1580. Introduction to Telecommunication Studies. A survey course designed to familiarize students with the principles and practices involved in radio and television broadcasting, cable, and other electronic communication systems. 3 s.h.
1581. **Telecommunication Technologies.** Operational principles of audio, data, and video telecommunication technologies. One hour lecture and two hours lab per week. 2 s.h.

1595. **Survey of American Mass Communications.** A rhetorical examination of the development, operation, and function of radio, television, film, and print media in America. Television documentaries and films illustrate the implication of mass communication. Students examine how a person may be individually affected by mass communication. 3 s.h.

2610. **Media Production Staff 2.** Assignment to one or more production crew, such as YSU Sports TV, Homework Express, or Light the Wick. Student responsibilities will be determined in light of the student's skills, interests, and production experience, as well as the production need. May be repeated. Prereq.: TCOM 1510. 1 s.h.

2682. **Scriptwriting for Electronic Media.** Fundamentals of telecommunication media writing with emphasis on the theory, analysis, and practices in the preparation of continuity, news, and documentaries. Prereq.: TCOM 1580, 1581, and ENGL 1550 with a grade of C or better in all. 3 s.h.

2683. **Media Operations and Performance.** An introduction to practices and procedures basic to media production facilities. The equivalent of three hours lecture and two hours lab per week. Prereq.: TCOM 1580 and ENGL 1550 with a grade of C or better in both. 3 s.h.

2684. **Broadcast News Practices.** Organization, preparation, and presentation of radio and television news programs. Includes study of journalistic requirements of broadcast media and broadcast newsroom operation. The equivalent of three hours lecture and two hours lab per week. Prereq.: TCOM 2682 and 2683 with a grade of C or better in both. 3 s.h.

2685. **Studio Operations 1.** A supervised application of operations and performance skills to audio and/or video programming. Repeatable to a maximum of 2 s.h. Prereq.: TCOM 2682 and 2683 with a grade of C or better in both. 1 s.h.

**Upper-Division Courses**

3710. **Media Production Staff 3.** Assignment to one or more production crew, such as YSU Sports TV, Homework Express, or Light the Wick. Student responsibilities will be determined in light of the student's skills, interests, and production leadership experience, as well as the production need. May be repeated. Prereq.: TCOM 2610. 1 s.h.

3780. **Principles and Practices of Media Announcing.** A study of the announcer's role in electronic mass media. Examination of theories, techniques, and major styles of media announcing. Three hours lecture, two or more hours of individualized lab per week. Prereq.: TCOM 2682 and 2683 with a grade of C or better in both; major in Telecommunication Studies. 3 s.h.

3781. **Audio Production.** Study of the concepts of audio production, including student production of various types of programs. The equivalent of three hours lecture and two hours lab per week. Prereq.: TCOM 2682 and 2683 with a grade of C or better in both; major in Telecommunication Studies. 3 s.h.

3782. **Video Production 1.** Study of studio production elements such as equipment, lighting, scene design, graphics, and special effects. The equivalent of three hours lecture and two hours lab per week. Prereq.: TCOM 2682 and 2683 with a grade of C or better in both; major in Telecommunication Studies. 3 s.h.

3783. **Telecommunications Regulation.** Responsibilities of electronic media communicators as prescribed by law and administrative agency policies, and court decisions. Analysis of the regulatory environment of broadcasters, common carriers, and cable. Prereq.: TCOM 2682 and 2683 with a grade of C or better in both; major or minor in Telecommunication Studies. 3 s.h.

3784. **Telecommunication Programming.** A study of contemporary broadcast and cable programming, including development, scheduling, and competitive strategies. Prereq.: TCOM 2682 and 2683 with a grade of C or better in both; major or minor in Telecommunication Studies. 3 s.h.

3785. **Studio Operations 2.** Individual projects or assignments in planning, coordinating and assessing production and programming related to studio procedures. Prereq.: TCOM 2682 and 2683 with a grade of C or better in both; acceptance of project Proposal Form by coordinating faculty member and department chairperson. 1 s.h.

3786. **Video Production 2.** Study and application of television production elements and editing. Production values of composition, transition, and sequence explored from a communication perspective. Students produce field-based productions. Three hours lecture, two hours lab. Prereq.: TCOM 3782. 3 s.h.

3787. **Practicum in Telecommunication.** Individual study and practical application of communication principles to various telecommunication problems. Repeatable to a maximum of 6 s.h. Prereq.: TCOM 2682 and 2683 with a grade of C or better in both. 1-3 s.h.

3788. **Professional Residency.** Professional telecommunication-related experience under direction of University faculty members and employees of firms participating in the residency program. The student is responsible for securing the professional residency with assistance of Telecommunication Studies program faculty. Prereq.: TCOM major, junior standing. 2 s.h.

3789. **Electronic Media Interviewing.** A study and application of interviewing and reporting techniques, emphasizing the local news interview and public affairs reporting. The equivalent of three hours lecture
and two hours lab per week. Prereq.: TCOM 2682 and 2683 with a grade of C or better in both. 3 s.h.

3790. Broadcast News Lab. Study and lab in news programs for TV, radio and web. Requirements of broadcast media and newsroom operation. Students create the weekly webcast, Light the Wick, or similar content. Two hours lecture and two hours lab per week. Prereq.: JOUR 2622 or TCOM 2682 or TCOM 2683. 3 s.h.

3791. Electronic Media Sales and Promotion. An examination of the principles and practices of selling electronic media. Analysis of rating-based sales and promotion strategies, as well as relations with agencies and station representatives. The equivalent of three hours lecture and two hours lab per week. Prereq.: TCOM 2682 and 2683 with a grade of C or better in both. 3 s.h.

4850. Advanced Audio/Video Production and Editing. Advanced techniques and procedures in audio/video production. Techniques include digital editing and video post-production procedures. Recognize current video and audio technology and how to troubleshoot problems associated with such technology. Prereq.: TCOM 3781 or 3782 with a grade of C or better. 3 s.h.

4881. Telecommunication Management. A study of the relationships of communication management with government, networks, ownership and other groups. Organization and procedures of typical units; common planning models. Prereq.: TCOM 2682 and 2683 with a grade of C or better in both; major or minor in Telecommunication Studies. 3 s.h.

4882. Studio Operations Management 3. Advanced individual projects or assignments in planning, coordinating and assessing production and programming related to studio procedures. Repeatable for a maximum of 4 s.h.. Prereq.: TCOM 3782; acceptance of Project Proposal Form by coordinating faculty member and department chairperson. 2 s.h.

4884. Video Production Direction. A study and application of the communication roles and skills associated with video directing. Emphasis on audience analysis. The equivalent of three hours lecture and two hours lab per week. Prereq.: TCOM 3782. 3 s.h.

4885. Developments in Telecommunication Media. Study and application of uses of telecommunication media apart from commercial broadcasting. Study of new technologies and their potential. Prereq.: TCOM 2682 and 2683 with a grade of C or better in both. 3 s.h.

4886. Audience and Market Measure. Methods of collecting, analyzing, and using information about media markets. Includes quantitative and non-quantitative techniques. Prereq.: TCOM 2682 and 2683 with a grade of C or better in both. 3 s.h.

4887. Theories and Criticisms of Telecommunication. Study of contemporary theories and research in telecommunication. Prereq.: TCOM 2682 and 2683 with a grade of C or better in both; major or minor in Telecommunication Studies. 3 s.h.

4888. Internship in Telecommunication. An application of telecommunication theory and practices within organizations primarily concerned with telecommunication. Students are selected on the basis of special qualifications, including GPA, courses taken, and competitive interview. Enrollment is contingent on the availability of internship positions. Twenty hours a week. Prereq.: Junior standing in telecommunications and permission of internship coordinator. 6 s.h.

4890. Producing Broadcast News. Supervision of news programs for TV, radio and web. Story development, shooting/editing, script management, graphics creation, studio operations, and on-camera performance. Creation and marketing of the webcast, Light the Wick, or equivalent. Two hours lecture and two hours lab per week. Prereq: TCOM 3790. 3 s.h.

4897. Seminar in Telecommunication. Designed to investigate contemporary aspects of telecommunications. May be repeated for credit if topic is different. Prereq.: TCOM 2682 and 2683 with a grade of C or better in both; major in Telecommunication Studies. 3 s.h.

4899. Capstone. Students demonstrate mastery of knowledge in a variety of degree assessment areas. Students prepare and present a portfolio of their work. The course assists students in assembling and presenting the portfolio to department faculty and other interested parties. To be taken after achieving senior status as a Telecommunications Studies major. Prereq.: senior status in Telecommunication Studies. 2 s.h.

THEATER—THTR
Department of Theater and Dance

Lower-Division Courses

1500. Auditions and Portfolios. Survey of the department programs, policies, practices, and facilities, with particular emphasis on the needs of theater majors. Various aspects of theater study which may increase chances for success in the field. Creation of production records, portfolios, and vitae pertinent to the theater artist. To be taken within the first 30 hours of coursework. 1 s.h.

1512. Survey of Musical Theater. The history and development of the musical theater genre, including an in-depth study of significant works and individual practitioners. 3 s.h.

1559. Play Production. An introduction to the processes of analyzing, directing, staging, and producing plays; demonstration and practice. 3 s.h.

1560. Understanding Theater. The theory, history, cultural role, and physical characteristics of the theater as an institution in human society. 3 s.h.
1561. Stagecraft. The technical elements of play production, with emphasis on stage mechanics, set construction, and scene painting. 3 s.h.

1563. Costume Construction and Craft. Introduction to stage costume through the study and application of costume construction techniques and costume crafts, the use of appropriate equipment, and costume maintenance through various projects involving the special techniques used for stage costume. 3 s.h.

1590. History of Motion Pictures. The history of the motion picture from its beginnings to the present, with emphasis on the milestones of film as a performing art. Viewing of significant films from various periods and countries. 3 s.h.

2600. Theater Participation. Expected involvement in the main stage productions of the department. Students will audition for all main stage productions, or accept a significant assignment in stage management, costume, scenery, lighting or other technical element of production. Must be taken once each semester during the time that a student is in residence as a theater major, for a minimum of 3, or its equivalent. Prereq.: a declared major in theater, and faculty permission. 1 s.h.

2607. Puppetry. An overview of the history of puppets in world drama, combined with practical exercises in making inanimate objects come to "life" for the purpose of creating works of theater. Includes puppet construction and performance. Prereq.: Sophomore standing. 3 s.h.

2661. Stage Management. Basic principles and techniques of stage management including job functions and responsibilities, production organization, problem solving and specialized paperwork. Stage management of a production and one hour lecture per week. Stage management of a production is a requirement of the class. Prereq.: THTR 1559. Grade: Traditional/P. 1 s.h.

2662. Practicum in Theater and Dance. Practical application of theater or dance skills through participation in special programming of the department, or specified studio/lab activities. Expected participation should amount to a minimum of thirty hours per semester. May be repeated for a maximum of 5 s.h. Prereq.: THTR 1561 or 1559 or special permission. CROSS LISTED WITH DNCE 2662. 1 s.h.

2664. Musical Theater Lab. Applied skills course dealing with styles and techniques of performing for the musical theater. Covers auditioning, rehearsal process, and expressive delivery and gesture through song. Culminates in public recital. Prereq. or concurrent with THTR 2668 and VOIC 1501T or other evidence of vocal training; and sophomore standing. 1 s.h.

2667. Acting 2: Voice for the Actor. Technical elements of voice for the stage. Physical exercises designed to improve stage speech, vocal projection, articulation and clarity. Application of principles and skills to a variety of texts from a performer’s perspective. Prereq.: THTR 2668. 3 s.h.

2668. Acting 1: Fundamentals. The fundamental theories and techniques of acting. Major emphasis on theater acting, but consideration is given to radio and television acting. Prereq.: THTR 1559 or permission of instructor. 3 s.h.

2670. Oral Interpretation. The development of skills necessary for the oral interpretation of various types of literature: prose, poetry, and drama. The thorough analysis of each work and communication of the work to an audience. 3 s.h.

2690. The Art of Motion Pictures. Analysis of the structure of the motion picture, the development of the script, the function of editing, the approach to acting in film production, and the problems faced by a director in film production. Criteria of artistic film making. Examples from motion pictures are screened and discussed. Prereq.: Sophomore standing. 3 s.h.

Upper-Division Courses

3700. Theater Participation 2. Advanced involvement in the main stage productions of the department. Students will audition for all main stage productions, or accept a significant assignment in stage management, costume, scenery, lighting or other technical element of production. Must be taken each semester during the time that a student is in junior/senior residence as a theater major, for a minimum of 4 or its equivalent. Prereq.: 3 s.h. of THTR 2600 or permission of the instructor. 1 s.h.

3761. Stage Makeup. Design and application of makeup for the stage including techniques for character and age makeup, making and applying facial hair, and other specialized makeup procedures. Prereq.: THTR 1559 or permission of the instructor. 3 s.h.

3762. Directing 1. An intensive study of the process of directing plays. Whenever possible, students direct the equivalent of a one-act play for public presentation. Lab hours by arrangement. Prereq.: THTR 1559 and THTR 3768 or concurrently or permission of instructor. 3 s.h.

3763. Scene Design. The history of design in terms of stage scenery; an investigation of current trends, techniques, and media; practical execution of models and sketches by the student. Prereq.: THTR 1559 and 1561 or consent of the instructor. 3 s.h.

3764. History of Stage Costume. A survey of stage costumes based on western styles from the ancient Egyptians to the present with emphasis on periods in which the theater flourished. Prereq.: THTR 1559 or permission of instructor. 3 s.h.

3765. Lighting Design. A study of historical development, basic electrical theory, switch boards and lighting instruments; color theory, principles and practices in stage lighting. Lab hours to be arranged. Prereq.: THTR 1559 and 1561 or consent of instructor. 3 s.h.
3766. Stage Combat. Applied skills class specializing in armed and unarmed combat for the stage. Safety factors in stage fighting, including safe use of rapier and dagger. Performance in public required. Prereq.: THTR 2668 or MUEN 0012 or HPES 1514 or permission of instructor. 3 s.h.

3768. Script Analysis. Critical approaches to dramatic literature. Analysis of dramatic works for production values. Prereq.: THTR 1559 and 2668. 3 s.h.

3769. Costume Design. Costume design for the stage through a study of script analysis, design concepts and principles, and costume rendering techniques. Prereq.: THTR 1559 or permission of instructor. 3 s.h.

3791. Rehearsal and Performance. Faculty-supervised study and practical demonstration of a theater or dance performance. Credit given for significant acting or dancing roles, assistant directing, or stage management assignments in Department of Theater and Dance programming. For students with appropriate experience. May be taken twice. Prereq.: THTR 2668 or DNCE 1542 and faculty approval. 3 s.h.

3792. Projects in Production. Faculty-supervised study resulting in the design and/or execution of scenery, lighting, or costumes for public performance. For students with appropriate experience. May be taken twice. Prereq.: THTR 3763 or 3765 or 3769 and theater faculty committee approval. 3 s.h.

4860. Theater History after 1700. History of the physical theater and representative dramatic texts from 1700 to the modern era. Prereq.: 9 s.h. of THTR coursework, 3 of which must be upper division. 3 s.h.

4863. Acting 3: Styles. A study of specific theories, techniques, and approaches to creating the various styles of acting. Emphasis on scene study featuring important historical styles of performance. Prereq.: THTR 1559 and 2668. 3 s.h.

4866. Summer Theater Workshop. Participation in the summer theater program involving all aspects of theatrical production. Positions of significant responsibility. Prereq.: Junior standing in Theater, or permission of instructor. 1-3 s.h.

4868. Children’s Theater. A study of the process of theater production by and for elementary school children, including theory, objectives, and methods. Prereq.: THTR 3762 or senior standing in Elementary Education with permission of instructor. 3 s.h.

4869. Creative Dramatics. Basic elements of playmaking, improvisation, story dramatization, pantomime, dialogue, and characterization. Experience with area school children provided when possible. Intended for elementary education majors and drama certification. Prereq.: Junior standing with 9 s.h. of theater courses (including 1559 and 2668) or junior standing in Elementary Education with permission of instructor. 3 s.h.

4870. Acting 4: Acting on Camera. A exploration of the theory and technique of film and video performance, and the special demands they make upon an actor. Prereq.: THTR 2668 and 2667 and junior standing, or consent of instructor. 3 s.h.

4891. Theater History Before 1700. History of the physical theater and representative dramatic texts from the Classical period through the Renaissance. Prereq.: 9 s.h. of THTR coursework, 3 of which must be upper division. 3 s.h.

4893. Independent Study in Theater. Independent work in theater production under faculty/staff guidance. Intended as a continuation of individualized creative work beyond THTR 3791 or THTR 3792. Project dependent upon approval of the evaluating faculty member and the student. May be repeated with different topics for a total of 9 s.h. Prereq.: THTR 3791 or 3792. 1-3 s.h.

4895. Arts in Education Internship: Theater. A practical application of drama/theater in education theories and skills in a field-based lab experience in the schools. Students submit project proposals geared either to the elementary or secondary level. Proposals must be approved by a theater faculty committee. Repeatable for a total of 6 s.h. Prereq.: THTR 1561, 1559 and 3762; or THTR 1559, 3761 and 4868. 1-3 s.h.

4898. Senior Project. Capstone experience expected of all seniors in the degree programs of the department. Significant demonstration of practical or scholarly ability in one of the sub-disciplines comprising the disciplines of theater or dance, and showing evidence of solid writing, speaking, and critical thinking skills. Prereq.: Senior standing with the expectation of graduating by the end of the following semester. Grading is A,B,C,NC/PR. 3 s.h.

4899. Topics in Theater. In-depth study of selected aspects in theater scholarship, theory or practice. May be repeated if the topic changes. Prereq.: Junior standing or permission of instructor. 3 s.h.

5864. Directing 2. A study of specific theories, techniques, and various important styles in play directing. Prereq.: THTR 1559 and 3762. 3 s.h.

WOMEN’S STUDIES—WMST
Interdisciplinary

2601. Introduction to Women’s Studies. Introduces key concepts, theoretical frameworks, and interdisciplinary research drawn from current scholarship about women. Concentrates on major issues relevant to the status and roles of contemporary women, including examination of effects of sexism, racism, ethnicity, and class distinction. 3 s.h.

3750. Special Topics in Women’s Studies. May be repeated for a maximum of 6 s.h. with different topics. Prereq.: WMST 2601 3 s.h.

4850. Senior Research Project. Research and writing of a paper on a topic in women’s studies, under the supervision of full-time faculty. Prereq.: Senior standing, completion of 15 s.h. in Women’s Studies, and permission of program director. Grading is Traditional/PR. 1-3 s.h.