



UT Course Descriptions 2009-2010

ACCT	3000	An elective dealing with financial statement information in decision making. Course requirements include both written and oral presentation of an in-depth analysis of the financial reports of a corporation.
ACCT	3010	Introduction to concepts and applications of cost accounting for manufacturing and service organizations. Covers cost management, activity costs, job costing, overhead analysis and uses of cost information in decision-making.
ACCT	3030	An introduction to federal income taxes for individuals. This course covers the concepts of income, deductions, taxes and credits. Students gain practical experience in preparing form 1040 for individuals.
ACCT	3100	This class focuses on the general purpose financial statements and the accounting information system that develops information included in those financial statements.
ACCT	3110	This course covers accounting topics applicable to asset valuation, income measurement and financial statement disclosure. It concentrates on accounting for corporations and emphasizes the accounting cycle and the asset side of the balance sheet.
ACCT	3210	This class focuses on the concepts and principles applicable to the taxation of individuals.
ACCT	3310	This course provides an introduction to processing and reporting of accounting information. Major emphasis is placed on basic accounting information processing including accounting applications in an advanced information technology environment.
ACCT	4120	This course concentrates on financial accounting for corporations and emphasizes the liability and stockholders' equity sections of the balance sheet, and related income statement issues.
ACCT	4130	This is the third course in the external financial reporting sequence. This course covers topics such as foreign exchange, partnerships, business consolidations and mergers.
ACCT	4310	Internal Reporting focuses on budgeting, product and service costing and the ability to recognize and provide management with relevant information for strategic cost management and performance evaluation.
ACCT	4410	Principles, procedures and ethics of financial reporting for not-for-profit organizations, including state and local government. Includes the use of funds, budgets, appropriations and encumbrances as means of control.
ACCT	4420	Auditing integrates financial and cost accounting, ethics, accounting theory, information systems and control structure concepts into a systematic process of obtaining, evaluating and reporting on economic events and activities.



ACCT	4940	The accounting internship allows superior accounting students to obtain practical training through a rigorous learning experience. This program enables students to secure a broad exposure to business operations and problems.
ACCT	4990	The student will write a research report on an accounting topic of interest to both student and faculty adviser. The topic must not be covered in another undergraduate accounting course.
ACCT	5000	The study of the principles of Financial and Managerial accounting. The financial accounting segment of the course will focus on the preparation, interpretation and analysis of financial statements and the use of the financial information. The managerial accounting segment of the course will focus on an introduction to cost accounting, managerial accounting concepts and the use of accounting information in managerial decision-making.
ACCT	5120	This class concentrates on financial accounting for corporations and emphasizes the liability and owner's equity sections of the balance sheet and related income statement issues.
ACCT	5320	This course focuses on budgeting, product and service costing, and the ability to recognize and provide management with relevant information for strategic cost management and performance evaluation. This class will include a project for additional analysis. Prerequisite: Acct 5100 with a grade of C (2.0) or better.
ACCT	5940	A combination of practical experience at a business concern with discussion to be held at the University with others in the program. An oral and written report is required.
ACCT	6130	This is the third course in the external financial reporting sequence. This course covers topics such as foreign exchange, partnerships, business consolidations and mergers.
ACCT	6150	Analysis of accounting issues crucial to multinational companies. Issues to be addressed include: comparing accounting across countries, effects of harmonization of financial reporting requirements and the translation of foreign currency financial statements.
ACCT	6190	An overview of current topics and issues concerning the profession. The course includes, but is not limited to, problems and opportunities related to the practice of public accounting.
ACCT	6210	Provides the methodology necessary for accountants to perform effective, efficient and ethical accounting and tax research and the means of communicating those results.
ACCT	6220	This course covers the taxation of corporations and their shareholders. Topics include the formation of a corporation, taxation of corporate income and the tax treatment of distributions.
ACCT	6310	Use of accounting information in planning and controlling an organization, including case studies in cost-volume-profit, budgeting, transfer pricing and performance evaluation.



ACCT	6320	Criteria and techniques for designing and using cost systems. Theory and techniques of analyzing organizations and processes in manufacturing and service organizations. Uses case studies to evaluate cost management systems.
ACCT	6330	Additional analysis of processing and reporting accounting information. Major emphasis is placed on accounting information processing including accounting applications in an advanced technology environment.
ACCT	6410	Principles, procedures and ethics of financial reporting for not-for-profit organizations, including state and local government. Includes the use of funds, budgets, appropriations and encumbrances as a means of control.
ACCT	6420	Auditing integrates financial and cost accounting, ethics, accounting theory, information systems and control structure concepts into a systematic process of obtaining, evaluating and reporting on economic events and activities.
ACCT	6430	Analyzes business analysis and valuation techniques with major emphasis placed on how a firm's financial reporting decisions affect fundamental analysis.
ACCT	6960	Independent research report on an accounting topic of interest to both the student and the faculty member. Research related to a topic not covered in the listed graduate accounting courses.
ACTG	1040	The course covers basic financial accounting principles for a business enterprise. Topics include transaction analysis, measurement, summarization, preparation, interpretation and use of financial reports.
ACTG	1050	Management uses of accounting data for analysis, decision making, financial planning and control. Topics include understanding cost behavior, activity-based costing, cost-volume-profit analysis and budgeting.
ACTG	1060	Extensive work on accounting cycle including preparation of financial statements, and development and use of account information in business application areas.
ACTG	1200	Students will become familiar with a variety of accounting software such as QuickBooks, Peachtree, and Microsoft Office Accounting.
ACTG	1220	A course designed to familiarize the student with QuickBooks, popular accounting software.
ACTG	1250	Spreadsheet programs will be used in budgeting, financial management, preparation of financial statements, creation of business documents and other financial applications.
ACTG	2100	In-depth expansion of financial accounting principles and financial statement presentation. Emphasis on balance sheet accounts with particular attention applied to working capital (cash, receivables, inventory, current liabilities, also long-term assets).
ACTG	2150	Continuation of advanced financial accounting topics including valuation of long-term liabilities and investments, stockholders' equity and accounting for income taxes, leases, pensions, accounting changes/errors, statement of cash flow.



ACTG	2300	Practice of cost accounting especially applied to manufacturing business. Includes accounting for materials, labor and overhead under job order and process cost systems and standard costing.
ACTG	2310	Cost accounting has become an essential part of health care management. The spread of managed care has heightened this need. Traditional cost courses focus primarily on manufacturing. This course provides thorough coverage of the essentials of cost accounting from a health care perspective.
ACTG	2350	Emphasis on the use of accounting information internally for decision-making by managers of business entities.
ACTG	2400	Consideration of the basic features of the federal income tax system. Emphasis is placed on the determination of taxable income of individuals and corporations. Also covered will be the preparation of the form 1040 both manually and using a commercial computer tax preparation package.
ACTG	2450	A study of S corporations, C corporations, partnerships and estate and gift tax.
ACTG	2500	A study of auditing standards, concepts and procedures. This course includes examination of the auditor's approach to study and evaluation of the internal control structure as well as substantive testing of the revenue cycle.
ACTG	2510	Topics will cover gathering and presenting financial information that will be accepted by a court of jurisprudence against perpetrators of economic crime.
ACTG	2610	This course is designed for students in the accounting program and employees of non-profit organizations. The course deals with the principles and applications of fund accounting as it relates to government, health care, colleges and universities and other non-profit organizations. It also includes budgeting and reporting.
ACTG	2630	This course will teach students the development and maintenance of appropriate reports, retention periods and tax filings.
ACTG	2710	Will prepare students for National Certified Bookkeeper Exam. Course covers all five required skill areas: merchandise inventory, payroll, depreciation, correcting and adjusting entries.
ACTG	2940	Cooperative education in accounting is the integration of classroom theory with practical work experience in the related field. Work related jobs must be investigated and approved by the co-op instructor. Instructor permission required.
ACTG	2980	Current developments in accounting research and theory and literature discussed in seminar manner. Topics selected from all areas of accounting.
ACTG	2990	Students will study an appropriate subject mutually agreed upon between the student and instructor. The format may include lecture, computer lab and/or practical experience.



ADOT	1010	Provides a basic understanding of the personal computer, word processing software and the development of keyboarding skills. Learn to format business letters, memos, reports and tables.
ADOT	1080	This course develops the competence of students in applying proofreading, editing, telephone, filing and vocabulary skills to office situations to enhance their effectiveness as administrative support personnel.
ADOT	1110	Focuses on the improvement of typewriting production and speed building. Course coverage includes production work on professional reports, business correspondence, office forms and frequent special practice to develop maximum typing skills.
ADOT	1200	This course explores the information processing and administrative support responsibilities and services necessary for the secretary to perform effectively at the operational level in the business office.
ADOT	2140	This course provides intensive practice in transcribing business correspondence from machine sources. The course will emphasize efficient use of equipment, preparation of quality correspondence, command of language skills and achieving an employable transcription rate.
ADOT	2180	This course emphasizes the mastery of basic and advanced word processing functions of WordPerfect for Windows to enable the student to function effectively and efficiently in a business environment.
ADOT	2200	Students study various organizational forms, the functions of business departments and relate past office situations to current office conditions in an effort to ensure future effectiveness in office operations.
ADOT	2270	Advanced instruction with emphasis on setting priorities, following directions, evaluating document formats and mailability, composing administrative business correspondence, demonstrating quality and efficiency in document production using industry standard word processing software.
ADOT	2940	Students will work in an office environment in the local business community and demonstrate the technical and communication skills required for successful performance in an administrative support position.
ADOT	2990	Students will study an appropriate subject mutually agreed upon between the student and instructor. The format may include lecture, computer lab and/or practical experience.
AED	2940	Independent field work which will allow the undergraduate student to develop a course of study. Optional placement in a school system or in programs for children and youth at The Toledo Museum of Art.
AED	3100	Focuses on the supporting the young child's capacity to create, perceive and appreciate the visual arts. Orientation to materials and instructional techniques will be explored through studio and gallery instruction with a young child.



AED	3130	An investigation of innovative methods for teaching multi-cultural understanding through art history and art appreciation. The Toledo Museum of Art's collection will be the focus for the course.
AED	3300	This course is designed to investigate the philosophy and variety of craft processes used to make art. Topics that may be covered include fibers, metal crafts, ceramics, paper making.
AED	3500	An introduction to new directions in secondary art education. Current views of philosophy and psychology are implemented as the rationale for contemporary curricula in art education. Field experience is to be arranged.
AED	3940	Field placement in an elementary school setting allowing the undergraduate student, with art teacher approval, to develop a course of study that will satisfy the special needs of the student in art education.
AED	4140	This course introduces and surveys a wide variety of art strategies and instructional adaptations for use with the child with physical, emotional or mental differences.
AED	4150	This course will explore Reggio's philosophy of early childhood education and the numerous ways that children explore the "hundred languages." Reggio uses these languages (art, clay, wire, sculpture, light, shadow, etc.) as a way to help children represent their world and what they know about it.
AED	4200	This course examines the tools, technology and instructional applications of computer graphics in art settings. This course is especially appropriate for art educators interested in integrating art concepts using the Macintosh environment.
AED	4230	This course will provide students in education an overview of the role of art and music in curriculum development. (Students may enroll in either art or music education sections.)
AED	4240	This course is designed to study art media and methods that will enhance the development of the child with disabilities as it relates to their physical, emotional, intellectual and social well being.
AED	4280	This course is designed to provide understanding of how art experiences relate to special populations. Students will research and develop strategies and adaptations for use with special populations in therapeutic settings.
AED	4300	An investigation into group and individual processes as they relate to art media and methods in therapeutic art will be presented. Experiences in art media will be explored.
AED	4450	An exploration of discipline-based art education (DBAE) philosophy in the schools. Field placement in the Toledo Museum of Art's Youth program and the area schools will be used to implement the theoretical base.
AED	4560	This course will introduce students to therapeutic art through investigation of theories in art education and art therapy. Students will explore art media and methods in therapeutic art programming.



AED	4900	This seminar is designed to enhance the student teacher's final preparation for employment. Professional issues, ethical behavior, interview techniques and other processes and concerns involved in entry into the profession will be examined.
AED	4930	Planned field experiences in public school classrooms under the direction of experienced art teachers. Gradual acceptance of full responsibility by student teacher. A scheduled time will be included to facilitating professional practices.
AED	4940	This course will incorporate therapeutic art program development skills within an internship environment.
AED	4950	Students are introduced to a variety of activities and materials based upon children's interests and needs, available materials, and time allotted to art activities in the self-contained classroom.
AED	4990	Individual study is designed to provide the student the opportunity to work individually on professional problems under the direction of the art education staff without formal class meetings.
AED	5000	This course will provide an overview of empirical and historical research structures, application of research to classroom activities and development of research for publication.
AED	5140	This course introduces and surveys a wide variety of art strategies and instructional adaptations for use with the child with physical, emotional or mental differences.
AED	5150	This course will explore Reggio's philosophy of early childhood education and the numerous ways that children explore the "hundred languages." Reggio uses these languages (art, clay, wire, sculpture, light, shadow, etc.) as a way to help children represent their world and what they know about it.
AED	5200	This course examines the tools, technology and instructional application of computer graphics education settings. The course is appropriate for art educators as well as others interested in using graphics and the microcomputer.
AED	5220	The study of art processes that provide physical, emotional and intellectual development. Topics covered include art history, art appreciation, aesthetics, making art and art materials.
AED	5240	This course is designed to provide understanding of how art experiences relate to special populations. Students will research and develop strategies and instructional adaptations for use with special populations in a therapeutic or rehabilitative setting.
AED	5260	Theory and Techniques of Therapeutic art with pre-adolescents/adolescents will be addressed. A survey of literature, case presentations and developmental stages will be discussed. Art assignments, papers and research will enhance a student's ability to work with this population.



AED	5280	This course is designed to study art methods and materials that will enhance the adult with special needs related to their emotional, intellectual and physical well-being.
AED	5300	An investigation into group and individual processes as they relate to art media and methods in therapeutic art will be presented. Experiences in art media will be explored.
AED	5320	This course will introduce the role of the museum for the art/humanities educator and will examine the installation and design of exhibitions and the implications for teaching. Life center issues, museum education, curriculum issues, interactive galleries and technology will be presented.
AED	5500	A review of research into current issues in art education related to methods of teaching, philosophy and psychology, this course also examines contemporary theoretical developments in art education.
AED	5930	Guest lecturers from other institutions of higher learning are invited to The Toledo Museum of Art or The University of Toledo Department of Art to present seminars relevant to their endeavors.
AED	5950	Students are introduced to a variety of art activities and materials based on children's interests and needs, available materials, and time allotted to art activities in the self-contained classroom.
AED	5990	Individual study is designed to provide a student with the opportunity to work independently on professional problems under the direction of the faculty in the Department of Art.
AED	6920	This course is open to graduate students who elect the completion of a master's project in fulfilling the research requirement of the master's degree program.
AED	6940	This course will incorporate advanced recreational therapy program concepts in therapeutic art within an internship environment using expressive techniques.
AED	6960	This course is open to graduate students who elect the completion of a master's thesis in fulfilling the research requirement of the master's degree program.
AERO	1110	Organization of the United States Air Force. Focus on missions involving airlift forces, strategic forces, tactical forces as well as overseas forces. Development and employment of weapon systems and logistic support functions. Leadership laboratory activities.
AERO	1120	Organization of the United States Air Force. Focus on U.S. Defense policies, military balance between U.S. and eastern European forces as well as capabilities of Army, Navy and Reserve/Guard forces. Officer ship/Professionalism and introduction to flight.
AERO	2110	Development of air power from the first lighter-than-air vehicles through the establishment of the Department of the Air Force as an independent military force. Various concepts of employment of air power and factors which have prompted research and technological change. Examples of impact of air power on strategic thought. Leadership laboratory activities.



AERO	2120	Development of air power since the establishment of the independent Air Force to the present. Various concepts of employment of air power and factors which have prompted research and technological change. Examples of impact of air power on strategic thought. Leadership laboratory activities.
AERO	3110	Integrated management course emphasizing individual as a leader in the Air Force. Human behavior, individual and in groups, historical development of management thought, discussion of classical leadership theory; oral and written communication, writing and briefing formats. Leadership laboratory activities.
AERO	3120	Air Force leadership, planning, organizing, coordinating, directing and controlling functions of management with emphasis on Air Force application, concept of command and staff, junior as administrative leader, Air Force personnel system, management of environment. Leadership laboratory activities.
AERO	4110	Role of the President, the Congress and National Security Council in national security making policy; American defense strategy; alliance; regional security; arms control. Leadership laboratory activities.
AERO	4120	Air Force officer as part of national security force; military law; laws of armed conflict; the military profession; transition to military life; relations with civilian community. Leadership laboratory activities.
AERO	4910	On demand. In-depth study of selected topics. Offered to individuals in lecture, seminar or independent study depending on student needs and nature of material. May be repeated twice for up to 6 hours.
AFST	1100	Introductory survey of basic theoretical concepts to analyze the Black experience, with special focus on the general historical process common to the African Diaspora (Africa, Caribbean and the Americas - South, Central and North, especially the USA.)
AFST	1110	General cultural and historical survey of Africa south of the Sahara from earliest times to the 20th century. Includes topics on art, literature, philosophy, religion and society.
AFST	1200	Introduction to the African experience through case studies of critical historical experiences: origin of humanity, origin of civilization, empire and traditional society.
AFST	2100	An examination of slavery and colonialism in the intellectual history of the African Diaspora, especially in the work of W.E.B. Dubois, C.L.R. James and Kwame Nkrumah.
AFST	2200	Examination of culture in the African Diaspora by focusing on continuities and discontinuities in music and dance, material culture, language and folklore and the cultural practices of everyday life.



AFST	2220	A study of the development of jazz styles including listening skills and historical perspectives. Because the major innovations and stylistic interpretations of jazz are a result of African Americans, the course includes a study of how their culture influenced the development of jazz. Students may take P/NC.
AFST	2300	Survey of basic social research methods and studies focusing on the Black community. Class conducts research on Black community of Toledo. Offered as companion to AFST 2400. Topics change each year. Course can be taken twice.
AFST	2400	Examination of social policy and the Black community of Toledo with a special focus on one major topic. Offered as companion to AFST 2300. Topics change each year. The course can be taken twice.
AFST	2660	The character and development of African political institutions and processes with a special emphasis on patterns in the post-independence period and prospects for the future.
AFST	3220	Course begins with a general overview of Africa's physical environment, its colonial history and its people and cultures. It then examines a variety of themes associated with development, population, urban and political geography.
AFST	3240	A study of the many ways blacks have involved themselves in American politics; examines African-Americans' participation in the political and governmental process.
AFST	3250	An examination of the historical experiences of African-Americans in the United States from 1619 to 1865.
AFST	3260	An examination of the historical experiences of African-Americans in the United States since 1865.
AFST	3300	African Art is the study of the diversity of African art. The format of the course will be developed with emphasis upon region and style with emphasis upon the collections of African Art found in the Toledo Museum of Art.
AFST	3450	A study of jazz styles, trends, performers and composers.
AFST	3490	Development of the economic status, problems and role of the African American community from colonial times to the present. Special emphasis on economic writings of African American scholars.
AFST	4140	Focuses on the distinctive elements of African Vernacular English, its historical origins, its sociocultural development and its implications for pedagogy and language policy.
AFST	4420	Subject varies. Among those treated are slavery, racism, Black reconstruction, modes of protest, Black nationalism, key leaders and Black migration.
AFST	4430	Stresses the African continuum among slaves within the context of variations in goals and policies of slave-owners, slave trade, slave economics, demographics, slave labor and formation of slave culture.



AFST	4530	A study of judicial policy-making and administrative implementation of decisions affecting racial issues, freedom of expression, national security and criminal procedures.
AFST	4570	Africa south of the Sahara from antiquity to 1800. Topics include the peopling of the continent, growth of centralized political institutions, stateless societies, Islamic penetration, African slave trade.
AFST	4580	Africa south of the Sahara from 1800 to the present. Subjects include 19th century, colonial and independent Africa. Specific topics: the rise of South Africa, imperialism, African resistance and nationalism and independent African political, cultural and economic systems.
AFST	4590	Study of the culture, history and society of the people of Eastern Africa. Each term different peoples will be considered. Areas include present-day Ethiopia, Kenya and the East Africa coast.
AFST	4650	A survey of African-American prose, poetry, drama and fiction from 1760 to 1915. Recommended: ENGL 2700, 2800, or 3790.
AFST	4660	Study of the literary achievement of major African-American writers beginning with DuBois and ending with Gwendolyn Brooks and Ed Bullins. Recommended: ENGL 2700, 2800, or 3790.
AFST	4670	Sociological study of African Americans in the United States, focusing on issues of ethnic identity, educational and economic achievement, continues sources of discrimination and current movements for change.
AFST	4680	An examination of political behavior in selected African states using a case method to examine alternative courses of action available to decision makers.
AFST	4700	An examination of factors affecting foreign policy processes in Africa, emphasizing the relations between Africa, the Big Powers and the United Nations.
AFST	4800	The new emerging ideological, political, social and economic patterns which repeat themselves in and determine the Third World transition from a traditional to a new society.
AFST	4900	General theoretical synthesis of the field focusing on a close reading of a recent biographical work of intellectual history, a recent work of cultural criticism and a recent work of social analysis.
AFST	4910	Student selected research topic under the supervision of faculty member and the Director of Africana Studies. Permission to enroll is contingent on a written proposal by the student being accepted by the two sponsoring faculty.
AFST	4920	For advanced students wishing to read a specialized literature in the field. Requires a written proposal approved by faculty and Director of the Program.
AFST	4960	Research and writing of original project in tutorial format. Maximum of 6 hours may be counted toward degree.



AFST	4980	Discussion of a substantial issue in scholarly research or public discourse relative to the African Diaspora. May be repeated for different issues. Maximum number of hours for AFST 4980 should not exceed 9 semester hours.
ALS	1900	Introduction to liberal studies. Library use, writing of a documented paper and the development of critical thinking through classroom discussion. Students in Adult Liberal Studies only.
ALS	2500	Students will focus on critical thinking and interdisciplinary research methods in preparation for upper-level seminars and research courses
ALS	3040	Focus on topics of general interest to liberal arts students with particular reference to tools, concepts and analytical methods of social scientists. Students in Adult Liberal Studies only except by program director's permission.
ALS	3050	Topics of general interest in humanities: writing and communication; religious, philosophical and ideological traditions; traditional and performing arts. Adult Liberal Studies students only except by program director's permission.
ALS	3060	Topics of general interest that consider scientific problem solving in such areas as biology, chemistry, geology, astronomy, physics, mathematics and statistics. Adult Liberal Studies students only except by program director's permission.
ALS	4910	Under supervision of a selected instructor, student completes a capstone research thesis as part of the Liberal Studies program area of concentration. Open only to Liberal Studies seniors.
AMST	2700	An interdisciplinary introduction to one or more American cultural myths such as that of the common man or the frontier which often underlie claims of a national character.
AMST	3340	The course will outline the historical development of population trends in the U.S. and consider current dynamics, trends and tendencies.
AMST	3730	A survey of the field of folklore with an emphasis on folk narrative, folk music and material culture in America. Recommended: Permission of instructor and Composition II
AMST	4830	This course analyzes how and why social protest movements form and how and why they succeed or fail. Attention will be given to post World War II social movements, including current examples.
AMST	4960	Part I Research and initial organizational design of the senior thesis. Advanced American Studies majors work under an adviser's direction. Part II Completion of a preliminary and then final draft of the senior thesis. The American Studies Faculty Steering Committee administers an oral exam upon thesis completion.
AMST	4980	Investigations of American Culture. Discovering patterns and interrelated phenomena in history, literature, sports, the arts, etc.
AMST	4990	Supervised independent study. Interdisciplinary topics within American culture. For majors only.



ANAT	500	Provides students with a working knowledge of the major anatomical regions and structures. Emphasis placed on the relationships of components as well as topographical and functional anatomy. Case studies will be utilized.
ANAT	505	Lecture based course supported by human dissection laboratory, offering integrated topics in gross and microscopic anatomy as well as embryology. This course is two semesters in length.
ANAT	508	Human development from conception to birth with anatomic and clinical correlations to child and adult.
ANAT	625	Lecture and discussion in detailed review of modern aspects of anatomy. May be repeated for credit.
ANAT	630	Lecture, discussion and laboratory exercises of nervous system structure.
ANAT	633	Detailed dissections of specific body regions. May be repeated for credit.
ANAT	650	Presentation and discussion of selected topics in the anatomical sciences. May be repeated for credit.
ANAT	672	Lecture and/or seminar course or current interest in the anatomical sciences. May be repeated for credit.
ANAT	673	Students will participate in selected on-going research programs of members of the department faculty. May be repeated for credit.
ANAT	679	Human Structure & Development (Block 2)
ANAT	680	The content of the medical neuroscience course includes not only the basic science concepts introduced in more traditional neuroanatomy courses, it also incorporates neurohistology, neuroembryology, neurophysiology, neuropathology, and neuroradiology. The usefulness of these concepts is reinforced by numerous clinically-based lectures which emphasize the importance of integrating basic neuroanatomical knowledge with the clinical symptoms presented by a neurological deficit. Other clinically-based lectures present current medical concepts concerning neuroimmunology, neurodegenerative diseases, pain, sleep, epilepsy, substance abuse, and memory and learning.
ANAT	689	Intensive study in field of interest, including theoretical and experimental work. May be repeated for credit.
ANAT	705	Lecture based course supported by human dissection laboratory, offering integrated topics in gross and microscopic anatomy as well as embryology. This course is two semesters in length.
ANAT	708	Human development from conception to birth with anatomic and clinical correlations to child and adult.



ANAT	710	The elective provides the student an opportunity to review, refine, and consolidate their understanding of the morphologic and physiologic bases of human biology as related to the practice of medicine and surgery in which they are most interested. Each student, in consultation with instructor, should determine an area(s) of concentration which may draw from any or all of the anatomical sub disciplines (gross anatomy, microanatomy, developmental anatomy, neuroscience). A plan of study should be established through consultation. During the execution of the plan of study, the student is expected to be present in the laboratory approximately two hours per day, five days per week.. The student is also expected to perform independent reading in the area(s) of study. The readings should include both basic and clinical science topics as relevant to the topic and student. The student may be requested/required to make a formal presentation of information related to the topics covered during the rotation.
ANAT	711	The elective provides the student an opportunity to review, refine, and consolidate their understanding of the morphologic and physiologic bases of human biology as related to the practice of medicine and surgery in which they are most interested. Each student, in consultation with instructor, should determine an area(s) of concentration which may draw from any or all of the anatomical sub disciplines (gross anatomy, microanatomy, developmental anatomy, neuroscience). A plan of study should be established through consultation. During the execution of the plan of study, the student is expected to be present in the laboratory approximately two hours per day, five days per week.. The student is also expected to perform independent reading in the area(s) of study. The readings should include both basic and clinical science topics as relevant to the topic and student. The student may be requested/required to make a formal presentation of information related to the topics covered during the rotation.
ANAT	825	Lecture and discussion in detailed review of modern aspects of anatomy. May be repeated for credit.
ANAT	830	Lecture, discussion and laboratory exercises of nervous system structure.
ANAT	833	Detailed dissections of specific body regions. May be repeated for credit.
ANAT	850	Presentation and discussion of selected topics in the anatomical sciences. May be repeated for credit.
ANAT	872	Lecture and/or seminar course or current interest in the anatomical sciences. May be repeated for credit.
ANAT	873	Students will participate in selected on-going research programs of members of the department faculty. May be repeated for credit.
ANAT	889	Intensive study in field of interest, including theoretical and experimental work. May be repeated for credit.



ANES	702	This clerkship will offer the student grounding in the medical basis and clinical practice of anesthesiology. They will participate directly in patient care throughout the process of preoperative evaluation, selection of anesthesia plan, implementation of that plan and emergence and post-op care. Students will also become acquainted with the technical aspects necessary for anesthesia practice including those of intubation, obtaining IV access, monitoring and performance of regional blocks. Participation in, and/or observation of, a requisite number of specific modalities, procedures and patient types is required of all students. The list of requisites can be found on the Department of Anesthesiology website.
ANTH	1020	A survey of the varied aspects of anthropology, including cultural anthropology, prehistory, physical anthropology and linguistics. (not for major credit)
ANTH	2000	Students are introduced to the academic and professional nature of Anthropology. Topics covered include professional socialization, honor theses, portfolio construction, preparation for graduate studies, and career development.
ANTH	2020	An introduction to the history, methods and techniques of archaeology and how the discipline of archaeology is related to anthropology, ethno history, history and geology. (not for major credit)
ANTH	2100	An introduction through the use of ethnographic film to various aspects of non-western culture and the development of the use of film in anthropology.
ANTH	2700	A survey of the human species in time, place and culture and the investigation of the factors underlying human biological variation.
ANTH	2750	A survey of the processes of cultural development from the lower Pleistocene to development of writing.
ANTH	2800	Introduction to culture patterns and processes and their relationship to human society and language.
ANTH	2900	A survey of the socio-historical and cultural factors of African Americans in the U.S.
ANTH	2980	Examination of Special Topics in Anthropology. May be repeated on different topics.
ANTH	3020	A study of the prehistoric peoples in Ohio from the end of the Ice Age to the arrival of the Europeans.
ANTH	3330	This course deals with multi-cultural dietary patterns through time and space, as well as cross-cultural influences on health and disease.
ANTH	3500	Drawing on ethnographic and case studies to compare and contrast cultural institutions and behavioral patterns of diverse cultures, this course explores the influence of culture on business operations across cultures.
ANTH	3510	Methods of excavation and recovery of archaeological data. Field school conducted during excavation of a prehistoric site in the Toledo area.



ANTH	3520	This course examines qualitative methods used in social science research. Focusing on ethnographic and qualitative methods, the course provides students the skills necessary to design and conduct qualitative research studies.
ANTH	3850	An introduction to the socioeconomic activities in societies of varying sociocultural complexity.
ANTH	3920	A survey of North America Indians from prehistoric times to the present.
ANTH	3940	The cultures and societies of the Sub-Saharan peoples of Africa.
ANTH	4000	Discussion among faculty and students devoted to the study of Anthropology with a special focus on the development of a professional portfolio for graduate work or career.
ANTH	4200	This course acquaints students with various schools of anthropological theory, stressing the influence of traditional approaches on contemporary thought and the impact of historical context on the development of theory.
ANTH	4450	This course takes an interdisciplinary approach to life in cities around the world, with emphasis on the ethnographic exploration of how power, cultural difference, and social inequality in cities are produced and experienced.
ANTH	4520	Instruction in the methods and techniques employed by the archaeologist to analyze cultural material recovered in the field.
ANTH	4560	Consists of field work involving the student in meaningful research problems at the community level. Introduces the student to the methods and problems of participant research.
ANTH	4730	A study of the functional interrelationships of humans and their biophysical environment in cross cultural perspective, with special emphasis on non-western cultures.
ANTH	4760	An examination of the biocultural nature of health and illness, with special emphasis on changing patterns of disease in non-western societies.
ANTH	4820	A cross-cultural approach to the description and analyses of magical and religious beliefs and practices in Asia, Africa, Latin America and Indigenous North America.
ANTH	4860	A survey of the sociohistorical and cultural factors related to the immigration and adaptation of the Irish in America.
ANTH	4890	Consideration of the economic and cultural forms of peasant society on a worldwide basis and comparison of these forms to other contemporary communities.
ANTH	4910	Supervised independent research in anthropology.
ANTH	4920	Designed for those wishing to continue course work in greater depth or seeking contact with unlisted subject areas. Written proposal and consent required.



ANTH	4950	Supervised opportunity for senior majors to apply the anthropological approach to a theoretical or applied cultural historical/biocultural problem through individual research, an internship, professional participation or a public education experience.
ANTH	4960	The student completes a thesis under the direction and guidance of their faculty adviser.
ANTH	4980	Courses on varied anthropological specialties. May be repeated in different specialty areas such as religion, ethno history, ethnic conflict and area courses.
ANTH	5200	This course acquaints students with various schools of anthropological theory, stressing the influence of traditional approaches on contemporary thought and the impact of historical context on the development of theory.
ANTH	5450	This course takes an interdisciplinary approach to life in cities around the world, with emphasis on the ethnographic exploration of how power, cultural difference, and social inequality in cities are produced and experienced.
ANTH	5520	Instruction in the methods and techniques employed by the archaeologist to analyze cultural material recovered in the field.
ANTH	5560	Consists of field work involving the student in meaningful research problems at the community level. Introduces the student to the methods and problems of participant research.
ANTH	5730	A study of the functional interrelationships of humans and their biophysical environment.
ANTH	5740	An examination of the historical, social, political and economic factors that influence the production, distribution and consumption of food and the effects on world health and development.
ANTH	5760	An examination of the biocultural nature of health and illness.
ANTH	5820	A cross-cultural approach to the description and analyses of magical and religious beliefs and practices.
ANTH	5860	A survey of the sociohistorical and cultural factors related to the immigration and adaptation of the Irish in America.
ANTH	5890	Consideration of the economic and cultural forms of peasant society on a worldwide basis.
ANTH	5920	Designed for those wishing to continue course work in greater depth or seeking contact with unlisted subject areas. Written proposal and consent required.
ANTH	5980	Courses on varied anthropological specialties. May be repeated in different specialty areas such as religion, ethno history, ethnic conflict and area courses.
ANTH	6960	Individually constructed.
ANTH	6990	Supervised independent research in anthropology.
ARBC	1080	A study of the culture and society of the Arabic-speaking world with emphasis on business and economics. Taught in English.

ARBC	1090	An introduction to principal social, artistic, and literary aspect of modern culture in the Arabic-speaking worlds. Taught in English.
ARBC	1110	An introduction to Arabic Language and culture through listening, speaking, reading and writing. Laboratory practice required.
ARBC	1120	An introduction to Arabic language and culture through listening, speaking, reading and writing. Laboratory practice required.
ARBC	2140	Further practice of the four language skills with grammar building and readings of a literary-cultural nature.
ARBC	2150	Further practice of the four language skills with grammar building and readings of a literary-cultural nature.
ARBC	2190	The course permits beginning students of Arabic to study or work in a country where Arabic is spoken. Credit will be awarded in accordance with established departmental procedures.
ARBC	3010	Work on advanced listening, speaking, reading, and writing skills through intensive work with authentic texts that deal contemporary issues relating to the Arabic-speaking world.
ARBC	3020	Work on advanced listening, speaking, reading, and writing skills through intensive work with authentic texts that deal contemporary issues relating to the Arabic-speaking world.
ARCT	1200	Computer Aided Design and Drafting (CADD) terminologies, concepts, strategies for three-dimensional drawings and presentations. Hands-on computer activities and experiences.
ARCT	1250	An introduction to various codes regulating the construction of a building, code history, their purpose and how organized zoning and other codes are studied.
ARCT	1260	Fundamentals, concepts and strategies used in the process of construction cost estimating. Organization of materials, labor and construction methods are experienced; other information is collected, organized and utilized.
ARCT	2100	Strategies, planning, preparation of working drawings of a construction project. Research and organization required to produce complete contract documents. Code searching, preliminary construction specifications and cost estimating; drafting board methods and CADD techniques are available for graphic presentations.
ARCT	2160	Fundamentals of construction contract documents, relationship of drawings, specifications, critical path planning, scheduling and contracts. Composition of construction specifications.
ARCT	2210	Fundamental computer concepts and operating systems, applications of computer generated graphics, Computer Aided Design and Drafting (CADD) systems, CADD terminologies, concepts, strategies for two-dimensional drawings, hands-on computer activities and experiences.
ARCT	2220	The techniques employed in the development of the design and presentation phases of architectural projects, client involvement, including project programs, space requirements and relationships, drafting board and CADD techniques are available.



ARCT	2250	An introduction to building systems and equipment technologies and their capabilities. Fundamentals of designing and sizing the building systems.
ARCT	2980	Student performs work on a specialized project of an advanced nature under the supervision of an Architectural Technology faculty member.
ARS	1000	Course will introduce new students to the University and college, provide information on requirements, regulations, campus resources and career exploration and help students develop academic skills.
ARS	2980	Seminar series addressing various issues that can arise in research, scholarship, and creative activities, including: safe laboratory practices, regulatory compliance issues, and ethics issues.
ART	1080	Various approaches to drawing and disciplines intended to develop skills, perception, visual acuity and awareness. Introduction to a broad range of objective subject matter and a variety of graphic media.
ART	1990	Group study in studio topics by various instructors.
ART	2050	This course develops the understanding of basic studio art principles, critiquing skills and media manipulation. Topics addressed include color theory and formal and conceptual elements of manipulating two dimensional space. May be taken concurrently with ART 2060.
ART	2060	This course develops the understanding of basic studio art principles, critiquing skills and media manipulation in the context of studying the formal and conceptual elements of manipulating three dimensional spaces. May be taken concurrently with ART 2050.
ART	2080	Dimensional, perspective and volumetric drawing applied to natural, man-made forms, environment and the figure. Emphasis on rendering techniques, skills and exploration of media integrated with design elements and formal compositional.
ART	2150	This course covers basic computer operations in an art context, utilizing bitmap, vector and page layout programs.
ART	2160	Survey of interactive computer operations in an art context utilizing web, 2D animation and sound applications.
ART	2230	Study of basic print materials and media, including relief, monoprint, Planographic and intaglio process and development of sound general print shop skills and safe practices. This course will impart an understanding of the language of the prints as a basis for further exploration.
ART	2330	Introduction to painting materials and their functions, emphasis oil color. The construction and design of paintings and investigations into the character and actions of paint upon a variety of surfaces.
ART	2430	An exploration of the application of traditional methods of sculpture making to additive, subtractive, Constructive and replicative processes with clay, plaster, wood, stone and metal. Formal and expressive content addressed.
ART	2530	Basic ceramic techniques explored. Introduction to hand-building, simple mold techniques and the potter's wheel. Basic glaze and clay body formulation and firing procedures.



ART	2730	Introduction to basic metalsmithing with emphasis on the technique of fabrication, soldering, casting and simple raising and the use of appropriate tools.
ART	2810	An introduction to photography as a fine art medium; includes camera operations, the use and handling of color films, film processing, printing, presentation techniques, historic and contemporary photographers.
ART	2990	Group study in studio topics by various instructors. Prerequisite: Varies, permission of instructor.
ART	3060	Study of altering a defined physical and psychological space as an art medium. Includes a study of the history of installations.
ART	3070	Traditional mixed media approaches as well as experimental and environmental art forms, light and motion, happenings and events.
ART	3080	Intensive study of the undraped human figure with emphasis on internal anatomical structure, dynamics and design; form rendering in linear media interpretation of old master and contemporary figurative drawing.
ART	3090	Continued study of the structural human figure integrated into situational light and environment. Instrumentation of varied media; construction and articulation of form with emphasis on space, pictorial elements and design.
ART	3150	Exploration of digitally created and manipulated photographic imagery from conception to print.
ART	3160	Advanced studies in drawing and painting on the computer and the exploration of traditional and experimental output methods.
ART	3170	The creation of web pages as artworks. In addition to conceptual development and building a visual vocabulary, students learn technical skills, including HTML, JavaScript and the use of web authoring software.
ART	3260	Approaches to an understanding of etching and intaglio processes. Study a wide range of materials and methods, including color printing. Critiques of content and technical skills will be essential.
ART	3270	Study of lithography and Planographic processes as they relate to fine art. Study of stone, plate and photo-lithography. Critiques of content and technical skills will be essential.
ART	3380	Introduction to painting materials and their functions, emphasis acrylic color. The construction and design of paintings and investigations into character and actions of paint in a variety of pictorial problems.
ART	3460	The application of additive processes using clay, plaster, wax to manipulate form and space using human, natural and built form as reference. Formal and expressive content addressed in historical context.
ART	3470	The application of subtractive processes using natural and laminated wood and cast and natural stone to manipulate form and space. Formal and expressive content in historical context is addressed.
ART	3570	Discipline problems relating to the wheel and hand building techniques. Individual responsibility involving the whole ceramic process. Introduction to ceramic materials and how they function in glazes and clay. Suggested readings.



ART	3710	WAC studio/lecture course utilizing The Toledo Museum of Art collection. Emphasizes aspects of visual language, writing origins, letterforms, artists' books, medieval manuscripts, collaborations, journals, sketchbooks, writing about visual art, concrete poetry.
ART	3760	Continued exploration of basic techniques and new problems in forging. (Ferrous and non-ferrous metals), fabrication and surface decoration to advance technical skills and creative problem solving.
ART	3770	Introduction to basic iron working, making tools, building forges and unit construction for larger pieces, techniques in enameling/continued study with alternative techniques and materials.
ART	3830	Optional discussion section with limited enrollment for Studio Art Majors only. Must be taken simultaneously with ART 3820 - Visual Construction of Gender.
ART	3860	Black and white photography for fine art applications, intermediate camera and darkroom techniques, exposure and lighting for b&w, film processing and printing, historic and contemporary photographers.
ART	3870	Use of large format cameras, studio lighting and advanced darkroom techniques for fine art applications.
ART	3990	Group study in studio topics by various instructors. Prerequisite: Varies, permission of instructor.
ART	4080	Interpretive and analytical drawing. Experimentation with a broad range of materials and techniques and in reconceptualizing form and composition. Assimilated form, abstraction, fantasy and memory drawing encouraged.
ART	4090	Advanced drawing, emphasizing interpretive and conceptual approaches. Refinement of discoveries and transformation into more personal imagery. Further expansion of visual vocabulary, cumulative skills and control of media.
ART	4240	Study of screen-printing (serigraphy) as a fine arts process, including digital imaging. Critiques of content and technical skills will be essential.
ART	4310	Creation and animation of 3D imagery on the computer.
ART	4320	Study of combining still imagery, animation, video and sound in an interactive computer format.
ART	4330	Continued focus on the development of technical skills and the solution of pictorial problems, with attention to individual creative solutions.
ART	4340	Creating digital motion components, utilizing digital video, still imagery and time-based compositing for integration in interactive multimedia and web-based artworks. Labor intensive, designed for highly motivated, self-disciplined students.
ART	4350	Contemporary painting approaches, emphasis on guided experimentation with a wide range of mixed materials. Advancing from technical proficiency toward the development of individual conceptual goals relative to painting.
ART	4410	Special topics in Cyber art. May be repeated when topic varies.



ART	4430	An exploration of the application of metal casting and welding producing traditional and non-traditional sculpture. Formal and expressive content in sculpture is addressed.
ART	4540	Larger wheel forms explored from the cylinder. Special hand building projects explored. Special firing techniques explored. Active student involvement in all phases of studio function and operation.
ART	4550	Student concentration into special studio problems. Development of style and direction. The bottle form explored on the potter's wheel. Slip casting techniques explored. Active student involvement in all phases of studio function and operation.
ART	4730	Problems with advanced hollowware, Masonite die process and T Stake raising. Fabrication of hollowware surface treatment, i.e., sandblasting, reticulation, coloring.
ART	4810	Varying studio topics in fine art photography including documentary photography, alternative processes, advanced projects, the body and the lens, studio lighting. May be repeated under differing course titles. Advanced Projects may be repeated.
ART	4850	Professional skills course for advanced art. Topics include portfolios, resumes, taxes, contracts shipping, documenting artwork, artists' statements, exhibitions/competitions, galleries, artists' talks and more.
ART	4910	Individual study into special studio problems. Weekly critiques. Every semester. Time arranged.
ART	4920	Individual study into special studio problems. Weekly critiques. Every semester. Time arranged.
ART	4930	Individual study into special studio problems. Weekly critiques. Every semester. Time arranged.
ART	4940	Student works in professional venue related to a diversity of art fields or endeavors. May be repeated for a maximum of 8 credit hours.
ART	4990	Group study in studio topics by various instructors. May be repeated when the topic varies.
ARTH	1500	Introduction to the aesthetic, cultural and social interpretation of works of art and architecture, and to the historical relationships of artists, patrons and audiences in art's production and purposes. (Not for major credit in Art History, Studio Art or Art Education).
ARTH	1510	Optional discussion section with limited and voluntary enrollment; focus on the Museum collections.
ARTH	2000	Study of art and architecture from prehistoric Europe through the Roman Empire; emphasis on the interpretation of representative works from Egypt, Greece and Rome.
ARTH	2001	Introduces students to major styles of western art from prehistoric to early Renaissance. Students will learn to analyze art in terms of formal, cultural, historical, and iconographic contexts.



ARTH	2003	Introduces students to major styles of western art from the Renaissance through the modern era. Students will learn to analyze art in terms of formal, cultural, historical, and iconographic contexts.
ARTH	2010	Optional discussion section with limited and voluntary enrollment; focus on the Museum collections in ancient art. Must be taken simultaneously with ARTH 2000.
ARTH	2020	Study of art and architecture from the late Roman Empire through the age of the Gothic Cathedral; emphasis on representative examples of Late Antique, Early Medieval, Romanesque and Gothic art.
ARTH	2030	Optional discussion section with limited and voluntary enrollment; focus on the Museum collections in medieval art.
ARTH	2040	An introductory survey emphasizing European painting and sculpture from circa 1300 to 1700.
ARTH	2080	European and American art 1700-1940, from the Rococo through Romanticism, Impressionism, Expressionism, Cubism, Dada, and Surrealism.
ARTH	2090	Optional discussion section with limited voluntary enrollment focusing on the collections of The Toledo Museum of Art. Must be taken simultaneously with ARTH 2080, History of Modern Art.
ARTH	2100	An introduction to the architecture, painting and sculpture of India, China and Japan and their relationship to the major religions and philosophies of each culture.
ARTH	2200	Contextual exploration of traditional art forms in the principle cultures of the Americas, Africa and Oceania.
ARTH	2300	Study of architectural design (function, materials, structure, aesthetics and symbolism), with focus on significant historical examples from antiquity through the late 20th century.
ARTH	2500	An introductory survey of art from 1940 till the present that relates recent art makers and movements to critical, cultural, and social issues.
ARTH	2510	Optional discussion section with limited voluntary enrollment that examines issues in ARTH 2500 in the context of the Toledo Museum of Art collection. Must be taken simultaneously with ARTH 2500.
ARTH	2700	An introductory survey of women artists from the Middle Ages to the present with consideration of their position in the formation of history's canon.
ARTH	2980	Topics in art history selected by instructor; may be repeated when topic varies.
ARTH	3110	Special topics in the history of the art or architecture of the ancient world; may be repeated when topic varies.
ARTH	3130	Special topics in the history of western art or architecture from 200 to 1500 A.D.; may be repeated when topic varies.
ARTH	3150	Special topics in the history of Renaissance art or architecture; may be repeated when topic varies.



ARTH	3170	Special topics in the history of Baroque art or architecture; may be repeated when topic varies.
ARTH	3190	Special topics in the history of 19th-Century art. May be repeated when topic varies.
ARTH	3210	Special topics in the history of 20th-Century art. May be repeated when topic varies.
ARTH	3230	Special topics in the history of American art and architecture. May be repeated when topic varies.
ARTH	3250	Special topics in the history of Asian art or architecture; may be repeated when topic varies.
ARTH	3270	Special topics in the history of ethnographic art of Africa, Oceania or the Americas; may be repeated when topic varies.
ARTH	3290	Special topics in the history of architecture; may be repeated when topic varies.
ARTH	3300	Study of the diversity of African art. The course will emphasize region and style with focus upon the collections of African Art in the Toledo Museum of Art.
ARTH	3350	Ancient Art of the Americas is a course which will focus on the artifacts produced by the indigenous populations of the Americas before the arrival of Columbus in the New World.
ARTH	3500	An in-depth study of the history of photography.
ARTH	3600	This course explores the development of technology as an art medium with a focus on significant historical examples from the 19th through the 21st centuries.
ARTH	3700	A WAC course offering study of twentieth-century feminist thought in relation to contemporary art makers and social issues, with close consideration of performance and installation.
ARTH	3750	We will consider how objects of material culture (film, photography, painting, sculpture, etc.) have intersected with disease while we engage a series of disease-related texts and histories of contagions (e.g., AIDS).
ARTH	3820	WAC course. This course focuses on how images reflect and shape our understanding of gender. Students learn to analyze visual material to identify and articulate their cultural significance in relation to gender.
ARTH	3980	Topics in Art History selected by the instructor. May be repeated when topic varies. (Check course schedules for specific subjects.)
ARTH	4500	A WAC course offering study of twentieth-century critical theory in relation to contemporary art makers and social issues, with a consideration of modernist versus postmodernist eras.
ARTH	4910	Directed research in the history of art for the Senior Thesis. May only be taken with consent of instructor; see department for application form. Must be taken consecutively with ARTH 4920, Senior Thesis II.
ARTH	4920	Writing the Senior Thesis. May only be taken after successful completion of ARTH 4910, Senior Thesis I and with instructor's consent. See Department for application form.



ARTH	4940	Student works in professional venue related to a diversity of art fields or endeavors. May be repeated for a maximum of 8 credit hours.
ARTH	4980	Topics in Art History selected by instructor; may be repeated when topic varies.
ARTH	4990	Independent Study in special problems of art history. May be repeated when topic varies.
ASTR	1010	Not for major credit; not open to science majors; no credit after 2010, 2020. General astronomy, including appearance of the sky and nature and evolution of the Earth, Moon, solar system, stars, galaxies and the Universe.
ASTR	2010	A quantitative introduction to the contents, origin and evolution of the solar system, as revealed by recent advances in space exploration. High school mathematics at the level of graphs, algebra and elementary logarithms is required.
ASTR	2020	A quantitative introduction to the nature and evolution of stars, galaxies and the universe, as revealed by observation and physical theory. High school mathematics at the level of graphs, algebra and elementary logarithms is required.
ASTR	2050	Laboratory exercises and observational measurements in elementary astronomy. Two hours laboratory per week. (not for major credit)
ASTR	2310	The history of observations of Mars, information gathered during the space program, potential for human exploration and colonization and related contemporary science fiction. High school algebra and graphs will be used.
ASTR	2320	The astronomical factors involved in the emergence of life in the universe, the search for extraterrestrial intelligence and the likelihood of advanced civilizations in the Galaxy. May be offered as writing intensive.
ASTR	2330	Descriptive discussion of the theory of general relativity, the final states of stellar evolution, black holes and history of the universe from the big bang through the formation of the solar system. May be offered as writing intensive.
ASTR	2340	Descriptive treatment of recent developments in astronomy from spacecraft, such as the Hubble Space Telescope, or from the newest, very large ground based telescopes. May be offered as writing intensive.
ASTR	4800	Theory and practice of astronomical outreach programming. Sky and calendar, mythology, constellations, astrophysics, buying and using small telescopes, operating and maintaining planetarium projectors, sky simulation software, projects and program production.
ASTR	4810	Spherical coordinate systems, astronomical time, celestial mechanics, the solar system and planetary physics, photometry, radiative transfer, stellar spectra and classification, binary stars and stellar masses.



ASTR	4820	Stellar structure and evolution, close binaries, origin of the elements, the sun, variable stars, star clusters, the interstellar medium, the Milky Way Galaxy, stellar statistics, galaxy structure and evolution, cosmology.
ASTR	4880	Astronomical, optical and electronic principles of operation of a modern astronomical observatory. Observing with the 1 meter telescope of Ritter Observatory, introduction to reduction, analysis and interpretation of astrophysical data. Six hours laboratory per week. May be offered as writing intensive.
BANS	3060	Applications of economic concepts and analytical techniques to business decisions and operations, including pricing and product management, market segmentation, technological development and the regulatory environment.
BANS	3070	Course focuses on the dynamics of business cycles and economic processes, and how they relate to business. Economic outlooks are examined through key indicators, cases, statistical analyses, and computer applications.
BANS	5210	An examination of the basic economic concepts and techniques used in business decision-making. The course covers micro- and macro-economic theories, history and evolution of economic institutions, ethical questions, and economic applications to business decisions in a global environment.
BANS	6050	Health care national policy, third party payment systems, capital formation, delivery systems, health care budgeting and macroeconomic health issues are examined.
BANS	6310	Study and use of forecasting models, managing and monitoring the forecasting function and communicating forecasts to management.
BANS	6520	Economic concepts and technique applied to company-level decision making. Focus on demand analysis, applied regression analysis and the interface between economies and human resource management, production, marketing and finance.
BANS	6740	Course develops a framework for measuring, tracking and forecasting national, regional and international business conditions. Focus is on how external economic conditions in the world economy influence business decisions.
BANS	7210	An examination of the basic economic concepts and techniques used in business decision-making. The course covers micro- and macro-economic theories, history and evolution of economic institutions, ethical questions and economic applications to business decisions in a global environment.
BIOC	611	An introduction to enzymatic catalysis, analysis of initial rate kinetics, presteady state kinetics, cooperatively and allosterism and affinity labeling.
BIOC	630	Group discussion of journal articles on topics on the cutting edge of cancer research.



BIOC	673	Students will participate in selected on-going research programs of members of the department faculty. May be repeated for credit.
BIOC	689	Intensive study in field of interest, including theoretical and experimental work. May be repeated for credit.
BIOC	811	An introduction to enzymatic catalysis, analysis of initial rate kinetics, presteady state kinetics, cooperatively and allosterism and affinity labeling.
BIOC	830	Group discussion of journal articles on topics on the cutting edge of cancer research.
BIOC	873	Students will participate in selected on-going research programs of members of the department faculty. May be repeated for credit.
BIOC	889	Intensive study in field of interest, including theoretical and experimental work. May be repeated for credit.
BIOE	1000	Orientation to the University of Toledo, the College of Engineering and the Department of Bioengineering. This course also provides a one-semester overview of the biomechanical and bioelectrical aspects of Bioengineering. The course is broken down into unit modules that illustrate key engineering principles and concepts. A major project based on the computational modeling of the cardiovascular system integrates the course units.
BIOE	1010	Preparation for co-op and full-time employment in industry. Topics include resume writing, interviewing skills, compensation and benefits, social protocol and corporate ethics, biomedical ethics, design and quality control processes and governmental regulation.
BIOE	1200	Introduction to the use of graphical design and numerical analysis software required for the solution of bioengineering problems.
BIOE	1EL	
BIOE	2100	Principles of thermodynamics and conservation of mass applied to living systems, biomedical devices and bioprocesses.
BIOE	2200	Physical and chemical properties of materials commonly used in medicine. Inflammatory, immunogenic, carcinogenic and toxicologic responses within host tissues. Testing and evaluation strategies for effective use of materials in medicine and biology.
BIOE	2EL	
BIOE	3110	Mechanics of the human musculoskeletal system and its joints. Basic concepts for deformable body mechanics, including stress and strain analysis, viscoelasticity, and applications to common problems in orthopedic biomechanics.
BIOE	3300	Measurement circuits, signal analysis, and computer design in biological systems and medicine. Electronic devices, digital devices, amplifier design and instrumentation safety. Laboratory applies lecture topics to acquisition of biological signals.
BIOE	3400	The quantitative description of momentum transport (viscous flow) and mass transport (convection and diffusion) in living systems. Application of engineering methods to model and quantify aspects of bioengineering systems.



BIOE	3500	Introduction to processing techniques used in biotechnology industries. The entire process of product development will be covered, including the creation and culture of recombinant organisms to synthesize a protein product, and the extraction, purification, immobilization and assay of the final product.
BIOE	3940	Approved co-op experience. Course may be repeated.
BIOE	3950	Approved co-op work experience beyond third required co-op experience. Course may be repeated.
BIOE	3EL	
BIOE	4100	Review of general physiological principles followed by a comprehensive study of the human nervous, muscle, circulatory, respiratory, excretory and digestive systems from an engineering perspective.
BIOE	4110	Three-dimensional analysis and measurements of human body motions. Applications include gait analysis, physical therapies, and impact analysis. Joint Replacement and Fixation Devices, total hip and total knee replacements, elbow, shoulder, wrist and finger arthroplasty; bone plates, hip fracture fixation devices and external fixators.
BIOE	4120	Design and application of analog and digital signal processors to biomedical signals. Covered topics include the Laplace transform, analog filter design, continuous and discrete Fourier transform, and FIR/IIR digital filter design.
BIOE	4200	Formulating, implementing and simulating mathematical models of biological and bioengineering systems. Linear feedback control systems are emphasized; other models are introduced.
BIOE	4300	Application of modern computing methods to the numerical and statistical analysis of bioengineering systems.
BIOE	4350	This course introduces the theory and design of optical biomedical instrumentation. Topics covered will include geometrical optics, electromagnetic theory, instrumentation and optical principles applied to biomedical optics.
BIOE	4410	This course integrates the engineering and life science backgrounds of senior bioengineering students through the presentation of design principles for problems in biomechanical, bioelectrical, biochemical and biological systems. Oral and written communication, ethics, engineering economics and business plans are reviewed.
BIOE	4420	A continuation of BIOE 4410. Teams of senior bioengineering students solve problems in biomechanical, bioelectrical, biochemical and biological systems through a design project. Testing and evaluation of designs, progress reports, oral presentations and a written final report are required.
BIOE	4610	The application of engineering principles to the design and analysis of artificial organs and their clinical application.
BIOE	4620	The application of engineering principles to the design and analysis of biological processes that employ living organisms or biochemicals.



BIOE	4630	Practical and theoretical aspects of processes required to separate and purify cells, proteins and other biological compounds.
BIOE	4640	An introduction to the physical principles, design and function of medical diagnostic imaging systems.
BIOE	4650	Introduction to expert systems and their characteristics, knowledge representation, inference techniques, dealing with uncertain information in knowledge-based systems and machine learning techniques for rule extraction.
BIOE	4660	Object-oriented modeling is an important tool in computational life science. This course utilizes the C++ programming language and the Unified Modeling Language (UML) to develop mechanistic biological models.
BIOE	4670	The basic principles and physics of ultrasound will be covered. Students will learn various medical applications of ultrasound and will be exposed to the latest developments in ultrasound technology.
BIOE	4710	Composite and hierarchical models bones; models of bone remodeling. Soft tissues models: linear and nonlinear viscoelasticity, Fung's quasilinear viscoelastic theory. Biphasic and triphasic models and mechano-ionic interactions.
BIOE	4720	The physiology of electrically excitable tissues, including nerve, muscle and secretory tissues. Action potential generation, neurotransmission and modulatory mechanisms. Methods for constructing and using computational models of excitable membranes.
BIOE	4730	Introduction to and utilization of computational packages in orthopedic biomechanics. Computer aided design of implants, shape-optimization, finite element analysis of implants performance and failure of musculoskeletal organs, tissues and cells.
BIOE	4740	Application of principles from engineering and the life sciences toward the development of biological substitutes that restore, maintain or improve tissue function.
BIOE	4750	The theory and implementation of techniques used for the measurement of forces and motion within the musculoskeletal system at the system, organ and tissue levels.
BIOE	4810	Introduction treatment of the theory and operation of physical electronic devices emphasizing electrical transport in metals, semiconductors and various models of BJT's, FET's and MOSFET's and application to bioinstruments.
BIOE	4820	A comprehensive treatment of the theory and techniques associated with Semiconductor nanotechnology and microfabrication of biomedical devices, sensors, MENS and microsystems.
BIOE	4910	Thesis research. The student completes and defends a written thesis under the direction and guidance of their faculty research adviser.
BIOE	4980	Selected subjects in the field of bioengineering with intensive investigation of the recent literature in a few areas of special interest to the class and the professor.



BIOE	4990	The student, under the guidance of their research adviser, explores in-depth specific areas or topics related to their research.
BIOE	4EL	
BIOE	5110	This course provides new bioengineering graduate students with the knowledge base needed to apply engineering concepts to the field of bioengineering. This course will also provide the necessary background needed for additional study in the life sciences and bioengineering.
BIOE	5120	A laboratory course providing the bioengineering graduate student the opportunity to explore and experience fundamental concepts and to use laboratory research tools and equipment.
BIOE	5200	Review and study of general physiological principles and bioengineering perspectives of the human circulatory, respiratory, digestive, immune, nervous, muscular and excretory systems.
BIOE	5260	An introduction to the physical principles, design and function of x-ray based diagnostic imaging systems, including radiographic, fluoroscopic and computer tomography (CT) systems.
BIOE	5300	Application of modern computing methods to the numerical and statistical analysis of bioengineering systems.
BIOE	5310	The purpose of this course is to introduce new bioengineering graduate students to research. Topics covered include hypothesis testing, biological data collection and analysis, and effective oral and written communication.
BIOE	5610	Properties and applications of systems of nonlinear differential equations. Fixed points, stability analysis, bifurcations, phase plane analysis, limit cycles, attractors and chaos. Applications to physiological and other biological systems are discussed.
BIOE	5620	The generation of electrical impulses by ion channels in excitable tissues. Models of ion channel gating include the Hodgkin-Huxley equations and Markov models. Principles of electrodiffusion applied to ionic flow through open channels.
BIOE	5630	Mathematic modeling of neurons. Cable theory applied to passive neurons. Compartmental modeling and computer simulations to incorporate ion channels. Obtaining experimental data to for creating realistic models of neurons.
BIOE	5640	The application of engineering principles to the design and analysis of artificial organs and their clinical application.
BIOE	5650	Practical and theoretical aspects of processes required to separate and purify cells, proteins and other biological compounds. This course will focus on new and nontraditional methods.
BIOE	5670	The basic principles and physics of ultrasound will be covered; Students will learn various medical applications of ultrasound and will be exposed to the latest developments in ultrasound technology.



BIOE	5710	Composite and hierarchical models of bone remodeling models presented. Soft tissue models include linear and nonlinear viscoelasticity, Fung's quasilinear viscoelastic theory. Biphasic and triphasic models and mechano-ionic interactions.
BIOE	5720	This course will address chemical, mechanical and immunological properties of biomaterials and strategies for their effective use in the fields of medicine and dentistry as well as in cell culturing and processing operations. Biomaterials applications in artificial organs, bone/joint replacement, plastic surgery, immunoisolation and controlled drug delivery will be addressed. The continued development and fabrication of biocompatible materials is critical for these areas.
BIOE	5730	Introduction to and utilization of computation packages in orthopedic biomechanics. Computer aided design of implants, shape-optimization, finite element analysis of implant performance and failure of musculoskeletal organs, tissues and cells.
BIOE	5740	Application of principles from engineering and the life sciences toward the development of biological substitutes that restore, maintain, or improve tissue function.
BIOE	5750	The theory and implementation of techniques used for the measurement of forces and motion within the musculoskeletal system at the system, organ and tissue levels.
BIOE	5780	Three-dimensional analysis and measurement of human body motions. Applications to gait analysis, physical therapies, and impact analysis. Includes total hip and knee replacement: elbow, shoulder, wrist and finger arthroplasty: bone plates, hip fracture fixation devices, and external fixators.
BIOE	5930	Presentations of ongoing research in the field of bioengineering. Includes presentations by guest speakers, faculty and graduate students.
BIOE	5950	Presentation of ongoing research in the field of bioengineering. Includes presentations by guest speakers, faculty and graduate students.
BIOE	5980	Selected subjects in the field of bioengineering with intensive investigation of the recent literature in a few areas of special interest to the class and the professor.
BIOE	5990	The student, under the guidance of their research adviser, explores in-depth specific areas or topics related to their thesis or dissertation research.
BIOE	6100	Application of mathematical and computational techniques to physiological systems. Models include conductive cables and compartmental models of nerve fibers, nonlinear differential equation models of electrophysiology, and stochastic models of biomolecular interactions.
BIOE	6200	This course provides a one-semester overview on the interactions of light and biological materials. Practical applications of biophotonics principles to physiological imaging will be emphasized.

BIOE	6210	Introduction to the theory and design of topical instruments for bioengineers. Instruments using geometrical, physical and quantum optical principles will be discussed.
BIOE	6220	Introduction to the theory and design of semiconductor sensors for measuring biological parameters. All major aspects of fabrication and characterization will be discussed.
BIOE	6230	This course is intended to give students in bioengineering a basic understanding of bioelectrical instrumentation and physiological measurements.
BIOE	6240	Laboratory introduction to measurement of bioelectrical potentials and use of instruments.
BIOE	6250	Advanced discussion of the theory and design of bioelectrical instrumentation. Computer analysis of data, data conversion and complex sensor systems will be considered.
BIOE	6270	An introduction to the physical principles, design and function of ultrasonic, nuclear medicine and magnetic resonance imaging (MRI) diagnostic imaging systems.
BIOE	6280	Contemporary techniques for producing and processing images and image data, including remote sensing, industrial inspection and medical diagnosis. Modeling and analysis of spatially invariant image sequences. Image reconstruction from projections.
BIOE	6290	Analog and discrete-data bioelectrical and bioengineering signals and their characteristics, bioengineering signal classification, signal processing and analysis techniques and decision making.
BIOE	6310	The application of engineering principles to the design and analysis of biological processes that employ living organisms or biochemicals.
BIOE	6340	Practical and theoretical aspects of various processes required to separate and purify cells, proteins and other biological compounds. Topics covered include various types of chromatography, liquid/liquid separations, solid/liquid separations, membrane processing, flow cytometry and field-enhanced separations. This course will focus on new and non-traditional methods.
BIOE	6410	Introduction to biological neural networks and cognitive science. Discriminant functions, training methods, TLUs, perceptrons and adalines. Back propagation and statistical methods. Kohonen networks. Hopfield network. Associative memories, Radial Basis Functions. Ontogenic neural networks. Neuro-fuzzy networks.
BIOE	6420	Fuzzy sets, the extension principle, fuzzy relations, fuzzy logic. Approximate operations on sets, lower and upper approximation, dependency and reduction of attributes. Populations of objects, fitness function, mutation, crossover.
BIOE	6430	Knowledge representation, dealing with uncertainty in knowledge-based systems. Machine learning techniques for rule extraction.

BIOE	6440	Fundamentals of series expansion using wavelets, continuous wavelets and frames, and signal compression. Applications of wavelets in signal processing signal reconstruction, compression and analysis for biomedical applications. Background in signal processing is desired.
BIOE	6510	Occupational biomechanics deals with the mechanical behavior of musculoskeletal tissues during performance of physical work. It combines knowledge of mechanics and physiology together with industrial work specifications and practice and provides an understanding of the physics of manual industrial activities.
BIOE	6520	The course of orthopedic biomechanics has been designed to fuse the biological and physiological problems with the science and technology of engineering. It focuses on a brief review of the physiology and biology of the human body, introduces the physics of manual industrial activities.
BIOE	6700	This course is concerned with the application of engineering principles to the design and analysis of artificial organs and their clinical application.
BIOE	6710	Tissue engineering combines engineering, materials science and cellular biology knowledge to solve the critical problems of tissue loss and organ failure. This course aims to not only teach aspects of engineering and cellular biology in the same course, but also to present them in such a way that the student learns the cellular phenomena involved in tissue development and growth and gains an appreciation of the role of biochemical and mechanical environment in regenerating tissues.
BIOE	6730	Application of transport phenomena and reaction engineering in the understanding of signaling, growth processes and the flow of biological fluids in mammalian vessels in living systems.
BIOE	6810	A comprehensive treatment of the theory and operation of physical electronic devices emphasizing electrical transport in metals and semiconductors, various models of BJT's and FET's and applications to biochemical and biomechanical sensing will be considered.
BIOE	6820	A comprehensive treatment of the theory, principles and techniques associated with microfabrication of electronic circuits and biosensors.
BIOE	6830	The course focuses on the development and analysis of mathematical models of biological processes. Students will use advanced mathematics and computers to implement models from the literature.
BIOE	6920	The student performs a special project of an advanced nature in bioengineering. A written report is required.
BIOE	6960	Graduate thesis research. The student completes and defends a written thesis under the direction and guidance of their faculty research adviser.
BIOE	7120	A laboratory course providing the bioengineering graduate student the opportunity to explore and experience fundamental concepts and to use laboratory research tools and equipment.



BIOE	7260	An introduction to the physical principles, design and function of x-ray based diagnostic imaging systems, including radiographic, fluoroscopic and computer tomography (CT) systems.
BIOE	7310	The purpose of this course is to introduce new bioengineering graduate students to research. Topics covered include hypothesis testing, biological data collection and analysis, and effective oral and written communication.
BIOE	7610	Properties and applications of systems of nonlinear differential equations. Fixed points, stability analysis, bifurcations, phase plane analysis, limit cycles, attractors and chaos. Applications to physiological and other biological systems are discussed.
BIOE	7620	The generation of electrical impulses by ion channels in excitable tissues. Models of ion channel gating include the Hodgkin-Huxley equations and Markov models. Principles of electrodiffusion applied to ionic flow through open channels.
BIOE	7630	Mathematic modeling of neurons. Cable theory applied to passive neurons. Compartmental modeling and computer simulations to incorporate ion channels. Obtaining experimental data to for creating realistic models of neurons.
BIOE	7720	This course will address chemical, mechanical and immunological properties of biomaterials and strategies for their effective use in the fields of medicine and dentistry as well as in cell culturing and processing operations. Biomaterials applications in artificial organs, bone/joint replacement, plastic surgery, immunoisolation and controlled drug delivery will be addressed. The continued development and fabrication of biocompatible materials is critical for these areas.
BIOE	7930	Presentations of ongoing research in the field of bioengineering. Includes presentations by guest speakers, faculty and graduate students.
BIOE	7950	Presentation of ongoing research in the field of bioengineering. Includes presentations by guest speakers, faculty and graduate students.
BIOE	7980	Selected subjects in the field of bioengineering with intensive investigation of the recent literature in a few areas of special interest to the class and the professor.
BIOE	7990	The student, under the guidance of their research adviser, explores in-depth specific areas or topics related to their thesis or dissertation research.
BIOE	8100	Application of mathematical and computational techniques to physiological systems. Models include conductive cables and compartmental models of nerve fibers, nonlinear differential equation models of electrophysiology, and stochastic models of biomolecular interactions.
BIOE	8200	This course provides a one-semester overview on the interactions of light and biological materials. Practical applications of biophotonics principles to physiological imaging will be emphasized.

BIOE	8210	Introduction to the theory and design of topical instruments for bioengineers. Instruments using geometrical, physical and quantum optical principles will be discussed.
BIOE	8220	Introduction to the theory and design of semiconductor sensors for measuring biological parameters. All major aspects of fabrication and characterization will be discussed.
BIOE	8230	This course is intended to give students in bioengineering a basic understanding of bioelectrical instrumentation and physiological measurements.
BIOE	8240	Laboratory introduction to measurement of bioelectrical potentials and use of instruments.
BIOE	8250	Advanced discussion of the theory and design of bioelectrical instrumentation. Computer analysis of data, data conversion and complex sensor systems will be considered.
BIOE	8270	An introduction to the physical principles, design and function of ultrasonic, nuclear medicine and magnetic resonance imaging (MRI) diagnostic imaging systems.
BIOE	8280	Contemporary techniques for producing and processing images and image data, including remote sensing, industrial inspection and medical diagnosis. Modeling and analysis of spatially invariant image sequences. Image reconstruction from projections.
BIOE	8290	Analog and discrete-data bioelectrical and bioengineering signals and their characteristics, bioengineering signal classification, signal processing and analysis techniques and decision making.
BIOE	8310	The application of engineering principles to the design and analysis of biological processes that employ living organisms or biochemicals.
BIOE	8340	Practical and theoretical aspects of various processes required to separate and purify cells, proteins and other biological compounds. Topics covered include various types of chromatography, liquid/liquid separations, solid/liquid separations, membrane processing, flow cytometry and field-enhanced separations. This course will focus on new and non-traditional methods.
BIOE	8410	Introduction to biological neural networks and cognitive science. Discriminant functions, training methods, TLUs, perceptrons and adalines. Back propagation and statistical methods. Kohonen networks. Hopfield network. Associative memories, Radial Basis Functions. Ontogenic neural networks. Neuro-fuzzy networks.
BIOE	8420	Fuzzy sets, the extension principle, fuzzy relations, fuzzy logic. Approximate operations on sets, lower and upper approximation, dependency and reduction of attributes. Populations of objects, fitness function, mutation, crossover.
BIOE	8430	Knowledge representation, dealing with uncertainty in knowledge-based systems. Machine learning techniques for rule extraction.



BIOE	8440	Fundamentals of series expansion using wavelets, continuous wavelets and frames and signal compression. Applications of wavelets in signal processing signal reconstruction, compression and analysis for biomedical applications. Background in signal processing is desired.
BIOE	8510	Occupational biomechanics deals with the mechanical behavior of musculoskeletal tissues during performance of physical work. It combines knowledge of mechanics and physiology together with industrial work specifications and practice and provides an understanding of the physics of manual industrial activities.
BIOE	8520	The course of orthopedic biomechanics has been designed to fuse the biological and physiological problems with the science and technology of engineering. It focuses on a brief review of the physiology and biology of the human body, introduces the physics of manual industrial activities.
BIOE	8700	This course is concerned with the application of engineering principles to the design and analysis of artificial organs and their clinical application.
BIOE	8710	Tissue engineering combines engineering, materials science and cellular biology knowledge to solve the critical problems of tissue loss and organ failure. This course aims to not only teach aspects of engineering and cellular biology in the same course, but also to present them in such a way that the student learns the cellular phenomena involved in tissue development and growth and gains an appreciation of the role of biochemical and mechanical environment in regenerating tissues.
BIOE	8730	Application of transport phenomena and reaction engineering in the understanding of signaling, growth processes and the flow of biological fluids in mammalian vessels in living systems.
BIOE	8960	Original investigations of significant bioengineering problems at the graduate level under the guidance of a member of the faculty.
BIOL	1120	A survey of major biological principles and phenomena in various plants and animals with emphasis on man. (Not for major credit).
BIOL	1140	Lectures integrating developmental, genetic, neurophysiological, psychological, sociological and philosophical aspects of human consciousness in terms a lay person can understand. (not for major credit)
BIOL	1150	Basic principles of human inheritance. Includes a comprehensive treatment of modern genetic technologies and their social, ethical, political and economic implications. (not for major credit)
BIOL	1220	(Not for major credit) A series of laboratory exercises that supplement the material discussed in BIOL 1120.
BIOL	1340	An interdisciplinary course that discusses major scientific discoveries, the role of hypothesis testing in science, the use of mathematics in science, data presentation and moral and ethical issues that stem from science.
BIOL	1EL	



BIOL	2010	This course will discuss and analyze classical experiments which underlie major concepts in biology, such as evolution, the gene, the cell, homeostasis and epigenesis. (not for major credit)
BIOL	2020	Structure and operation of organ systems. Lecture and laboratory emphasizing how shapes and properties within tissues and organs enable the whole organism to maintain a living balance. (not for major credit)
BIOL	2100	Emphasizes the principles of microbiology that are important to the environmental, life science, nursing and health-related fields. (not for major credit)
BIOL	2150	An introduction to the diversity of multicellular life on earth, evolution and physiological adaptations.
BIOL	2160	A series of laboratory exercises which supplement the material discussed in BIOL 2150.
BIOL	2170	A general introduction to cell structure and function, energy processing in plants and animals, basic genetics, molecular biology and development.
BIOL	2180	A series of laboratory exercises which supplement the material discussed in BIOL 2170.
BIOL	2910	A discussion/demonstration of opportunities for undergraduate research in Biology at the University of Toledo and elsewhere.
BIOL	2980	Selected topics in Biology for the non-major.
BIOL	2EL	
BIOL	3010	The principles of heredity at the molecular level, covering gene and chromosome structure, replication and repair, recombination, control of gene expression, control of cell division.
BIOL	3020	A laboratory course in experimental molecular biology involving gene cloning, analysis of cloned product and other techniques of modern molecular genetics.
BIOL	3030	A study of the internal organization of the eukaryotic cell, organelle and membrane function, cell-cell signaling, cell movement, cell adhesion, the extracellular matrix.
BIOL	3040	Laboratory exercises involving cell culturing, protein analysis, protein localization and other techniques of modern cell biology.
BIOL	3070	Detailed structural and functional analysis of the human endocrine, nervous, reproductive, circulatory, respiratory, digestive and excretory systems. An emphasis will be placed on system-system interactions and homeostatic mechanisms.
BIOL	3090	Lectures on molecular and cellular interactions in animal and plant embryogenesis and development.
BIOL	3100	An analysis of development by biochemical and biological methods using live materials.
BIOL	3210	Lectures covering nutrition and transport in humans, role of nutrition in growth and development, nutritional diseases.



BIOL	3410	Lectures on the basic concepts of plant physiology. Included will be a review of plant organization, transport systems and biochemistry.
BIOL	3420	A discussion of plants which are important to humans from household, garden, landscape, agronomic and other perspectives. Laboratory exercises will concern culture techniques.
BIOL	3510	A comparative treatment of the evolutionary and developmental history of the major vertebrate organ systems.
BIOL	3EL	
BIOL	4010	Analysis of the regulatory mechanisms for nucleic acid and protein synthesis; genome structure; recombination; genetic damage and repair.
BIOL	4030	Lectures on the principles of modern microbiology and virology, including metabolism, growth, cellular morphology, genetics and host parasite relationships. Bacterial and viral diseases will be illustrated.
BIOL	4040	Laboratories utilizing basic microbiological techniques and illustrating principles of growth, identification and genetics of microbes.
BIOL	4050	Lectures on the chemical, genetic and cellular basis of the immune response.
BIOL	4060	Laboratory studies of the immune response.
BIOL	4090	Introduction to carcinogenesis and the cellular and molecular features of malignancy. Methods to diagnose and treat malignancies will also be presented.
BIOL	4110	A systematic survey of genetic variation in man with emphasis on modern research methodology.
BIOL	4130	Lectures pertaining to chromosome architecture and mechanisms controlling variation in chromosome structures and changes in chromosome number.
BIOL	4170	Survey of animal and plant developmental genetics. Basic principles and methods of genetic analysis, model systems, genetic basis of tissue patterning, evolutionary implications and applications in tissue and plant engineering.
BIOL	4200	Mechanisms regulating gas exchange, water balance and electrolyte concentrations in plasma and interstitial fluid in the mammalian body; normal function of cardiovascular, gas exchange and renal systems including neuroendocrine control.
BIOL	4210	Examines the genetic, molecular, and biochemical defects associated with human disease and includes a review of current research related to human disease.
BIOL	4230	Lectures on the comparative and environmental physiology of vertebrates and invertebrates including metabolism, temperature regulation, respiration, circulation, excretion and osmotic regulation.
BIOL	4250	An introduction to the molecular, genetic and cellular aspects of neurobiology in humans and model organisms. Topics include neuronal physiology and signaling, neural development, sensation, muscle control, learning and memory.



BIOL	4300	Introduction to the principles and methodology of plant taxonomy with particular attention to the native plant species.
BIOL	4310	Survey of the invertebrates from unicellular protista to protostomes and deuterostomes. Emphasis on adaptations to aquatic, terrestrial, or parasitic habitats.
BIOL	4320	Laboratory exercises and field trips involving observation, collection and dissection of representative invertebrates.
BIOL	4330	A study of the host-parasite interaction including aspects of parasite morphology, taxonomy, development and ecology.
BIOL	4700	A writing intensive course that focuses on reading original literature in biology in a variety of formats. Required of all biology majors.
BIOL	4790	Faculty directed course that incorporates extensive field experience and individual projects.
BIOL	4910	Faculty directed research. Both oral and written reports of results required.
BIOL	4940	Prior consent of both the department and the proposed supervisor. Scientist-supervised study of research done in an extramural research institute or scientific laboratory. Written and oral reports to the department required. Maximum of 6 hours may count toward BIOL electives.
BIOL	4950	Supervised practical experience in the field of biology. Maximum of 6 hours may be used as biology elective credit for BS degree.
BIOL	4980	An advanced course for Biology majors in an important area of biology. May be repeated for credit under different specialty numbers (topics).
BIOL	4990	Faculty directed readings or projects in a specific area of biology.
BIOL	4EL	
BIOL	5030	Lectures on the principles of modern microbiology and virology, including metabolism, growth, cellular morphology, genetics and host parasite relationships. Bacterial and viral diseases will be illustrated.
BIOL	5040	Laboratories utilizing basic microbiological techniques and illustrating principles of growth, identification and genetics of microbes.
BIOL	5050	The development, genetics and physiology of the immune response.
BIOL	5060	Laboratory studies of the immune response.
BIOL	5110	A systematic survey of genetic variation in man with emphasis on modern research methodology.
BIOL	5130	Lectures pertaining to chromosome architecture and mechanisms controlling variation in chromosome structures and changes in chromosome number.
BIOL	5170	Survey of animal and plant developmental genetics. Model systems, genetic basis of tissue patterning, evolutionary implications and applications in tissue and plant engineering. Analysis of primary literature.
BIOL	5230	Lectures on the comparative and environmental physiology of vertebrates and invertebrates including metabolism, temperature regulation, respiration, circulation excretion and osmotic regulation.



BIOL	5310	Survey of invertebrates from unicellular protista and protostomes and deuterostomes. Emphasis on adaptations to aquatic, terrestrial or parasitic habitats.
BIOL	5320	Laboratory exercises and field trips involving observation, collection and dissection of representative invertebrates.
BIOL	5330	A study of the host-parasite interaction including aspects of parasite morphology, taxonomy, development and ecology.
BIOL	5610	
BIOL	5980	Lecture, seminar or distance learning course on current topics or problems in the biological sciences that are relevant for science educators.
BIOL	6000	A writing intensive course for new graduate students that focuses on scientific hypothesis testing and reading the original literature in biology.
BIOL	6010	Analysis of recent developments in prokaryotic and eukaryotic molecular biology through evaluation and discussion of current literature.
BIOL	6020	Library screening and sequencing of selected clones.
BIOL	6090	An advanced course that stresses the experimental basis for current concepts of cell structure and function.
BIOL	6100	An in-depth discussion of techniques used in the study of cell and molecular biology. Examples include chromatography and fractionation, electrophoresis cell and molecular cloning.
BIOL	6200	This course will provide an in-depth discussion of signal transduction topics important for cell/molecular biology research, emphasizing the interplay between intracellular signaling molecules needed to regulate physiological responses.
BIOL	6250	This course will explore the current neuroscience literature with a focus on the signaling within and between neural cells that orchestrates the development, function, and plasticity of the nervous system.
BIOL	6260	The course will cover our current understanding of carcinogenesis and provide in-depth discussion of the important topics and latest advances in cancer research.
BIOL	6510	See CHEM 6510.
BIOL	6520	See CHEM 6520.
BIOL	6530	See CHEM 6530.
BIOL	6920	Introduction to research on a selected problem under the direction of an individual faculty member.
BIOL	6930	Presentation on research or current literature by graduate students, faculty, or guest speakers.
BIOL	6940	Prior consent of both the department and the proposed supervisor. Scientist-supervised study of research done in an extramural research institute or scientific laboratory. Written and oral reports to the department required.
BIOL	6960	Research that normally contributes to the fulfillment of the M.S. thesis requirement.



BIOL	6980	Seminar/discussion of significant current topics or problems in biology.
BIOL	6990	Faculty directed readings or projects in a specific area of Biology.
BIOL	7030	Lectures on the principles of modern microbiology and virology, including metabolism, growth, cellular morphology, genetics and host parasite relationships. Bacterial and viral diseases will be illustrated.
BIOL	7040	Laboratories utilizing basic microbiological techniques and illustrating principles of growth, identification and genetics of microbes.
BIOL	7050	The development, genetics and physiology of the immune response.
BIOL	7060	Laboratory studies of the immune response.
BIOL	7110	A systematic survey of genetic variation in man with emphasis on modern research methodology.
BIOL	7130	Lectures pertaining to chromosome architecture and mechanisms controlling variation in chromosome structures and changes in chromosome number.
BIOL	7230	Lectures on the comparative and environmental physiology of vertebrates and invertebrates including metabolism, temperature regulation, respiration, circulation excretion and osmotic regulation.
BIOL	7310	Survey of invertebrates from unicellular protista and protostomes and deuterostomes. Emphasis on adaptations to aquatic, terrestrial or parasitic habitats.
BIOL	7320	Laboratory exercises and field trips involving observation, collection and dissection of representative invertebrates.
BIOL	7330	A study of the host-parasite interaction including aspects of parasite morphology, taxonomy, development and ecology.
BIOL	7980	Lecture, seminar or distance learning course on current topics or problems in the biological sciences that are relevant for science educators.
BIOL	8000	A writing intensive course for new graduate students that focuses on scientific hypothesis testing and reading the original literature in biology.
BIOL	8010	Analysis of recent developments in prokaryotic and eukaryotic molecular biology through evaluation and discussion of current literature.
BIOL	8020	Library screening and sequencing of selected clones.
BIOL	8090	An advanced course that stresses the experimental basis for current concepts of cell structure and function.
BIOL	8100	An in-depth discussion of techniques used in the study of cell and molecular biology. Examples include chromatography and fractionation, electrophoresis cell and molecular cloning.
BIOL	8200	This course will provide an in-depth discussion of signal transduction topics important for cell/molecular biology research, emphasizing the interplay between intracellular signaling molecules needed to regulate physiological responses.
BIOL	8250	This course will explore the current neuroscience literature with a focus on the signaling within and between neural cells that orchestrates the development, function, and plasticity of the nervous system.



BIOL	8260	The course will cover our current understanding of carcinogenesis and provide in-depth discussion of the important topics and latest advances in cancer research.
BIOL	8510	See CHEM 8510.
BIOL	8520	See CHEM 8520.
BIOL	8530	See CHEM 8530.
BIOL	8920	Introduction to research on a selected problem under the direction of an individual faculty member.
BIOL	8930	Presentation on research or current literature by graduate students, faculty, or guest speakers.
BIOL	8940	Prior consent of both the department and the proposed supervisor. Scientist-supervised study of research done in an extramural research institute or scientific laboratory. Written and oral reports to the department required.
BIOL	8960	Research normally leading to the fulfillment of the Ph.D. dissertation requirement.
BIOL	8980	Seminar/discussion of significant current topics or problems in biology.
BIOL	8990	Faculty directed readings or projects in a specific area of Biology.
BIOL	WAC	
BIPG	510	Introduction to bioinformatics and computational biology. Both theory and practical methods for evaluating and managing biomedical data will be covered. Topics range from sequence analysis to structure prediction. Includes computer laboratory sessions. May be taken concurrently with BIPG520/720.
BIPG	511	This course will provide students with practical experience with the most common bioinformatics tasks. Short lectures will be integrated with computer exercises in the Bioinformatics Computer Lab.
BIPG	520	Application of probability and statistics to bioinformatic analysis. Topics include stochastic processes, Markov chains, statistical basis for DNA sequence analysis, evolutionary models, and statistical analysis of functional genomic data. Includes computer laboratory sessions. May be taken concurrently with BIPG510/710.
BIPG	530	In-depth analysis of original scientific papers/seminars in the fields of bioinformatics, proteomics and genomics for the development of critical analysis and scientific communication skills. May be repeated for credit.
BIPG	540	This course will introduce students to database concepts, design, and implementation, using the most popular database formats utilized in biomedical research. The practicum provides hands-on experience with real-world databases.
BIPG	550	This course aims at providing hands-on training on analysis of microarray data. Students will learn how to handle and analyze microarray data. Topics covered include preprocessing, identifying differentially expressed genes, classification and presentation of findings. Different platforms of microarray technologies will be covered in this course.



BIPG	580	Students will participate in selected on-going research programs with faculty members in the Bioinformatics, Proteomics and Genomics program. May be repeated for credit.
BIPG	590	Students will develop an in-depth scholarly project to fulfill the research project requirements for the MSBS degree with a concentration in Bioinformatics, Proteomics and Genomics. May be repeated for credit.
BIPG	610	Use, design, strengths and limitations of bioinformatics programs run on desktop computers. Programming in PERL to acquire and analyze biological sequences. Construction and management of databases. Introduction of LINUX, C++, and Java. Includes computer laboratory sessions.
BIPG	640	Lectures and hands-on activities that demonstrate the application of bioinformatics, proteomic and genomics techniques to solve research problems being studied by selected faculty from MCO, UT, BGSU or another institution.
BIPG	689	Intense study in an area of bioinformatics, proteomics and genomics (BPG). Course content, assignments, meeting times and grade requirements are arranged with a BPG faculty member. May be repeated for credit.
BIPG	710	Introduction to bioinformatics and computational biology. Both theory and practical methods for evaluating and managing biomedical data will be covered. Topics range from sequence analysis to structure prediction. Includes computer laboratory sessions. May be taken concurrently with BIPG520/720.
BIPG	711	Short lectures integrated with computer tasks in Bioinformatics Computer Lab. The bioinformatics resources will primarily be those freely available on the internet. The course will meet twice a week for 2-hour sessions in the Bioinformatics Computer Lab. The course will last four weeks during the Summer semester. The following topics will be presented in the eight sessions: searching biological databases pair-wise sequence alignments, BLAST searches, multiple sequence alignment, phylogenetic analysis, gene prediction, and transcription factor binding sites and other DNA motifs. No prerequisites.
BIPG	720	Application of probability and statistics to bioinformatic analysis. Topics include stochastic processes, Markov chains, statistical basis for DNA sequence analysis, evolutionary models, and statistical analysis of functional genomic data. Includes computer laboratory sessions. May be taken concurrently with BIPG510/710.
BIPG	730	



BIPG	740	This course will introduce students to database concepts, design, and implementation, using the most popular database formats utilized in biomedical research. The practicum provides hands-on experience with real-world databases.
BIPG	750	Use, design, strengths and limitations of bioinformatics programs run on desktop computers. Programming in PERL to acquire and analyze biological sequences. Construction and management of databases. Introduction of LINUX, C++, and Java. Includes computer laboratory sessions.
BIPG	810	
BIPG	840	Intense study in an area of bioinformatics, proteomics and genomics (BPG). Course content, assignments, meeting times and grade requirements are arranged with a BPG faculty member. May be repeated for credit.
BIPG	889	
BLAW	3550	Introduction of the issues and challenges facing human resource specialists, generalists and managers in organizations. Legal, social and political aspects of human resource management, as well as compliance requirements for OSHA and other safety laws, are discussed.
BLAW	3570	The role of law in structuring and operating business choices of sole proprietorship, agency, partnership, limited partnership, close private corporation, large public corporation, limited liability corporation and negotiable instruments law.
BLAW	3670	The role of laws and organizations governing business done in the global arena. Study of the legal environment of international business; international sales, credits and the commercial transaction; international trade law and the regulation of the international marketplace.
BLAW	4570	This course examines intellectual property systems and presents management options for the protection of intellectual property. Technology's legal and ethical aspects are covered, including case studies on specific technological innovations and products.
BLAW	4580	The course prepares the student to prevent deceptive and fraudulent practices in business, including kinds and definitions of deception and fraud, history, legal aspects, legislation, detection and prevention.
BLAW	5150	Emphasis will be placed on the law in those areas which would assist the student to have a better understanding of those ethical and social problems in our increasingly more complicated legal environment.
BLAW	6040	Provides an analytical framework for the understanding of the legal climate within which the health care institution operates. Emphasis on the legal concepts which bear upon current health care problems and operation and planning decisions.



BLAW	6100	Discussion of social criticisms of business and of responses which may improve its social performance. Topics include consumerism, ecology, market power, market organization, social responsibility and ethics regulation and public policy, social performance measurement.
BLAW	7150	Emphasis will be placed on the law in those areas that would assist the student to have a better understanding of those ethical and social problems in our increasingly more complicated legal environment.
BME	8900	[1-16 hours] Selected topics from current BME research with investigation into recent literature and/or via a laboratory experience in an area of mutual interest to the student and the instructor. Students are to use the section number of their instructor. Prerequisite: Instructor's consent.
BME	8930	0 hour] Biomedical engineering research presentations by external speakers from industry, universities and other organizations.
BME	8960	[1-16 hours] Doctoral dissertation research credit hours for students in the biomedical engineering program. Students are to use the section number of their dissertation adviser.
BME	8980	[1-8 hours] A special topic at the graduate level in biomedical engineering to be offered as a lecture course during a term by a BME faculty member. Prerequisite: Consent of the BME faculty member.
BMGT	1000	Acquaints the new student with the services, policies, procedures and layout of the university, college and department. Establishes relationships among new students, full-time professors and peer mentors during this time of adjustment.
BMGT	1010	An introduction to the world of business focusing on an overview of business operations with special emphasis on management, marketing, computers, accounting and finance.
BMGT	1500	Covers all aspects of communicating in the workplace including oral, written and group communications. Specific subjects covered include composing agendas, conducting interviews and organizing meetings. Students will learn a computer graphics program and prepare a presentation.
BMGT	1540	This course will address the impact of individual and group behavior on organizations. Topics covered include downsizing, stakeholder management, network organizations, participative management approaches and the quality movement.
BMGT	1800	The study of planning and controlling the operations that an organization uses to produce goods and provide services and the decision making tradeoffs that occur.
BMGT	1850	An introduction to the basic philosophies, concepts and tools of Quality Management. Continuous improvement, customer focus and appropriate measurement of quality are covered.
BMGT	1EL	
BMGT	1EU	



BMGT	2010	Covers issues dealing with managing a company in a predominantly service-oriented marketplace. Topics include training employees to deal with customers/clients, creating a customer-friendly business environment, problem-solving and strategic planning.
BMGT	2020	Explores the functions of Human Resource Management including acquiring and developing human resources with special emphasis on improving the quality of work life.
BMGT	2030	Explores the role of first-line managers in organizations with special emphasis on the responsibilities of supervisors. These responsibilities include delegation, communication, problem-solving, training and leading.
BMGT	2050	Examines entrepreneurship with a special emphasis on formulating, developing and operating a small business.
BMGT	2060	Overview of knowledge and skills necessary to provide customer service and support to clients and computer users with an emphasis on problem-solving and communication skills in a technical setting.
BMGT	2110	Students will examine one particular industry and learn the various economic factors associated with operating a business in an international setting.
BMGT	2120	Course is designed to assist students in understanding personal and consumer finance issues as well as sound financial planning measures.
BMGT	2310	Carefully documents treatment of the legal framework of business. Emphasis on the international aspect of business law. Topics covered include contracts, bailments, agency relationships, legal forms of ownership and negotiable instruments.
BMGT	2700	This course offers a conceptual framework for understanding diversity and its effects on organizational behavior. It will also provide action tools for effective management of diversity in organizations.
BMGT	2720	Students discover how to be a diversity trainer and explore bias-free practices that create more inclusive diverse work environments free from discrimination, contributing to enhanced organizational effectiveness.
BMGT	2750	Strategies taught to increase communication effectiveness among employees from differing cultural backgrounds. Students will also learn market-specific tips and taboos and develop strategies for negotiating across cultures.
BMGT	2800	Gain an understanding of the ISO 9000 and QS 9000 quality standards requirements and the actions and decisions necessary to successfully gain ISO/OS 9000 registration.
BMGT	2990	Students will study a management-related subject mutually agreed upon between the student and instructor. The format may include lecture, computer lab and/or practical experience.
BMGT	2EL	
BMGT	2EU	



BMSP	625	This is an interdisciplinary course designed to teach students skills in developing a research plan in the form of a grant proposal.
BMSP	631	The course will cover the fundamentals and current research efforts in biomedical sciences, emphasizing diseases of the cardiovascular, immune, and nervous systems, as well as metabolic and infectious diseases.
BMSP	632	The course will cover the fundamentals and current research efforts in biomedical sciences, emphasizing diseases of the cardiovascular, immune, and nervous systems, as well as metabolic and infectious diseases.
BMSP	633	The course will cover principles of protein structure/function relationships in proteins, protein folding, ligand-protein interactions and mechanism of enzyme-catalyzed reactions. Special emphasis will be given to the present-day research.
BMSP	634	This course provides an introduction to major areas of current research in genetics and molecular biology. Topics include gene structure and regulation, DNA replication, recombination, repair, mutation, and quantitative genetics.
BMSP	635	The content of this course will encompass didactic lectures on current knowledge and methodological approaches in the area of fundamental cellular processes and cell communication.
BMSP	636	This course will explore vital roles played by plasma and intracellular membranes in communication and homeostasis, and by membrane lipid/protein interactions in defining cytoarchitecture, protein sorting, excitability and synaptic transmission.
BMSP	637	Forum for the presentation, critique, and discussion of recent primary literature important to the development of the field of biomedical science.
BMSP	638	This course will cover the basic principles and applications, of state-of-the-art technology in molecular biology, protein chemistry, and studies with culture cells, tissue explants and transgenic animal models.
BMSP	639	Students will be mentored in biomedical research and will gain familiarity with research projects ongoing in graduate laboratories. May be repeated for credit.
BMSP	825	This is an interdisciplinary course designed to teach students skills in developing a research plan in the form of a grant proposal.
BMSP	831	The course will cover the fundamentals and current research efforts in biomedical sciences, emphasizing diseases of the cardiovascular, immune, and nervous systems, as well as metabolic and infectious diseases.
BMSP	832	The course will cover the fundamentals and current research efforts in biomedical sciences, emphasizing diseases of the cardiovascular, immune, and nervous systems, as well as metabolic and infectious diseases.



BMSP	833	The course will cover principles of protein structure/function relationships in proteins, protein folding, ligand-protein interactions and mechanisms of enzyme-catalyzed reactions. Special emphasis will be given to the present-day research.
BMSP	834	This course provides an introduction to major areas of current research in genetics and molecular biology. Topics include gene structure and regulation, DNA replication, recombination, repair, mutation, and quantitative genetics.
BMSP	835	The content of this course will encompass didactic lectures on current knowledge and methodological approaches in the area of fundamental cellular processes and cell communication.
BMSP	836	This course will explore vital roles played by plasma and intracellular membranes in communication and homeostasis, and by membrane lipid/protein interactions in defining cytoarchitecture, protein sorting, excitability and synaptic transmission.
BMSP	837	Forum for the presentation, critique, and discussion of recent primary literature important to the development of the field of biomedical sciences.
BMSP	838	This course will cover the basic principles and applications, of state-of-the-art technology in molecular biology, protein chemistry, and studies with culture cells, tissue explants and transgenic animal models.
BMSP	839	Students will be mentored in biomedical research and will gain familiarity with research projects ongoing in graduate laboratories. May be repeated for credit.
BUAD	1000	Introduction to the University community. Strategies for successful college transition are explored.
BUAD	1010	Introduction to the various functional areas of business, the critical role business plays in the economy, the impact of globalization and the performance of business functions.
BUAD	1020	Course provides an overview of the role of micro-computers and information systems in business applications. It provides good training in word processing and spreadsheets for problem solving.
BUAD	2000	This course will assist students with self-assessment, exploring career options and developing a resume. Skills in communicating, listening, organizing and supervising are some of the areas required for long-term career success that are covered.
BUAD	2030	Skills-based course equips the student to effectively lead and work in teams. Continuous improvement, problem solving, decision making, synergy and teamwork are explored in hands-on learning experience.
BUAD	2040	This course is an introduction to financial accounting from the perspective of a financial statement user. Where appropriate, it provides a small and mid-sized company's perspective.
BUAD	2050	This course is an introduction to management accounting, including the use and limitations of cost-volume-profit analysis for fundamental decisions concerning products, services and activities.



BUAD	2060	Business data analysis using interactive tools such as spreadsheets. Course will cover the application of statistical concepts, forecasting, the collection and analysis of data for business decision-making using cases where appropriate.
BUAD	2070	A study of application of statistics in business using cases and spreadsheets. Course will cover hypothesis testing, regression analysis and correlation analysis, process control, time series and index numbers.
BUAD	2080	This course covers the global competitive challenges impacting businesses. Topics include globalization forces, country differences in political economy and culture, cross-border trade and investment, regional economic integration, and monetary systems.
BUAD	3000	This course will assist students in developing job search skills necessary to obtain an internship and full-time position. Skills covered include resume enhancement, cover letter design, networking, informational interviewing, interview preparation and professional dress.
BUAD	3010	A practical approach to the planning and utilization of the marketing function. Topics include product development, pricing, promotion and distribution within a domestic and international framework.
BUAD	3020	This course provides an overview of the functions, problems, solution techniques and decision making processes within the manufacturing and service environment. Topics include production planning, JIT, TQM and materials management.
BUAD	3030	Introduction to managerial and organizational concepts designed to develop knowledge, attitudes, techniques and skills in creating and managing innovative, adaptive organizations. Interactive exercises, videos, cases, discussions and lectures will be used.
BUAD	3040	Course emphasizes integrated financial decision making tools, techniques and theory. Content stresses acquisition and management of short and long-term capital, short and long-term investments, corporate securities and, financial markets.
BUAD	3050	The role of computers and information systems in business decision-making will be carefully examined. The student is expected to develop computer-based applications for business decision making and problem solving through the use of state of the art software, including advanced spreadsheets, database and web design tools.
BUAD	3470	The nature of the law and the formation and application of Legal Principles; the Legal and Ethical Environment in which business operates; regulation of commerce and competition through Contracts, Torts and the Uniform Commercial Code.



BUAD	4010	Course is designed to be integrative and to provide a top-down focus in order to enhance overall understanding of key business concepts and processes. Students select from five options: The Dynamics of Family Business; Staying in Business: Value Based Management; Developing Global Business Plan for Small and Mid-Sized Firms; Integrative Management Game; and Honors Integrative Research Project.
BUAD	4020	This course integrates functional business knowledge learned in the core and stresses their interconnectedness and interrelationships. Students will develop and implement strategies in response to changes in the external environment.
BUAD	6010	A contemporary view of entrepreneurship strategies in organizations is presented. This course deals with opportunity driven analysis and strategy. It will expose students to the role of the entrepreneurs in an organization and the skills and attitudes required to succeed in planning and managing entrepreneurial organizations. This integrated course covers a substantial body of knowledge, concepts and tools that entrepreneurs/intrapreneurs need prior to and while starting their new ventures.
BUAD	6030	Involves customer and market-driven issues and how they affect product/service/operations development. This integrated course examines marketing, operating and engineering in product development.
BUAD	6100	This course develops an appreciation for financial statements and their usefulness in making decisions. The nature of costs, opportunity costs, responsibility accounting, budgeting, cost allocations, absorption cost systems, activity based costing and standard costs are included.
BUAD	6200	This class uses cases and projects to develop skills necessary to integrate financial and nonfinancial considerations into the managerial process. Topics: (1) Assessing entrepreneurial opportunities; (2) Forecasting for strategic financial decision making; (3) Capital acquisition; and (4) Acquiring an existing business.
BUAD	6300	This course covers the application of marketing concepts, models, technology and techniques to marketing problems, emphasizing strategic thinking and analysis in a global environment. Also covered are market research and information usage, and data-driven, ethical strategic marketing decision making.
BUAD	6400	An integrated approach to management. The focal point is organizational strategies, group and individual adaptation to environmental forces.
BUAD	6500	This course presents an understanding of the underlying theories and strategic challenges that must be encountered when firms "go global" or operate in the global context.



BUAD	6600	This course presents an integrated approach to value chain management and analyzes key challenges, practices and trends concerning primary business functions and processes. The course also examines the strategic ramifications for the supply chain in an emerging digital economy.
BUAD	6800	This course covers the strategic role of information technology resources, e-commerce initiatives and e-business transformation for competitive advantage, managerial decision support, business process streamlining and inter-firm collaboration. Also covered are analyses of business models, exposure to data analysis tools, evaluation of information system architecture and resource requirements.
BUAD	6900	This capstone course integrates business functions toward the strategic management of organizations or subunits thereof. Course pedagogy includes lectures, guest speakers, cases; experiential exercises field projects and simulations.
BUAD	6920	Receive practical business experience working in an organization, while meeting with other students and learning about their experiences.
BUAD	6940	Allow students to participate in real world problem in a consulting type of situation. Pre-requisite: 15 hours of MBA level work.
BUAD	6980	Independent study to be arranged with the Director, M.B.A. program.
BUAD	6990	Designed for students in a full-time employment situation who have the opportunity to do a supplemental project with their own employer. Must relate to specialization and be above normal responsibility.
CABP	601	Introduction to neoplasia; epidemiology and etiology; the role of causative agents such as chemicals, radiation and viruses; cell proliferation, injury and death; oncogenes, suppressor genes and an overview of therapy.
CABP	627	A comprehensive examination of the cellular and molecular foundation of cancer. Topics to be covered include: neoplasia; epidemiology and etiology; the role of causative agents such as chemicals, radiation, and viruses; cell proliferation, injury, and death; oncogenes; tumor suppressor genes; and an overview of cancer therapy.
CABP	656	A readings and discussion course that will examine classic and current research publications from within the broad realm of cancer biology.
CABP	673	Intensive study in the field of cancer biology including theoretical and experimental work. May be repeated for credit.
CABP	689	
CABP	699	Introduction to neoplasia; epidemiology and etiology; the role of causative agents such as chemicals, radiation and viruses; cell proliferation, injury and death; oncogenes, suppressor genes and an overview of therapy.
CABP	801	



CABP	827	A comprehensive examination of the cellular and molecular foundation of cancer. Topics to be covered include: neoplasia; epidemiology and etiology; the role of causative agents such as chemicals, radiation, and viruses; cell proliferation, injury, and death; oncogenes; tumor suppressor genes; and an overview of cancer therapy.
CABP	856	A readings and discussion course that will examine classic and current research publications from within the broad realm of cancer biology.
CABP	889	Intensive study in the field of cancer biology including theoretical and experimental work. May be repeated for credit.
CABP	999	
CARD	1180	Study of cardiac electrophysiology and the process of rhythm analysis, along with heart sounds and ambulatory monitoring techniques.
CARD	1190	Twelve-lead EKG analysis and troubleshooting. Patient preparation and instruction for ambulatory monitoring.
CARD	1280	Twelve-lead EKG analysis which includes bundle branch blocks, hypertrophics, infarction patterns, pediatric EKG interpretation and stress test procedures.
CARD	1290	Analysis of abnormal twelve-lead EKGs and procedures for stress testing.
CARD	1390	Clinical experiences are provided in acute care and outpatient settings for EKG, ambulatory monitoring and stress testing.
CARD	2080	Study of the procedures and principles in M-mode, 2-D and Doppler echocardiography. Emphasis on views and pathology.
CARD	2090	Introduction to echocardiography views utilized for M-mode, 2-D and Doppler measurements. Laboratory and clinical experience are provided to support the didactic curriculum.
CARD	2180	Advanced pathophysiology, including stress echo, transesophageal and congenital anomalies.
CARD	2190	Advanced echocardiography studies, with Doppler interpretation. Clinical practice will be held off campus.
CARD	2370	A study of ultrasound instrumentation mechanics and ultrasound wave physics. Introduction to knobology of the imaging system in noninvasive cardiology studies.
CARD	2380	The physical principles of ultrasound image generation and the image interpretation skills will be discussed. Assessment of cardiac and peripheral vascular diseases will be covered.
CARD	2400	Study of the procedures and principles involved in recording and performing an analysis of non-invasive PV data. The use of quantitative and qualitative methods of detecting venous diseases is covered.
CARD	2410	Performance of non-invasive peripheral vascular procedures related to venous diseases. Laboratory and clinical experience are provided to support the didactic curriculum. Clinical rotations are held off campus.



CARD	2420	A study of the procedures and principles involved in recording and performing analysis of non-invasive peripheral vascular data. The use of quantitative and qualitative methods of assessing arterial diseases is provided.
CARD	2430	Performance of non-invasive peripheral vascular procedures related to arterial diseases. Laboratory and clinical experience are provided to support the didactic curriculum. Clinical are held off campus.
CARD	2500	Clinical rotation which allows the student to perform non-invasive echocardiography or peripheral vascular exams under the direct supervision of a qualified technologist.
CARD	2990	A course designed to provide educational opportunities in a specialized academic area under the direct supervision of a faculty member.
CET	1000	An introduction to Construction Engineering by introducing career sectors, current topics, teamwork, safety and the curriculum in order to provide the freshman CET student with building blocks for success within the program.
CET	1100	Fundamentals of construction drafting techniques (hand and computer-aided) will be covered in this course. Drafting of plan sheets for foundations, wall cross-sections, floor plans and architectural detail will be covered in the laboratory portion of this course.
CET	1150	Terminologies and properties of construction materials and construction techniques. Sources and organization of manufacturer's material information will be discussed. An introduction to the various building codes and these organizations will be examined as related to new and existing buildings.
CET	1200	Analysis of the laws of statics and strength of materials. Application to the properties of common construction materials including stress, strain, compression, shear, moments and deflection with respect to columns and beams. The design of wood beams, columns, joints and other structural elements will also be examined.
CET	1210	Study of construction and land surveying techniques, including the use of a steel tape, level, transit and total station. Laboratory will stress surveying measurement and layout techniques. Laboratory exercises will also introduce "AUTOCAD" and associated third party software applications to surveying.
CET	2030	Computer drafting as related to construction engineering projects such as highways, streets, sanitary and storm sewers, and building sites. The computer drafting portion will use Microstation and associated third party support (e.g. Geopak).
CET	2110	Design of portland and asphalt cement concrete mixes and associated quality control tests of mortar, aggregates, asphalt cements, portland and asphaltic concrete.



CET	2220	Theory and application of soil properties as related to foundation design, including pressure distribution, bearing capacity, compressibility, consolidation, shear and stress analysis. Laboratory will cover quality control tests.
CET	2250	Principles of statics and strength of materials as applied to structural design of steel, reinforced concrete and wood, using applicable codes.
CET	2980	Student performs work on a specialized project of an advanced nature under the supervision of a Construction Engineering Technology faculty member.
CET	3120	Engineering design and problems of soils, aggregates, asphaltic and portland cement concretes brick and block masonry construction. Emphasis will be upon earth-based quality construction.
CET	3210	Study of land surveying concepts as related to land subdivision - construction, boundary and engineering surveys. Laboratory exercises will be field surveying problems and computer laboratory problems using "AUTOCAD" and associated computer surveying software packages.
CET	3220	Surface and ground-water hydrology/hydraulic concepts as related to rainfall/runoff and surface and ground-water drainage. Open and closed channel hydraulics will be studied.
CET	3EL	
CET	4250	Advanced studies of steel, wood, concrete and masonry structural design, examination of temporary construction structures and problems, demolition of structures.
CET	4350	Temporary and permanent earth structures (foundations and retaining walls), tunneling, trenching, cofferdams and dewatering.
CET	4460	Topics include job startup, scheduling (pre-construction operations), CPM and PERT, disputes, work stoppages, job closeout, liens and client, contract, architect-engineer relationship. Supervision and inspection of various building elements (concrete, asphalt, steel, anchor bolts) will be discussed as related to OSHA and general ethics.
CET	4EL	
CHEE	1000	An introduction to the UT campus, campus resources, the College of Engineering and the Department of Chemical and Environmental Engineering. Primary emphasis is on engineering computing, data analysis and basic chemical engineering calculations.
CHEE	1010	Social protocol and ethics in industry. Resume writing and interview skills are presented in preparation for the Co-op experience. Review of resource materials for technical and non-technical individual learning. Oral and written presentation techniques are emphasized.
CHEE	2010	Introduction to the principles and techniques used in chemical engineering. Basic concepts of mathematics, physics and chemistry are applied to solving problems involving stoichiometry, material balances and energy balances.

CHEE	2110	A comprehensive introduction to process fluid mechanics. Topics include: hydrostatics, characteristics of laminar and turbulent flow, mechanical energy balance, flow through packed beds and fluidization of solids, design of pumping systems and piping networks and metering of fluids.
CHEE	2230	The principles of thermodynamics and their application to chemical engineering. Topics include states and properties of matter, the first and second law of thermodynamics and thermo-chemical effects.
CHEE	2330	Topics include properties of fluid mixtures, phase equilibria, chemical equilibria, power generation and refrigeration processes.
CHEE	2980	Special topics of interest to chemical engineers - lower division.
CHEE	2990	Independent studies in chemical engineering - lower division. Selected subjects in chemical engineering of special interest to the professor and the student.
CHEE	3030	An introduction to equilibrium-based separation processes. Topics include distillation, extraction, leaching, drying and membrane separations. Preliminary equipment design calculations.
CHEE	3110	Fundamental equations of heat transfer. Fourier's law. Steady and unsteady thermal conduction. Heat transfer coefficients. Heat exchangers. Condensation and boiling. Forced and natural convection. Radiation, Kirchoff's law and view factors.
CHEE	3120	Mass transfer and its application in chemical engineering separations. Diffusivity, mass transfer coefficients and Fick's Law. Applications in continuous and stagewise processes, including absorption, extraction and distillation.
CHEE	3300	Fundamentals of chemical reaction engineering. Rate laws, kinetics and mechanisms of homogeneous and heterogeneous reactions. Analysis of reaction rate data. Design of industrial reactors.
CHEE	3400	An introduction to designing control systems for chemical engineering processes. Process stability and controller design and selection. Application of Laplace transforms frequency response techniques and simulation software for open-loop and closed-loop analysis.
CHEE	3940	Approved co-op work experience. Course may be repeated.
CHEE	3950	Approved co-op work experience beyond third required co-op experience. Course may be repeated.
CHEE	4100	A study of the transport and fate of chemicals in the environment. This course makes use of the principles of thermodynamics, material balances and transport concepts to concentrate on the mechanisms and rates of movement of chemicals in natural environments.
CHEE	4110	Legal aspects of pollution prevention. Process integration. Pinch analysis. Intelligent process design and control. Mass exchange networks. Environmentally conscious selection of raw materials.
CHEE	4150	The study of chemical reaction engineering as applied to environmental systems. Engineering reactor design considerations for environmental applications are covered.



CHEE	4160	Discussion of and solution to the environmental problems of the chemical industry. Equal periods of time will be devoted to water, air and solid and hazardous waste control.
CHEE	4180	All aspects of oil and hazardous material spills. Causes of spills, safe responses to them, mitigation of spills, impact, cleanup, prevention, disposal of residues, transportation of chemicals. Air pollution problems from volatile chemicals. Safety laws.
CHEE	4270	Estimation of Physical Properties, especially thermodynamic properties of gases and liquids.
CHEE	4410	Introduction to and analysis of new separation techniques relevant to downstream processing of bioreactor products. Topics include new extraction and adsorption methods, chromatography techniques, ultrafiltration and electrokinetic methods such as electrophoresis and isoelectric focusing.
CHEE	4480	An introduction to formulating and solving engineering problems involving the use of both dense and porous membranes for gas separation, pervaporation, dialysis, filtration and reverse osmosis applications.
CHEE	4500	An experimental study of the design and performance of selected chemical engineering processes and equipment. Analysis of data, design of experiments and laboratory reports are emphasized.
CHEE	4510	An introductory analysis of the equations of change governing the phenomena of momentum, heat and mass transfer in single and multicomponent systems from a continuum viewpoint. The analogies between the three phenomena will be stressed. The ability to obtain a realistic mathematical model of chemical engineering processes will be developed.
CHEE	4520	Chemical equipment and process design. Introduction to simulation and flow-sheeting techniques and software. Topics include plant safety and pollution prevention, market analysis, cost estimating, decision making and cash flow analysis.
CHEE	4540	Application of chemical engineering fundamentals and the use of process simulators in the synthesis of chemical processes. Use of cost factors and environmental considerations in process decisions. The solution of a comprehensive case study and the preparation of a formal report are required.
CHEE	4550	An experimental study of the design and performance of selected chemical engineering process equipment, focusing on heat and mass transfer and process control. Design of experiments, analysis of data and presentation techniques are emphasized.
CHEE	4600	The course will help students develop a working knowledge of the mathematical tools developed to describe seemingly random or chaotic behavior and the ability to apply these tools to problems of interest to engineers.



CHEE	4800	Polymerization processes, characterization, structure and properties of polymers, processing and engineering applications of the major polymer types.
CHEE	4820	Introduction to the physico-chemical principles and engineering of dispersions, emulsions and colloids relevant to chemical/biochemical, pharmaceutical and environmental areas. Topics include surface tension, adsorption, charge effects at interfaces, colloid stability and emulsions.
CHEE	4850	A quantitative treatment of the mechanical behavior of polymer systems emphasizing rubber elasticity, linear viscoelasticity, yield and failure, non-Newtonian flow of polymer melts, and viscometry. Application of stress-strain relationships to processing and design are considered.
CHEE	4960	Independent research under the guidance of a faculty member, requiring an oral report and a written thesis upon completion of work.
CHEE	4980	Special topics of interest to chemical engineers - upper division.
CHEE	4990	Independent studies in chemical engineering - upper division.
CHEE	5100	A study of the transport and fate of chemicals in the environment. This course makes use of the principles of thermodynamics, material balances and transport concepts to concentrate on the mechanisms and rates of movement of chemicals in natural environments.
CHEE	5150	The study of chemical reaction engineering as applied to environmental systems. Engineering reactor design considerations for environmental applications are covered.
CHEE	5160	Discussion of and solution to the environmental problems of the chemical industry. Equal periods of time will be devoted to water, air and solid and hazardous waste control.
CHEE	5180	All aspects of oil and hazardous material spills. Causes of spills, safe responses to them, mitigation of spills, impact, cleanup, prevention, disposal of residues, transportation of chemicals. Air pollution problems from volatile chemicals. Safety laws.
CHEE	5270	Estimation of Physical Properties, especially thermodynamic and transport properties of gases and liquids.
CHEE	5410	Introduction to and analysis of new separation techniques relevant to downstream processing of bioreactor products. Topics include new extraction and adsorption methods, chromatography techniques, ultrafiltration and electrokinetic methods such as electrophoresis and isoelectric focusing.
CHEE	5480	Students learn how to formulate and solve engineering problems involving the use of both dense and porous membranes for gas separation, pervaporation, dialysis, filtration and reverse osmosis applications.
CHEE	5600	The course will help students develop a working knowledge of the mathematical tools developed to describe seemingly random or chaotic behavior and the ability to apply these tools to problems of interest to engineers.



CHEE	5800	Polymerization processes, characterization, structure and properties of polymers, processing and engineering applications of the major polymer types.
CHEE	5820	Introduction to the physico-chemical principles and engineering of dispersions, emulsions and colloids relevant to chemical/biochemical, pharmaceutical and environmental areas. Topics include surface tension, adsorption, charge effects at interfaces, colloid stability and emulsions.
CHEE	5850	A quantitative treatment of the mechanical behavior of polymer systems emphasizing rubber elasticity, linear viscoelasticity, yield and failure, non-Newtonian flow of polymer melts, and viscometry. Application of stress-strain relationships to processing and design are considered.
CHEE	5930	Research topics of current interest to chemical engineers will be presented by internal and external speakers in a research seminar format.
CHEE	6100	Study of engineering materials science and applications relevant for industry and manufacturing. Course content emphasizes the relation of structure and processing to design and applications of metallic, semiconductor, ceramic polymeric and composite materials.
CHEE	6500	Analysis of kinetic, diffusive and flow factors on chemical reactor performance. Topics include batch, plug flow and CSTR reactors, empirical rate expressions, residence time distributions, catalytic reactors, stability and optimization.
CHEE	6510	Advanced treatment of fundamental principles of thermodynamics, especially as related to calculation of phase equilibria. Topics include intermolecular potentials, excess functions, theories of solutions, high-pressure equilibria and introductory statistical mechanics.
CHEE	6550	Students learn how to formulate and solve engineering problems involving momentum transfer from the microscopic view. Topics include vector/tensor analysis, approximation methods, computational solutions and non-Newtonian fluid phenomena.
CHEE	6560	Students learn how to formulate and solve engineering problems involving simultaneous momentum, heat and mass transfer from the microscopic view. Topics include conduction, radiation, diffusion, forced convection and free convection.
CHEE	6600	The study of tensor algebra and calculus. Use of covariant, contravariant and mixed tensor algebra and calculus. Tests for tensor character. Christoffel symbols and derivative operations in curvilinear coordinates.
CHEE	6700	Theory and practice of management technology applied to project management, engineering project development and major technological innovation to address new business needs and opportunities. Topics covered include schedule, budgets, performance, technology assessment and management of time and costs.



CHEE	6790	Study of new Accelerated Radical Innovation discipline targeting 2X-10X improvement in innovation effectiveness, measured by reduced risk, time and cost. Assessment and modeling to speed development, transfer and profitable commercialization.
CHEE	6810	The physical and chemical principles of polymer systems. Topics covered include: configuration and conformation, thermodynamics and statistical mechanics of polymer solutions, hydrodynamics, scattering, rubber elasticity, birefringence, glass phenomena, crystallization thermodynamics and kinetics.
CHEE	6830	A study of the transport properties of polymers including permeation of gases, vapors and liquids and movement of electrical charge. Topics include mathematics of diffusion, polymer-per meant interactions, effects of polymer structure, packaging and dielectric properties and electrical conduction of polymers.
CHEE	6840	A study of the concepts and principles of basic thermoplastic processing methods with the emphasis of their application to selected topics of current interest in the industry.
CHEE	6860	Characterization of polymers by physical testing (tensile, creep and rheological), physicochemical methods (viscosity, gel permeation chromatography), thermal analysis, spectroscopy, light microscopy, permeation, density, light scattering and processing.
CHEE	6870	An advanced course on the structure and bonding, theory, properties and materials processing of metallic, semiconductor, ceramic, macromolecular, composite and biological materials, emphasizing the relations between composition and structure, crystal growth and processing kinetics and properties and applications.
CHEE	6880	Application of chemical thermodynamics and phase equilibria in materials science. Basic principles of chemical thermodynamics will be introduced and then applied to metal alloy and semiconductor systems and to biological systems.
CHEE	6890	An advanced course for students interested in multidisciplinary engineering materials science research, of the concepts, theory and techniques for advanced characterization of crystalline, amorphous and macromolecular materials at various length scales by optical, magnetic, electrical, X-ray microscopy, chemical, physical and probe techniques.
CHEE	6960	Graduate research towards the completion of a Master's Degree.
CHEE	6980	Selected topics from current chemical engineering research with intensive investigation into the recent literature in an area of mutual interest to the student and the instructor.
CHEE	7100	
CHEE	7150	
CHEE	7160	
CHEE	7180	
CHEE	7270	

CHEE	7410	
CHEE	7480	
CHEE	7600	
CHEE	7800	
CHEE	7820	
CHEE	7850	
CHEE	7930	
CHEE	8500	Analysis of kinetic, diffusive and flow factors on chemical reactor performance. Topics include batch, plug flow and CSTR reactors, empirical rate expressions, residence time distributions, catalytic reactors, stability and optimization.
CHEE	8510	Advanced treatment of fundamental principles of thermodynamics, especially as related to calculation of phase equilibria. Topics include intermolecular potentials, excess functions, theories of solutions, high-pressure equilibria and introductory statistical mechanics.
CHEE	8550	Students learn how to formulate and solve engineering problems involving momentum transfer from the microscopic view. Topics include vector/tensor analysis, approximation methods, computational solutions and non-Newtonian fluid phenomena.
CHEE	8560	Students learn how to formulate and solve engineering problems involving simultaneous momentum, heat and mass transfer from the microscopic view. Topics include conduction, radiation, diffusion, forced convection and free convection.
CHEE	8600	The study of tensor algebra and calculus. Use of covariant, contravariant and mixed tensor algebra and calculus. Tests for tensor character. Christoffel symbols and derivative operations in curvilinear coordinates.
CHEE	8810	The physical and chemical principles of polymer systems. Topics covered include: configuration and conformation, thermodynamics and statistical mechanics of polymer solutions, hydrodynamics, scattering, rubber elasticity, birefringence, glass phenomena, crystallization thermodynamics and kinetics.
CHEE	8830	A study of the transport properties of polymers including permeation of gases, vapors and liquids and movement of electrical charge. Topics include mathematics of diffusion, polymer-per meant interactions, effects of polymer structure, packaging and dielectric properties and electrical conduction of polymers.
CHEE	8840	A study of the concepts and principles of basic thermoplastic processing methods with the emphasis of their application to selected topics of current interest in the industry.
CHEE	8860	Characterization of polymers by physical testing (tensile, creep and rheological), physicochemical methods (viscosity, gel permeation chromatography), thermal analysis, spectroscopy, light microscopy, permeation, density, light scattering and processing.
CHEE	8960	Graduate research towards the completion of a Doctoral Degree.



CHEE	8980	Selected topics from current chemical engineering research with intensive investigation into the recent literature in an area of mutual interest to the student and the instructor.
CHEM	1090	For students who major in science, engineering or other fields which require chemistry as a prerequisite subject who have not had a previous course in chemistry and whose preparation is not sufficient to begin General Chemistry (CHEM 1230) or Chemistry for Health Sciences (CHEM 1120).
CHEM	1100	An introduction to basic chemistry and a survey of the impact that chemistry has on society. Topics include: power, energy, and fuels; water and pollution; soaps and detergents; nutrition; poisons and toxins; plastics and polymers; drugs.
CHEM	1120	The study of chemistry for students majoring in nursing and other health-related fields. This course includes general, organic and biochemical topics in condensed form. The impact of chemistry in health fields will be emphasized.
CHEM	1150	Laboratory introduction to the concepts of chemistry to accompany Chemistry 1100. Demonstrations by laboratory experiments of lessons developed in the accompanying lecture course.
CHEM	1200	Problem solving and skill development for students enrolled in CHEM 1230 who obtained a satisfactory score on the chemistry placement test but need additional assistance in selected topics. May be taken only as P/NC.
CHEM	1210	A series of elementary courses oriented toward the life processes in plants and animals. Recommended for students in the allied health professions.
CHEM	1220	A series of elementary courses oriented toward the life processes in plants and animals. Recommended for students in the allied health professions.
CHEM	1230	An introduction to atomic structure, chemical bonding, kinetic-molecular theory, energy relationships and structural concepts. This sequence is for students who major in science, engineering or other fields which require chemistry as a prerequisite subject. Three hours lecture and one hour discussion per week.
CHEM	1240	An introduction to solutions, equilibrium, acid-base theory, energy relationships and structural concepts. This sequence is for students who major in science, engineering or other fields which require chemistry as a prerequisite subject. Three hours lecture and one hour discussion per week.
CHEM	1260	Beginning laboratories directed toward a chemical study of the life processes in plants and animals. Approved chemistry safety goggles meeting the American National Standard Z87.1-1968 must be worn by every student during every laboratory class meeting.



CHEM	1270	Beginning laboratories directed toward a chemical study of the life processes in plants and animals. Approved chemistry safety goggles meeting the American National Standard Z87.1-1968 must be worn by every student during every laboratory class meeting.
CHEM	1280	Experiments over topics covered in CHEM 1230 lectures. Approved chemistry safety goggles meeting the American National Standard Z87.1-1968 must be worn by every student during every laboratory class meeting.
CHEM	1290	Experiments over topics covered in CHEM 1240 lectures. Approved chemistry safety goggles meeting the American National Standard Z87.1-1968 must be worn by every student during every laboratory class meeting.
CHEM	1910	Survey of current research areas at the frontiers of chemistry, including topics that cross the boundaries with other disciplines. May be taken only as P/NC.
CHEM	1EL	
CHEM	2410	Study of structure and reactions of organic compounds. Three hours lecture per week.
CHEM	2420	Study of structure and reactions of organic compounds. Three hours lecture per week.
CHEM	2430	Optional recitation sections that discuss concepts and solve practice questions in CHEM2410.
CHEM	2440	Optional recitation sections that discuss concepts and solve practice questions in CHEM2420.
CHEM	2460	Practice of organic laboratory techniques. Four hours of laboratory per week. Approved chemical safety goggles meeting the American National Standard Z87.1-1968 must be worn by every student during every laboratory class meeting.
CHEM	2470	Practice of organic laboratory techniques. Four hours of laboratory per week. Approved chemical safety goggles meeting the American National Standard Z87.1-1968 must be worn by every student during every laboratory class meeting.
CHEM	2480	Introduction to theory and laboratory practice in modern methods of physical separation techniques, synthesis and microscale manipulations. Approved chemistry safety goggles meeting the American National Standard Z87.1-1968 must be worn by every student during every laboratory class meeting.
CHEM	2490	Application of synthetic methods to elementary organic synthesis with special emphasis on instrumental approaches to problem solving in organic chemistry. Approved chemistry safety goggles meeting the American National Standard Z87.1-1968 must be worn by every student during every laboratory class meeting.



CHEM	2500	A bridge course for students wishing to major in chemistry at the B.S. level after taking CHEM 2460 or CHEM 2460 and 2470. The application of instrumental methods to organic synthesis. Approved chemical safety goggles meeting the American National Standard Z87.1-1968 must be worn by every student during every laboratory class meeting.
CHEM	2910	An introduction to research under the guidance of a faculty member. May be repeated. A maximum accumulated credit of 4 hours in 2910 and total of 10 hours in 2910, 3910, 4910 may be applied toward a degree. May be taken only as P/NC.
CHEM	2920	Readings from the literature of chemistry. May be taken only as P/NC.
CHEM	2EL	
CHEM	3310	Theory and applications of chemical equilibria to gravimetric, volumetric and separation techniques. Emphasis on the quantitative aspects of analytical chemistry. Two hours lecture per week.
CHEM	3360	Practice of quantitative analytical methods of analysis. Six hours laboratory per week. Approved chemical safety goggles meeting the American National Standard Z87.1-1968 must be worn by every student during every laboratory class meeting.
CHEM	3510	Chemical structure and molecular transformation in biological systems.
CHEM	3520	Chemical structure and molecular transformation in biological systems.
CHEM	3560	Practice of biochemistry laboratory techniques. Four hours of laboratory per week.
CHEM	3610	The application of modern theories to the elements and their inorganic compounds. Physical chemical principles are used throughout. Prerequisite: CHEM 2420 or CHEE 2230 and 2330
CHEM	3710	Physical and mathematical laws applied to chemistry with examples from biologically important processes. No credit given if Chemistry 3730-3740 is taken.
CHEM	3712	Optional recitation section that discusses concepts and solves practice questions for CHEM 3710. Must be taken simultaneously with CHEM 3710. Not for major/minor credit.
CHEM	3720	Physical and mathematical laws applied to chemistry with examples from biologically important processes. No credit given if Chemistry 3730-3740 is taken.
CHEM	3722	Optional recitation section that discusses concepts and solves practice questions for CHEM 3720. Must be taken simultaneously with CHEM 3720. Not for major/minor credit.
CHEM	3730	Fundamental theories and basic laws of chemistry with emphasis on their mathematical development. Thermodynamics, equilibrium, electrochemistry, classical chemical kinetics.
CHEM	3732	Optional recitation section that discusses concepts and solves practice questions for CHEM 3730. Must be taken simultaneously with CHEM 3730, Physical Chemistry 1. Not for major/minor credit.



CHEM	3740	Fundamental theories and basic laws of chemistry with emphasis on their mathematical development. Structure of matter, statistical and quantum mechanics, reaction dynamics, spectroscopy.
CHEM	3742	Optional recitation section that discusses concepts and solves practice questions for CHEM 3740. Must be taken simultaneously with CHEM 3740, Physical Chemistry 2. Not for major/minor credit.
CHEM	3810	Application of the principles of chemistry to understand the issues related to implementing and optimizing a sustainable supply of energy.
CHEM	3860	Laboratory experiments and techniques relating to subjects developed in CHEM 3710, 3730, or 4570. Three-hour laboratory and one-hour discussion per week see your advisor for proper section number. Approved chemical safety goggles meeting the American National Standard Z87.1-1968 must be worn by every student during every laboratory class meeting. Prerequisite: CHEM 2420 and 2470 or 2490; Co requisite: CHEM 3710 or 3730 or 4570
CHEM	3870	Laboratory experiments and techniques relating to subjects developed in 3710/3720, 3730/3740. Three hours laboratory and one hour discussion per week. Approved chemical safety goggles meeting the American National Standard Z87.1-1968 must be worn by every student during every laboratory class meeting.
CHEM	3910	Research under the guidance of a faculty member. May be repeated. A maximum accumulated credit of 10 hours in CHEM 2910, 3910 and 4910 may be applied toward a degree. A written report is required. May be taken only as P/NC. Prerequisite: GPA (overall and in chemistry courses) above 2.5 and permission of department Co requisite: CHEM 2420
CHEM	3920	Readings from the literature of chemistry. May be taken only as P/NC.
CHEM	3EL	
CHEM	4300	An introduction to modern chemical instrumentation and applications to chemical analysis. Topics include electrical, magnetic, nuclear and spectroscopic instrumentation. Prerequisite: CHEM 3310 and 3360; Co requisite: CHEM 3710 or 3730 or 4570
CHEM	4500	The chemistry of cellular and molecular transformation in biochemical systems.
CHEM	4510	A detailed analysis of the structure and function of proteins.
CHEM	4520	The principles of chemical catalysis applied to molecular enzymology.
CHEM	4530	The structure and function of RNA and DNA.
CHEM	4570	Principles and applications of physical chemistry as applied to biological macromolecules (i.e., proteins and nucleic acids in solution), including thermodynamics, kinetics and spectroscopy of macromolecular interactions.



CHEM	4580	This course surveys biologically important metals and metal-ligand complexes, and examines the role of metal ions in proteins, metal ion transport and regulation, and metals in medicine.
CHEM	4620	The application of modern theories to the elements and their inorganic compounds-advanced topics. Physical chemical principles are used throughout.
CHEM	4880	Laboratory experiments and techniques relating to subjects developed in CHEM 4300. Six hours of laboratory per week. Approved chemical safety goggles meeting the American National Standard Z87.1-1968 must be worn by every student during every laboratory class meeting. Prerequisite: CHEM 3860; Co requisite: CHEM 4300
CHEM	4910	Thesis level research under the guidance of a faculty member. May be repeated. A minimum of three hours and an acceptable thesis required for credit toward the B.S. major. A maximum accumulated credit of 10 hours in CHEM 2910, 3910 and 4910 may be applied toward a degree. A written report is required. May be taken only as P/NC. Prerequisite: GPA (overall and in chemistry courses) above 2.5 and permission of department Co requisite: CHEM 3740 or 4570
CHEM	4920	Readings from the literature of chemistry. May be taken only as P/NC.
CHEM	4980	An advanced course for chemistry majors in an important area of chemistry. Consult the undergraduate adviser for details. Course may be repeated for credit under different specialty numbers (topics).
CHEM	4EL	
CHEM	5300	Tutorial in selected topics in analytical chemistry.
CHEM	5400	Tutorial in selected topics in organic chemistry. S/U grading only.
CHEM	5500	Tutorial in selected topics in biological chemistry.
CHEM	5600	Tutorial in selected topics in inorganic and organometallic chemistry. S/U grading only.
CHEM	5700	Tutorial in selected topics in physical chemistry. S/U grading only.
CHEM	5800	Tutorial in selected topics in materials chemistry.
CHEM	6300	An overview of new techniques in analytical chemistry. Topics include sample preparation and sampling, spectroscopic, separation, electrochemical, surface characterization and thermal methods. Prerequisite: Permission of department.
CHEM	6310	[3 hours] The theory, design and application methods. Topics include extraction techniques, gas, liquid, and supercritical fluid chromatography, affinity and chiral separation, and capillary electrophoresis.
CHEM	6320	A fundamental study of electrochemical concepts, methods, instrumentation and applications. Prerequisite: Permission of department.

CHEM	6330	A comprehensive study of theory and instrumentation. Applications of spectroscopic methods including spectral interpretation. Topics include a study of absorption, emission, Raman, NMR, ESR, mass spectrometry, and related subjects. Important methodology and strategy in organic synthesis including disconnection and retrosynthetic analysis.
CHEM	6350	Experiments covering topics discussed in CHEM 6310 lectures. Five hours of laboratory per week. Approved chemical safety goggles meeting the American National Standard 287.1-1968 must be worn by every student during every laboratory class meeting.
CHEM	6400	Section 1 (2 hrs): Basic heterocyclic synthesis and methodology. Section 2 (2 hrs): Reducing reagents and new carbon-carbon bond forming processes. Section 3 (4 hrs): Material covered in Sections 1 and 2.
CHEM	6410	Important methodology and strategy in organic synthesis including disconnection and retrosynthetic analysis.
CHEM	6420	Section 1 (2 hrs): Physical basis of organic chemistry. Section 2 (2 hrs): Molecular orbital theory, mechanistic chemistry and reactive intermediates. Section 3 (4 hrs): Material covered in Sections 1 and 2.
CHEM	6430	Qualitative and quantitative aspects of the design of new therapeutic agents are discussed. Approaches to the design of drugs and new therapeutic modalities directed at enzymes, receptors, membrane transport proteins and nucleic acids will be examined.
CHEM	6500	The chemistry of cellular and molecular transformations in biochemical systems. Molecular structure of proteins, nucleic acids and membranes. Metabolism and biosynthesis of carbohydrates, amino acids and lipids; gene regulation and replication.
CHEM	6510	A detailed analysis of the structure and function of proteins. Current methodology for the analysis of structure, the basis for molecular associations and relationships between structure and biological function.
CHEM	6520	Survey of current methods to study enzyme-catalyzed reactions, and application to examples from major enzyme groups. Current topics in enzymology include abzymes and ribozymes, artificial enzymes, and enzymes, and enzyme engineering.
CHEM	6530	The structural and chemical properties of nucleic acids and the resulting biological consequences. Topics include: 3D structures, conformation, protein/nucleic acid interactions, physical properties and chemical reactions, mutagenesis, damage/repair, and recombination.
CHEM	6540	Fundamental theory and practical application of X-ray diffraction to macromolecular structure determination, including protein crystallization and manipulation, data collection and reduction, phase solution, electron density interpretation, structural refinement and validation.
CHEM	6550	Hands-on training in protein crystallography. Laboratory projects include: protein crystallization, crystal manipulation and mounting, X-ray diffraction data collection, data reduction, structure solution, electron density interpretation, refinement and structural validation.



CHEM	6560	An advanced course on the theoretical aspects of modern methods in macromolecular structure determination. Topics include: sample preparation, crystallization, data collection, phasing, electron density map interpretation and structural refinement.
CHEM	6570	Principles and applications of physical chemistry as applied to biological macromolecules (i.e., proteins and nucleic acids in solution), including thermodynamics, kinetics and spectroscopy of macromolecular interactions.
CHEM	6580	This course surveys biologically important metals and metal-ligand complexes, and examines the role of metal ions in proteins, metal ion transport and regulation, and metals in medicine
CHEM	6600	[4 hours] Symmetry, bonding theories, magnetism, and spectroscopic characterization of inorganic compounds are described. Coverage of spectroscopic techniques such as NMR, EPR, UV/VIS, IR, AND Mossbauer focus on applications to inorganic systems. Prerequisite: Permission of Department.
CHEM	6610	The inorganic and organometallic chemistry of the transition metals, lanthanides and actinides is described. Synthesis, structure, bonding, reactivity are considered. Applications in catalysis, bioinorganic, and materials chemistry are discussed. Prerequisite: Permission of Department.
CHEM	6620	The inorganic and organometallic chemistry of main group elements is described. Synthesis, structure, bonding, and reactivity are considered. The use of main group reagents in synthesis, catalysis, and materials chemistry are discussed.
CHEM	6700	[4 hours] Chemical systems and processes in the context of classical equilibrium thermodynamics. It introduces non-equilibrium and statistical thermodynamics to elucidate chemical changes and the connection between molecular and macroscopic system properties. Prerequisite: Permission of Department.
CHEM	6710	Fundamental principles of quantum mechanics and their application to model systems, atoms and molecules; Introduction to molecular spectroscopy. Prerequisite: Permission of Department.
CHEM	6720	[4 hours] Advanced topics of current interest are physical chemistry. Examples of topics include nanomaterials science, spectroscopic techniques, or molecular modeling. Prerequisite: Permission of department.
CHEM	6800	[4 hours] Introduction to important classes of solids, including conductors, magnetic materials, ferroelectrics, glasses, microporous materials, organic solids. Traditional and novel synthetic approaches, structure/property relationships, and characterization methods specific to solids. Prerequisite: Permission of Department.



CHEM	6810	A generic materials science approach to the study of crystalline structure and defects (point, line and planar) in crystalline materials. The mechanisms and kinetics of diffusion in the condensed state.
CHEM	6820	A materials science approach to the thermodynamics of condensed state equilibria. Phase transformation kinetics.
CHEM	6850	[4 hours] Theory and practice of structure determination by X-ray diffraction. Basics of symmetry, diffraction, and reciprocal space. Hand-on introduction to single-crystal and powder methods. Prerequisite: Permission of Department.
CHEM	6920	Presentations on research or current literature.
CHEM	6930	Seminars conducted by individual members of the department.
CHEM	6940	Content and organization of the literature of chemistry; its utilization in the preparation of a concise review and presentation. Culminating seminar for the non-thesis Master of Science in Chemistry.
CHEM	6960	Original investigations of significant chemical problems at the master's level under the guidance of a member of the faculty.
CHEM	6980	Discussions of newly developing areas in chemistry research.
CHEM	7300	Tutorial in selected topics in analytical chemistry.
CHEM	7400	Tutorial in selected topics in organic chemistry. S/U grading only.
CHEM	7500	Tutorial in selected topics in biological chemistry.
CHEM	7600	Tutorial in selected topics in inorganic and organometallic chemistry. S/U grading only.
CHEM	7700	Tutorial in selected topics in physical chemistry. S/U grading only.
CHEM	7800	Tutorial in selected topics in materials chemistry.
CHEM	8300	An overview of new techniques in analytical chemistry. Topics include sample preparation and sampling, spectroscopic, separation, electrochemical, surface characterization and thermal methods. Prerequisite: Permission of department.
CHEM	8310	[3 hours] The theory, design and application methods. Topics include extraction techniques, gas, liquid, and supercritical fluid chromatography, affinity and chiral separation, and capillary electrophoresis.
CHEM	8320	A fundamental study of electrochemical concepts, methods, instrumentation and applications. Prerequisite: Permission of department.
CHEM	8330	A comprehensive study of theory and instrumentation. Applications of spectroscopic methods including spectral interpretation. Topics include a study of absorption, emission, Raman, NMR, ESR, mass spectrometry, and related subjects. Important methodology and strategy in organic synthesis including disconnection and retrosynthetic analysis.
CHEM	8350	Experiments covering topics discussed in CHEM 6310 lectures. Five hours of laboratory per week. Approved chemical safety goggles meeting the American National Standard 287.1-1968 must be worn by every student during every laboratory class meeting.

CHEM	8400	Section 1 (2 hrs): Basic heterocyclic synthesis and methodology. Section 2 (2 hrs): Reducing reagents and new carbon-carbon bond forming processes. Section 3 (4 hrs): Material covered in Sections 1 and 2.
CHEM	8410	Important methodology and strategy in organic synthesis including disconnection and retrosynthetic analysis.
CHEM	8420	Section 1 (2 hrs): Physical basis of organic chemistry. Section 2 (2 hrs): Molecular orbital theory, mechanistic chemistry and reactive intermediates. Section 3 (4 hrs): Material covered in Sections 1 and 2.
CHEM	8430	Qualitative and quantitative aspects of the design of new therapeutic agents are discussed. Approaches to the design of drugs and new therapeutic modalities directed at enzymes, receptors, membrane transport proteins and nucleic acids will be examined.
CHEM	8500	The chemistry of cellular and molecular transformations in biochemical systems. Molecular structure of proteins, nucleic acids and membranes. Metabolism and biosynthesis of carbohydrates, amino acids and lipids; gene regulation and replication.
CHEM	8510	A detailed analysis of the structure and function of proteins. Current methodology for the analysis of structure, the basis for molecular associations and relationships between structure and biological function.
CHEM	8520	Survey of current methods to study enzyme-catalyzed reactions, and application to examples from major enzyme groups. Current topics in enzymology include abzymes and ribozymes, artificial enzymes, and enzymes, and enzyme engineering.
CHEM	8530	The structural and chemical properties of nucleic acids and the resulting biological consequences. Topics include: 3D structures, conformation, protein/nucleic acid interactions, physical properties and chemical reactions, mutagenesis, damage/repair, and recombination.
CHEM	8540	Fundamental theory and practical application of X-ray diffraction to macromolecular structure determination, including protein crystallization and manipulation, data collection and reduction, phase solution, electron density interpretation, structural refinement and validation.
CHEM	8550	Hands-on training in protein crystallography. Laboratory projects include: protein crystallization, crystal manipulation and mounting, X-ray diffraction data collection, data reduction, structure solution, electron density interpretation, refinement and validation.
CHEM	8560	An advanced course on the theoretical aspects of modern methods in macromolecular structure determination. Topics include: sample preparation, crystallization, data collection, phasing, electron density map interpretation and structural refinement.
CHEM	8570	Principles and applications of physical chemistry as applied to biological macromolecules (i.e., proteins and nucleic acids in solution), including thermodynamics, kinetics and spectroscopy of macromolecular interactions.



CHEM	8580	This course surveys biologically important metals and metal-ligand complexes, and examines the role of metal ions in proteins, metal ion transport and regulation, and metals in medicine
CHEM	8600	[4 hours] Symmetry, bonding theories, magnetism, and spectroscopic characterization of inorganic compounds are described. Coverage of spectroscopic techniques such as NMR, EPR, UV/VIS, IR, AND Mossbauer focus on applications to inorganic systems. Prerequisite: Permission of Department.
CHEM	8610	The inorganic and organometallic chemistry of the transition metals, lanthanides and actinides is described. Synthesis, structure, bonding, reactivity are considered. Applications in catalysis, bioinorganic, and materials chemistry are discussed. Prerequisite: Permission of Department.
CHEM	8620	The inorganic and organometallic chemistry of main group elements is described. Synthesis, structure, bonding, and reactivity are considered. The use of main group reagents in synthesis, catalysis, and materials chemistry are discussed.
CHEM	8700	[4 hours] Chemical systems and processes in the context of classical equilibrium thermodynamics. It introduces non-equilibrium and statistical thermodynamics to elucidate chemical changes and the connection between molecular and macroscopic system properties. Prerequisite: Permission of Department.
CHEM	8710	Fundamental principles of quantum mechanics and their application to model systems, atoms and molecules; Introduction to molecular spectroscopy. Prerequisite: Permission of Department.
CHEM	8720	[4 hours] Advanced topics of current interest are physical chemistry. Examples of topics include nanomaterials science, spectroscopic techniques, or molecular modeling. Prerequisite: Permission of department.
CHEM	8800	[4 hours] Introduction to important classes of solids, including conductors, magnetic materials, ferroelectrics, glasses, microporous materials, organic solids. Traditional and novel synthetic approaches, structure/property relationships, and characterization methods specific to solids. Prerequisite: Permission of Department.
CHEM	8810	A generic materials science approach to the study of crystalline structure and defects (point, line and planar) in crystalline materials. The mechanisms and kinetics of diffusion in the condensed state.
CHEM	8820	A materials science approach to the thermodynamics of condensed state equilibria. Phase transformation kinetics.
CHEM	8850	[4 hours] Theory and practice of structure determination by X-ray diffraction. Basics of symmetry, diffraction, and reciprocal space. Hand-on introduction to single-crystal and powder methods. Prerequisite: Permission of Department.
CHEM	8920	Presentations on research or current literature.



CHEM	8930	Seminars conducted by individual members of the Department.
CHEM	8940	Instruction on the content and organization of the scientific literature of chemistry, and its utilization in the preparation of a concise review
CHEM	8960	Original investigations of significant chemical problems at the Doctoral level under the guidance of a member of the faculty.
CHEM	8980	Discussions of newly developing areas in chemistry research.
CHEM	DEV	
CHEM	WAC	
CHIN	1110	
CHIN	1120	
CHIN	2140	
CHIN	2150	
CI	1900	This course introduces students to the world of middle grades education. The students will explore the nature of middle grades education, its philosophy, history, students, curriculum and teaching.
CI	1910	A seminar which focuses on the relationship among the skills learned in English composition classes, the art of explaining and communicating and the specific disciplines. Students will be encouraged to see language skills in the wider context of enabling the understanding of and explaining in their own academic major. They will be encouraged to use various means of communication (including electronic) to interpret concepts in their major area and consider ways in which a secondary teacher would need to implement these same experiences in the classroom.
CI	1920	This course introduces students to the world of foreign language education. Students will explore the nature of foreign language education, its philosophy, history, types of schools, students, curriculum and teaching.
CI	1EU	
CI	2900	Students will learn about various forms of cultural diversity as presented in books appropriate for middle childhood learners.
CI	2910	This course will allow students to explore education-related issues within the context of society in general. Structured field trips, coupled with pre- and post-seminars are planned.
CI	2920	Students will learn about cognitive, physical, emotional and social characteristics of pre- and young adolescents through participant observation in study and recreational settings and they will prepare a case study.
CI	2930	Students will examine current reform efforts in mathematics education and the impact on the teaching and learning of mathematics at all levels - PreK-college. Students must join a professional mathematics education organization.
CI	2940	Students will examine current reform efforts in science education and the impact on the teaching and learning of science at all levels - PreK-college. Students must join a professional science education organization.



CI	2950	Students will examine current reform efforts in social studies education and the impact on the teaching and learning of social studies at all levels - PreK-college. Students must join a professional social studies education organization.
CI	2960	Students will examine current reform efforts in reading/language arts education and the impact on the teaching and learning of reading/language arts at all levels - PreK-college. Students must join a professional reading/language arts education organization.
CI	2970	This course will help the student explore school context including the sociology and culture of high schools. The goal of this course is to help students apply theory and explore the ways of supporting the wide diversity of backgrounds and abilities of students in today's high schools. Students will be helped to see the necessity of and begin the development of a personal philosophy and set of beliefs with respect to the educational processes in which they will participate.
CI	2980	Students will understand salient factors relating to the effective teaching of foreign languages in elementary, middle-junior and high school. Specifically, students will assist foreign language teachers in teaching their students.
CI	2EU	
CI	3010	Integration of instruction in listening, talking, writing and reading skills with purposes, scope and sequence of Social Studies. Ways to help children grow and develop in these areas. Preparation of an integrated unit.
CI	3020	Prepare and teach integrated language arts/social studies unit and teach reading/language arts in an elementary, or middle school classroom.
CI	3100	Introduction to theory and research supporting effective curriculum development and instruction. Students acquire knowledge and skills necessary to create effective classroom environments.
CI	3110	Students will implement and apply skills of instructional design, content area reading and classroom management within selected secondary school settings.
CI	3210	Development of understanding and judgment relating to the production of documents and statistical reports. Introduction to Cortez Peters method of teaching keyboarding.
CI	3220	Analysis of the activities of today's office professionals. Includes office technology, management, communication procedures (oral and written) and office procedures.
CI	3230	Hands-on experience in the operation of information processing equipment used in today's modern offices.
CI	3240	This course will provide a comprehensive study of effective teaching in the middle level schools. Students will study historical, philosophical and psychological factors, transescent instructional strategies, discipline, classroom management and evaluation.



CI	3400	An introduction to literacy and the acquisition of reading and writing skills/proficiency. Presents a study of language development, language diversity, the process of reading and writing and their development.
CI	3430	Phoneme-grapheme relationships using age appropriate techniques with young children, teaching phonics and word recognition, phonological and morphological underpinnings of English spelling, reading disabilities, sound awareness in spoken language.
CI	3440	Students learn methods for using phonics and word identification skills with pre- and early adolescent learners, focusing on strategies to help with reading, writing and spelling in the content areas.
CI	3460	Professional standards for reading/language arts with specific attention to diverse learners. PreK through grade 3. Developmentally-appropriate classroom design and methods. Understanding of print. Use of computer software.
CI	3900	The course will consider the content of the college courses taken in a student's major area and relate it to specific courses in the secondary school curriculum. Examples will be developed of the ways in which concepts of university level courses are related to the curriculum of the content area courses at the secondary school level. Students will be encouraged to develop materials and applications of the college level content to a conceptual level appropriate to the secondary student. Students will be expected to use computer technology in several ways.
CI	3EU	
CI	4000	A course designed to introduce students to major curriculum trends and issues. Focus will be placed on theory and practical issues related to curriculum integration and team teaching.
CI	4010	A field experience for regular education and special education students. Teaching experiences to demonstrate knowledge and pedagogical skill in a team taught integrated unit.
CI	4030	Introduction to the purposes, scope and sequence, resources, curriculum, instruction and evaluation in middle grades science. Methods and materials for teaching science concepts.
CI	4040	Introduction to the purposes, scope and sequence, resources, curriculum, instruction and evaluation in primary science. Relationships to DAP and science concept development.
CI	4050	Prepare and teach a science unit of instruction in the elementary classroom.
CI	4060	Focus on the mathematics education of children in early childhood through the middle grades with emphasis on mathematics learning process, mathematics content, effective teaching strategies, instructional materials and assessment techniques.
CI	4070	Teach a mathematics unit in an early childhood, elementary or middle grade classroom.



CI	4080	Methods for teaching and integrating language arts in diverse classrooms. Emphasis on understanding the reading and writing process from emergent literacy through middle school. For Special Education Majors only.
CI	4090	Integrated approach to teaching mathematics and science. Emphasis on the learning process, mathematics and science content, effective teaching strategies, instructional materials and assessment techniques. For Special Education Majors Only.
CI	4130	Focus on student learning in urban settings. Students will examine urban demographic and school achievement data, develop a profile of urban students and develop appropriate school activities.
CI	4140	Consideration of current theory and practice in teaching foreign languages in elementary and secondary schools. Focus on planning instruction, materials selection and methods for teaching communication skills and culture.
CI	4150	Language immersion techniques, mastery-based teaching and reliance on reading/writing-to-learn activities. Develop proficiency in methodologies that reflect current research and effective instructional practices in secondary English and Communications.
CI	4160	Preparation for teaching in the secondary mathematics classroom. Techniques for motivating students, using questioning and critical thinking strategies and integrating technology are developed.
CI	4170	In-depth study of the methods and materials for teaching secondary science. Apply knowledge in a secondary classroom.
CI	4180	In-depth study of methods and materials for teaching social studies. Implementation of secondary curriculum within the context of current technology and the development of critical thinking skills.
CI	4190	Students will develop and implement a unit plan in the content area integrating teaching of content, thinking skills and adjusting the unit to a special needs population.
CI	4210	Office functions as part of business administration, including physical facility planning, office systems, procedures and services, control of office work and administrative/supervision of office staff.
CI	4220	Hands-on experience in a current word processing package. Also provides an overview of word processing methodologies, concepts and techniques needed to teach a secondary course.
CI	4230	Development and application of appropriate materials and methods in teaching general business, accounting and computer technology.
CI	4240	Development and application of appropriate materials and methods in teaching keyboarding, business communication/English, vocational education and computer applications. Course required for vocational certification.



CI	4250	A course for preservice middle grade teachers seeking licensure in mathematics. The course will focus on curriculum, scope and sequence, resources, learning activities, teaching strategies, technology use and assessment following NCTM Standards and the Ohio Mathematics Model.
CI	4260	Designed for middle grade teachers seeking licensure in science. The course covers standards, curriculum, learning activities, teaching strategies, use of technology and assessment techniques in a middle school setting.
CI	4270	This course will focus upon the social studies education of middle grades students with an emphasis on standards, scope and sequence, resources, learning activities, teaching strategies, technology evaluation techniques.
CI	4280	A course for preservice middle grades teachers seeking licensure in reading/language arts. This course will focus upon the literary education of children in the middle grades. Standards, curriculum, scope and sequence, resources, learning activities, teaching strategies, technology use and assessment will be addressed following NCTE standards and the Ohio Language Arts Model.
CI	4290	Field experience to demonstrate knowledge and pedagogical skills as students teach in two licensure areas. Instructional practice, assessment strategies and technology use will be integrated in two units from a student's licensure areas.
CI	4300	Emphasis on all genres of literature for children, including poetry, traditional literature, fantasy, realistic fiction, biography and other information books, particularly for the preschool and primary student.
CI	4310	Emphasis on all genres of literature for children, including poetry, traditional literature, fantasy, realistic fiction, both historical and contemporary, biography and other information books. Geared for the middle school student.
CI	4320	Survey of literature materials written for the junior and senior high school student. Emphasis is placed on all genres, literary elements and the use of literature across the curriculum.
CI	4360	Picture books, fiction, biography and poetry appropriate for elementary and middle school students that interpret and reflect honestly the lives of persons of color will be studied and evaluated.
CI	4390	To broaden students' knowledge of current professionals in children's literature, nationally-known authors, illustrators and editors presentations.
CI	4400	Using various genres of literature, students focus on instructional strategies across the curriculum for teaching, assessing, diagnosing and remediating reading and reading difficulties. Evaluation of learning through writing emphasized.



CI	4430	A critical study of teaching foreign languages and English as a second language in secondary schools including current curriculum, materials, teaching strategies and evaluation.
CI	4440	Examine the research on structural and generative grammars and oral language acquisition. Analyze process writing research, teaching-learning principles, and practices that employ process writing techniques.
CI	4450	Practical techniques for guiding children into effective oral and written expression of ideas and feelings will be presented. Develop lesson plans.
CI	4470	Focus on the knowledge and skill needed to assess the reading and writing of students and to plan appropriate instruction.
CI	4480	Focus on diagnostic assessment that represents differences in learners and emphasizes meeting student needs through a variety of instructional strategies to remediate problems in phonics, word recognition, fluency, comprehension and writing.
CI	4490	Study of the integration of reading comprehension, writing, oral language and word skill development in content reading. Attention will be given to instructional methods as well as assessment practices.
CI	4510	Development of mathematical understanding in young children, appropriate learning and assessment experiences and analysis of curriculum. Mathematical focus on place value, number sense, geometry, measurement, algebra, data analysis and probability.
CI	4520	Conceptualization of mathematics curriculum and its implementation in the classroom. The inductive approach will be emphasized. Examination of middle school math concepts.
CI	4530	Examination of the development of mathematics concepts and skills across the K-12 curriculum. Discussion of mathematics content, teaching methods, instructional materials, assessment techniques and applications to classroom practice.
CI	4540	Examination of the development of mathematics concepts and skills across K-12 curriculum. Discussion of mathematics content, teaching methods, instructional materials, assessment techniques and applications to classroom practice.
CI	4550	Focuses on the art of problem solving and its implementation in the classroom. Basic problem solving strategies are developed; materials and methods for their integration in mathematics teaching are provided.
CI	4570	Focuses on the content of the 7-12 mathematics curriculum and its delivery in secondary schools. Consideration is given to the role of technology, proficiency testing, conceptualizations of mathematics and resulting implications.
CI	4640	Issues, methods and materials related to teaching Environmental Science in grades PreK-12. Field trips to areas of environmental interest will be part of the course.



CI	4670	Nature, scope and role of science experiences in learning development of middle school age children; integration and application of current developments; theory and research in middle school science education.
CI	4680	This course focuses on theoretical issues related to teaching science in grades pre K-12 and is designed for preservice teachers.
CI	4710	Examines multicultural curriculum and teaching strategies. Reviews ethnicity, culturally pluralistic curricula, selection of instructional materials, grouping practices, assessment of learning and multi-ethnic schools, with an emphasis on improving instruction.
CI	4720	Examines current issues of content and pedagogy in secondary social studies.
CI	4740	Reviews the rationale, research and strategies for character education, values clarification, moral developments as well as programs designed to promote self concept.
CI	4760	Rationale, strategies and resources for teaching local history including demonstrations of teaching oral history and utilization of community resources.
CI	4790	Rationale and strategies for using newspapers as classroom resource for teaching across curriculum. Participants will explore classroom applications after interviewing reporters, photographers, cartoonists as well as Newspaper in Education classroom teachers.
CI	4900	Focuses reflectivity on common experiences in Student Teaching. Attention to resume preparation, portfolio use, job interviews.
CI	4910	A professional teaching and reflection seminar that places internship experience in the context of reforms, research and critical literacy in the content areas. This will include a study of reports, studies and resulting recommendations of the societies as well as those at the state, national and international levels. Critical literacy will be examined within the framework of necessary knowledge for an informed citizenry. Outcomes of this seminar may be integrated in the professional portfolio presentation. Coursework will be creatively scheduled to dovetail with the internship experience.
CI	4930	Full-time supervised classroom teaching for 8-15 weeks.
CI	4950	Workshops developed around topics of interest and concern for pre-service and in-service teachers and other education personnel. Practical application of workshop topics will be emphasized.
CI	4980	Topics of interest and concern to preservice, in-service and non-degree teachers within school districts and community agencies. The course may be included in an undergraduate degree program.
CI	4990	Provides student the opportunity to work individually on professional problems under the direction of the staff of the department of curriculum and instruction. This course is open to seniors with the consent of the adviser and permission of the instructor.
CI	4EU	



CI	5150	Language immersion techniques, mastery-based teaching and reliance on reading/writing-to-learn activities. Develop proficiencies in methodologies that reflect current research and best practice. Alternative preservice methods.
CI	5160	Preparation for teaching in the secondary mathematics classroom. Techniques for motivating students, using questioning and critical thinking strategies and integrating technology are developed.
CI	5170	In-depth study of the methods and materials for teaching secondary science. Apply knowledge in a secondary classroom.
CI	5180	In-depth study of methods and materials for teaching social studies. Implementation of secondary curriculum within the context of current technology and the development of critical thinking skills.
CI	5190	Field experience for alternative 7-12 certification. Classroom observations and reports. Teach series of lessons or unit of study in secondary classroom. Students will develop and implement a unit plan in the content area integrating teaching of content, thinking skills and adjusting the unit to a special needs population.
CI	5210	Office functions as part of business administration, including physical facility planning, office systems, procedures and services, control of office work and administration/supervision of office staff.
CI	5220	Hands-on experience in a current word processing package. Also provides an overview of word processing methodologies, concepts and techniques needed to teach a secondary course.
CI	5250	A course for preservice middle grade teachers seeking licensure in mathematics. The course will focus on curriculum, scope and sequence, resources, learning activities, teaching strategies, technology use and assessment following NCTM standards and the Ohio Mathematics Model.
CI	5260	Designed for middle grades teachers seeking licensure in science. The course covers standards, curriculum, learning activities, teaching strategies, use of technology and assessment techniques in a middle school setting.
CI	5270	This course will focus upon the social studies education of middle grades students with an emphasis on standards, scope and sequence, resources, learning activities, teaching strategies, technology evaluation techniques.
CI	5280	A course for preservice middle grades teachers seeking licensure in reading/language arts. This course will focus upon the literary education of children in the middle grades. Standards, curriculum, scope and sequence, resources, learning activities, teaching strategies, technology use and assessment will be addressed following NCTE standards and the Ohio Language Arts Model.
CI	5300	Emphasis on all genres of literature for children, including poetry, traditional literature, fantasy, realistic fiction, biography and other information books, particularly for the preschool and primary student.

CI	5310	Emphasis on all genres of literature for children, including poetry, traditional literature, fantasy, realistic fiction, both historical and contemporary, biography and other informational books. Geared for the middle school student.
CI	5320	Survey of literature materials written for the junior and senior high school student. Emphasis is placed on all genres, literary elements and uses of literature across the curriculum.
CI	5360	Picture books, fiction, biography and poetry appropriate for elementary and middle school students that interpret and reflect honestly the lives of persons of color will be studied and evaluated.
CI	5390	To broaden students' knowledge of current professionals in children's literature, nationally-known authors, illustrators or editors presentations.
CI	5430	A critical study of teaching foreign languages and English as a second language in secondary schools including current curriculum, materials, teaching strategies and evaluation.
CI	5440	
CI	5450	An exploration and analysis of research on cultivating creativity and enhancing literacy achievement at the middle and secondary levels.
CI	5460	Advanced methods for teaching and integrating language arts in diverse classrooms. Emphasis is on understanding the reading and writing process from emergent literacy through middle school.
CI	5470	Focus on knowledge and skill needed to assess reading and writing of students and to plan appropriate instruction.
CI	5480	Focus on diagnostic assessment that represents differences in learners and emphasizes meeting student needs through a variety of instructional strategies to remediate problems in phonics, word recognition, fluency, comprehension and writing.
CI	5490	Study of the integration of reading comprehension, writing, oral language and word skill development in content reading. Attention will be given to instructional methods as well as assessment practices.
CI	5510	Development of mathematical understanding in young children, appropriate learning and assessment experiences and analysis of curriculum. Mathematics focus on place value, number sense, geometry, measurement, algebra, data analysis and probability.
CI	5520	Conceptualization of mathematics curriculum and its implementation in the classroom. The inductive approach will be emphasized. Examination of middle school math concepts.
CI	5530	Examination of the development of mathematics concepts and skills across the K-12 curriculum. Discussion of mathematics content, teaching methods, instructional materials, assessment techniques and applications to classroom practice.
CI	5540	Examination of the development of algebraic concepts and skills across the K-12 curriculum. Emphasis on current research, theory, and innovative approaches for teaching and learning algebra



CI	5550	Focuses on the art of problem solving and methods and materials for classroom implementation. Consideration given to current trends and related resource regarding use of problem solving in mathematics teaching.
CI	5560	Study of the role of assessment in the teaching and learning of mathematics. Examination of current research, assessment techniques, and trends and ways in which assessment can guide and inform mathematics instruction.
CI	5570	Focuses on the content of the 7-12 mathematics curriculum and its delivery in secondary schools. Consideration is given to the role of technology, proficiency testing, conceptualizations of mathematics and resulting implications.
CI	5580	Examination of the development of concepts and skills associated with number, data, and probability across the K-12 curriculum. Emphasis on current research, theory, and innovative instructional approaches.
CI	5590	Examination and exploration of policy issues, research, and national trends that have implications for teachers, curriculum specialists, school districts, and others involved in mathematics education
CI	5640	Issues, methods and materials related to teaching environmental science in grades PreK-12. Field trips to areas of environmental interest will be part of the course.
CI	5650	Prepares mentors to guide prospective teachers as they learn to teach in classroom settings. Emphasis is on reform oriented practice, developing productive mentor-mentee relationships, and guiding and assessing novices' learning.
CI	5660	Use of technology tools to foster learning in science classrooms. Emphasis is on integrating practical applications, research and theoretical perspectives to become intelligent users of computer applications in science education.
CI	5670	Nature, scope and role of science experiences in learning and development of middle school age children; integration and application of current developments; theory and research in middle school science education.
CI	5680	This course focuses on theoretical issues related to teaching science in grades preK-12 and is designed for preservice teachers.
CI	5690	Advanced methods for teaching science to engage learners in extended inquiry as they investigate real-world questions. Emphasis on innovative instructional strategies, research and theoretical perspectives to promote deep understanding of fundamental concepts.
CI	5710	Examines multicultural curriculum and instructional issues. Reviews diversity issues. Reviews diversity issues, pluralistic curricula, selection and development of instructional materials, grouping practices, assessment of learning and multi-ethnic schools. Emphasis on improving instruction.



CI	5720	Examines current issues of content and pedagogy in secondary social studies.
CI	5740	Rationale, research and strategies for character education, values clarification, moral development and self concept programs. Students will do a critical review of programs in values education.
CI	5760	Rationale, strategies and resources for teaching local history including demonstrations of teaching oral history and utilization of community resources.
CI	5790	Rationale and strategies for using newspapers as classroom resource for teaching across curriculum. Explore classroom applications after interviewing reporters, photographers, cartoonists as well as Newspaper in Education classroom teachers.
CI	5810	Purposes of classroom instruction and role of the teacher. Investigation and characteristics of mediated instruction, lecture-recitation, inductive discussion and inquiry and cooperative learning models. Modeling activities.
CI	5820	Introduction to curriculum and teaching for initial 1-8 certification at the graduate level. Analysis of classroom management, curriculum and instructional planning and evaluation strategies. Unit and lesson preparations.
CI	5830	An exploration of quality teaching in middle grades schools (5-9) including historical and philosophical foundations, developmental traits of students, current curriculum, teaching strategies, discipline and classroom management and evaluation.
CI	5860	An exploration of the junior high and middle school curriculum including philosophical, psychological and historical bases, current organization and design and principles of curriculum development. Designing developmentally-appropriate curriculum is stressed.
CI	5870	Exploration of senior high school curriculum. Social, psychological, historical and philosophical foundations. Curriculum organization and design. Sources of curriculum.
CI	5880	This course explores innovative research-based instructional strategies that show students how to teach comprehension as a constructive process in all curricula areas. It explores alternative methods for addressing the needs of less advanced students and multicultural populations.
CI	5950	Workshops developed around topics of interest and concern to in-service teachers. Practical application of workshop topics will be emphasized. Students may include several workshops in their master's or specialist degree programs.
CI	5980	A course developed around topics of interest and concern to in-service teachers within school districts and agencies. Stresses solution and resolution of education problems occurring within the district.

CI	5990	Individual study designed to provide a student the opportunity to work individually on professional problems under the direction of the faculty of the Department of Curriculum and Instruction.
CI	6370	This seminar will teach participants about fundamentals of grant writing. Topics covered will include: locating sources of funding, writing grants, designing evaluation instruments and administering grants.
CI	6400	Study of the theories and problems of literacy instruction. Factors affecting literacy development including organizations and climate of the classroom texts and instructional methods will be considered.
CI	6410	Study of the integration of reading and writing in the content areas. Attention will be given to instructional methods as well as assessment practices.
CI	6420	Study of the integration of reading and writing in the content areas. Attention will be given to instructional methods as well as assessment practices.
CI	6430	Teachers acquire the knowledge and skill needed to assess the reading and writing of students and to plan appropriate instruction.
CI	6440	Focus on comprehension, vocabulary and word identification strategies for supporting disabled readers in the regular classroom in learning to read independently.
CI	6460	Understanding and implementation of writing process in elementary classrooms, focusing on helping students write more effectively in three genre-fiction, nonfiction and poetry, as well as on evaluating student writing.
CI	6470	Addresses the philosophical underpinnings of integrated instruction as well as practical aspects of its implementation. Students incorporate literature and instructional strategies in thematic units.
CI	6490	Extensive examination of current research in literacy instruction. The influence of scientific studies on teaching procedures, materials and contexts of learning will be considered.
CI	6590	Analysis of the latest research in mathematics curriculum of the elementary school. A critical appraisal is made of current issues in mathematics instruction.
CI	6650	Investigates theoretical frameworks for mentoring in reform-oriented teacher education. Mentors' roles as collaborators for student learning, guides and partners for teacher learning, and professionals and leaders in classrooms are examined.
CI	6690	Critical appraisal of current issues and trends in science education research. Emphasis on research investigations concerning concepts and issues in science learning theory, curriculum development and assessment.
CI	6750	Examination of family substance abuse and dysfunction. Hidden learning, roles and patterns of behavior among COSAs. Strategies and materials for elementary, middle school, junior high COSAs.



CI	6790	Intensive study of contemporary developments in social studies including national standards, current research and major publications.
CI	6800	Consideration is given to major conceptualizations (models) of curriculum and instruction - classical, technological, personalized and interactional. Stress is placed upon the philosophical, psychological and historical determinants of these curricular models.
CI	6810	Study of essential structural components of curriculum. Role of the educator in making defensible curriculum decisions. Issues related to curricular aims, content, designs and evaluation are examined with the assistance of curriculum theory.
CI	6820	Program development for community agency personnel training and staff development. Principles of curriculum design applied to non-school programs. Model for design; evaluation.
CI	6830	Analysis of current curriculum developments in public school education such as the major curriculum reform projects, individualization of programs, compensatory programs, ITU and programmed instructional packages and related developments.
CI	6840	Study of initiating and implementing curriculum change in the school setting. Students will build upon a review and examine key theories of educational leadership concerned with curriculum development.
CI	6900	Examination of research and current issues in curriculum and instruction. Emphasis on theory and research and evaluation models. Preparation and submission of article manuscript.
CI	6920	Students will complete an individual research project under the direction of a committee of at least two faculty members in Curriculum and Instruction, ordinarily including the faculty adviser.
CI	6940	Placement of a master's student in appropriate school district setting under direction of a CI instructor. : 04 Middle Childhood Education, 05 Adolescent and Young Adult Education, 06 Multiage. Prerequisite: Methods course in subject area. Co requisite: CI5990. Course may not be used to satisfy Master's program requirements.
CI	6960	Students will complete a thesis under the direction of committee of at least two faculty members from Curriculum and Instruction, ordinarily including the faculty adviser.
CI	7460	Advanced methods for teaching and integrating language arts in diverse classrooms. Emphasis is on understanding the reading and writing process from emergent literacy through middle school.
CI	7530	Examination of the development of mathematics concepts and skills associated with geometry and measurement across the K-12 curriculum. Emphasis on current research, theory, and innovative instructional approaches to the teaching and learning of geometry and measurement.
CI	7540	Examination of the development of algebraic concepts and skills across the K-12 curriculum. Emphasis on current research, theory, and innovative approaches for teaching and learning algebra.



CI	7560	Study of the role of assessment in the teaching and learning of mathematics. Examination of current research, assessment techniques, and trends and ways in which assessment can guide and inform mathematics instruction
CI	7580	Examination of the development of concepts and skills associated with number, data, and probability across the K-12 curriculum. Emphasis on current research, theory, and innovative instructional approaches
CI	7590	Examination and exploration of policy issues, research, and national trends that have implications for teachers, curriculum specialists, school districts, and others involved in mathematics education.
CI	7650	Prepares mentors to guide prospective teachers as they learn to teach in classroom settings. Emphasis is on reform oriented practice, developing productive mentor-mentee relationships, and guiding and assessing novices' learning.
CI	7660	Use of technology tools to foster learning in science classrooms. Emphasis is on integrating practical applications, research and theoretical perspectives to become intelligent users of computer applications in science education.
CI	7690	Advanced methods for teaching science to engage learners in extended inquiry as they investigate real-world questions. Emphasis on innovative instructional strategies, research and theoretical perspectives to promote deep understanding of fundamental concepts.
CI	7810	Purposes of classroom instruction and role of the teacher. Investigation and characteristics of mediated instruction, lecture-recitation, inductive discussion and inquiry and cooperative learning models. Modeling activities.
CI	7830	An exploration of quality teaching in middle grades schools (5-9) including historical and philosophical foundations, developmental traits of students, current curriculum, teaching strategies, discipline and classroom management and evaluation.
CI	7860	An exploration of the junior high and middle school curriculum including philosophical, psychological and historical bases, current organization and design and principles of curriculum development. Designing developmentally-appropriate curriculum is stressed.
CI	7870	Exploration of senior high school curriculum. Social, psychological, historical and philosophical foundations. Curriculum organization and design. Sources of curriculum.
CI	7880	This course explores innovative research-based instructional strategies that show students how to teach comprehension as a constructive process in all curricula areas. It explores alternative methods for addressing the needs of less advanced students and multicultural populations.



CI	7940	Observation and supervised experience in an appropriate setting. Students will be assigned to work as interns under the joint supervision of school and University personnel.
CI	7980	A course developed around topics of interest and concern to in-service teachers within school districts and agencies. Stresses solution and resolution of education problems occurring within the district.
CI	8370	This seminar will teach participants about fundamentals of grant writing. Topics covered will include: locating sources of funding, writing grants, designing evaluation instruments and administering grants.
CI	8400	Study of the theories and problems of literacy instruction. Factors affecting literacy development including organizations and climate of the classroom texts and instructional methods will be considered.
CI	8410	Study of the integration of reading and writing in the content areas. Attention will be given to instructional methods as well as assessment practices.
CI	8420	Study of the integration of reading and writing in the content areas. Attention will be given to instructional methods as well as assessment practices.
CI	8430	Teachers acquire the knowledge and skill needed to assess the reading and writing of students and to plan appropriate instruction.
CI	8440	Focus on comprehension, vocabulary and word identification strategies for supporting disabled readers in the regular classroom in learning to read independently.
CI	8460	Understanding and implementation of writing process in elementary classrooms, focusing on helping students write more effectively in three genre-fiction, nonfiction and poetry, as well as on evaluating student writing.
CI	8470	Addresses the philosophical underpinnings of integrated instruction as well as practical aspects of its implementation. Students incorporate literature and instructional strategies in thematic units.
CI	8490	Extensive examination of current research in literacy instruction. The influence of scientific studies on teaching procedures, materials and contexts of learning will be considered.
CI	8590	Analysis of the latest research in mathematics curriculum of the elementary school. A critical appraisal is made of current issues in mathematics instruction.
CI	8650	Investigates theoretical frameworks for mentoring in reform-oriented teacher education. Mentors' roles as collaborators for student learning, guides and partners for teacher learning, and professionals and leaders in classrooms are examined.
CI	8690	Critical appraisal of current issues and trends in science education research. Emphasis on research investigations concerning concepts and issues in science learning theory, curriculum development and assessment.

CI	8700	The doctoral research cycle begins by introducing students to issues in curriculum and instruction, establishing a research agenda, and building a community of scholars. Pre-requisite to Pro-Seminar II.
CI	8710	The doctoral research cycle continues by examining the paradigmatic and theoretical bases of C&I research. Develop lines of inquiry grounded in theoretical knowledge and personal interests. Prerequisite: Pro-Seminar I.
CI	8720	The doctoral research cycle is completed. A study is designed, conducted and disseminated within a research group under the guidance of a mentor. Prerequisite: CI 8700 + 8710.
CI	8750	Examination of family substance abuse and dysfunction. Hidden learning, roles and patterns of behavior among COSAs. Strategies and materials for elementary, middle school, junior high COSAs.
CI	8790	Intensive study of contemporary developments in social studies including national standards, current research and major publications.
CI	8800	Consideration is given to major conceptualizations (models) of curriculum and instruction - classical, technological, personalized and interactional. Stress is placed upon the philosophical, psychological and historical determinants of these curricular models.
CI	8810	Study of essential structural components of curriculum. Role of the educator in making defensible curriculum decisions. Issues related to curricular aims, content, designs and evaluation are examined with the assistance of curriculum theory.
CI	8820	Program development for community agency personnel training and staff development. Principles of curriculum design applied to non-school programs. Model for design; evaluation.
CI	8830	Analysis of current curriculum developments in public school education such as the major curriculum reform projects, individualization of programs, compensatory programs, ITU and programmed instructional packages and related developments.
CI	8840	Study of initiating and implementing curriculum change in the school setting. Students will build upon a review and examine key theories of educational leadership concerned with curriculum development.
CI	8860	Problems of conducting systematic inquiry in the curriculum field. Students will discuss ideas and research of curriculum scholars. Requires the ability to analyze and evaluate current programs and scholarly writing.
CI	8870	An in-depth investigation of the foundations of curriculum inquiry with specific emphasis on the application of contemporary philosophy, curricular criticism and possibility in the design of educational programs.
CI	8900	This seminar will consider problems and provide advanced study for doctoral students in Curriculum and Instruction.
CI	8930	Individual study is designed to provide the doctoral student opportunity to work individually on professional problems under the direction of CI faculty.



CI	8940	Placement of doctoral students in appropriate school, school district, or other professional setting under direction of joint placement personnel and CI faculty.
CI	8960	Original research in an area of curriculum and instruction.
CIEC	3200	The course emphasizes the role, attitude and characteristics of the effective teacher of young children.
CIEC	3250	Designed to heighten awareness about the effect of public policy on young children, their educational opportunities and their parents and sensitize students to advocacy and its many manifestations.
CIEC	3310	In-depth study of curriculum development, designing learning environments and anti-bias procedures for preschool children. Students will plan and implement learning activities in field placement.
CIEC	3320	A study of the young child's play and its relationship to learning. Students will design activities and a socio-dramatic play kit to facilitate play in assigned early childhood settings.
CIEC	3350	This course is designed to establish awareness of public policy issues and advocacy techniques, knowledge of family systems, effective home/school communication and collaborative procedures.
CIEC	3380	This course is designed to explore the socio-cultural context of the school, family and community as important influences in learning. Students will be assigned to work with a family, gather data and information about their field sites and attend IEP and IFSP conferences.
CIEC	3900	A culminating reading and discussion seminar that continues and intensifies the activities of earlier seminars (CIEC 1900 and 2900). Emphasis will be on transforming the content of the Humanities, Sciences and Social Sciences into appropriate Early Childhood curriculum.
CIEC	4070	This course is designed to apply characteristics of best practice to curriculum development and implementation with adherence to the national and state curriculum standards as they apply to children, age 3 to 8, with diverse educational needs.
CIEC	4150	This course will explore Reggio's philosophy of early childhood education and the numerous ways that children explore the "hundred languages." Reggio uses these languages (art, clay, wire, sculpture, light, shadow, etc.) as a way to help children represent their world and what they know about it.
CIEC	4340	Sequential development of the young child from birth to 3 years. Taken in conjunction with placement in early childhood setting, permitting opportunities to participate in the care giving of infants/toddlers.
CIEC	4380	Practicum experiences in preschool settings where students will observe, plan, implement and evaluate activities. Students will spend two half days per week in their field placements.
CIEC	4390	Planning, teacher made materials and managing classrooms will be covered.



CIEC	4460	This course is designed to help teachers of science in grades Pre-Kindergarten through third to understand the concepts, ideas and applications of science in the real world. Students will learn how scientific thinking involves collecting data, analyzing data, making decisions and taking action based on those decisions. Students will learn how to plan effective science experience for young children that cause them to explore environments and act upon their discoveries. Students will learn how to assess the scientific thinking of young children appropriately, using formal and informal strategies.
CIEC	4480	A five half day a week field experience in an inclusive Pre-K or primary classroom with focus on the implementation of content and skill based curriculum using the best practice methods and the integration of appropriate technology.
CIEC	4510	A study of the language, literacy and concept development of the young child with emphasis on the factors that influence this development and classroom practice which fosters their development.
CIEC	4520	Developmental, sensory and neurological principles underlying the planning and implementation of developmentally appropriate learning activities for young children.
CIEC	4530	Emphasizes the rationale and methods for providing a wholesome affective environment for young children in preschool and primary settings.
CIEC	4540	Provides early childhood educators with skills and knowledge related to the successful operation of an early childhood center, school, or program. Standards and regulations as set forth by State licensing agencies as well as accreditation by NAEYC will be covered.
CIEC	4550	In depth study of methods and materials for teaching social studies from pre-school to third grade. Implementation of early childhood curriculum with the context of current technology and the development of critical thinking skills.
CIEC	4580	Practicum experience in infant/toddler settings where students will observe, plan, implement and evaluate activities.
CIEC	4590	Planning, teacher made materials and the environment for infant and toddlers will be covered.
CIEC	4750	This course focuses on methods of assessment in early childhood classrooms. Issues covered include methods of observation, interpreting formal assessment results and using information gained from assessment to plan curriculum.
CIEC	4760	A study of the principles and knowledge base for designing developmentally appropriate curriculum and classroom environments. Principles of anti-bias education are also addressed. Students make observations in four K to grade 3 classrooms.
CIEC	4770	Practicum experience in primary grade settings (grades K-3) where students will observe, plan, implement and evaluate activities.



CIEC	4790	Planning, research, teacher made materials appropriate for environments for kindergarten children will be covered.
CIEC	4900	A seminar designed to reflect on the student teaching experience and to enhance the student teacher's final preparation for employment. Professional issues, ethical behavior, resume and interview techniques and other processes and professional entry concerns. For early childhood student teachers.
CIEC	4910	The internship senior will complete an action research study or related topic about student learning. In addition to a completed paper, the student will give a multi-media presentation that clearly articulates the research question/problem, methods used in the study and the results of the study.
CIEC	4930	Planned experience in public school classrooms under direction of University supervisor. Observation of teaching of experienced teacher; gradual acceptance of full responsibility by student teacher for planning, instruction, evaluation and related duties.
CIEC	4950	Workshop developed around topics of interest and concern for pre-service and in-service teachers and other education personnel. Practical application of workshop topics will be emphasized.
CIEC	4980	Topics of interest and concern to preservice, in-service and non-degree teachers within districts and community agencies served by the Center for Educational Development. May be included in an undergraduate degree program.
CIEC	4990	Individual study designed to provide a student the opportunity to work individually on professional problems under the direction of the Early Childhood faculty.
CIEC	5000	A comprehensive introduction to the profession of early childhood education by examining relevant issues as they relate to overall development of children ages birth to eight years.
CIEC	5070	Applies characteristics of best practice to curriculum development and implementation with adherence to national and state curriculum standards as they apply to children, age 3 to 8, with diverse educational needs.
CIEC	5150	This course will explore Reggio's philosophy of early childhood education and the numerous ways that children explore the "hundred languages." Reggio uses these languages (art, clay, wire, sculpture, light, shadow, etc.) as a way to help children represent their world and what they know about it.
CIEC	5340	Introduction to the sequential development of the young child from birth to 3 years. Students will engage in field hours in infant-toddler settings, design learning materials and critique research in topics related to infant/toddler curriculum.
CIEC	5350	Students will understand the implications of social, political and economic policies on the emergence of services for young children in the 21st century.



CIEC	5380	Practicum experience in pre-kindergarten settings where students will observe, plan, implement and evaluate activities.
CIEC	5460	This course is designed to help teachers of science in grades Pre-Kindergarten through third to understand the concepts, ideas and applications of science in the real world. Students will learn how scientific thinking involves collecting data, analyzing data, making decisions and taking action based on those decisions. Students will learn how to plan effective science experience for young children that cause them to explore environments and act upon their discoveries. Students will learn how to assess the scientific thinking of young children appropriately, using formal and informal strategies.
CIEC	5520	Development and sensory principles underlying the planning and implementation of developmentally appropriate learning activities for young children. Technical content will include the physical and neurological bases for learning.
CIEC	5530	This course focuses on teacher planning and activities that support the socio-emotional development of young children.
CIEC	5540	Focuses on the successful operations of an early childhood program. Covers topics such as licensing and certification standards, staff development selection and purchase of equipment and proper food and health services.
CIEC	5550	In depth study of methods and materials for teaching social studies from pre-school to third grade. Implementation of early childhood curriculum within the context of current technology and the development of critical thinking skills.
CIEC	5580	Practicum experience in infant/toddler settings where students will observe, plan, implement and evaluate activities.
CIEC	5590	Planning, research, teacher-made materials appropriate for environments for infants and toddlers will be covered.
CIEC	5770	Practicum experience in grades Kindergarten through 3 where students will observe, plan, implement and evaluate activities.
CIEC	5800	This course is designed to assist the classroom teacher in building positive relationships with the parents of students and to develop effective strategies for communicating with them.
CIEC	5950	Workshops developed around topics of interest and concern to in-service teachers. Practical application of workshop topics will be emphasized. Students may include several workshops in their master's or specialist degree programs.
CIEC	5980	A course developed around topics of interest and concern to in-service teachers within districts served by the Center for Educational Research and Services. Stresses solution and resolution of educational problems occurring within the district.



CIEC	5990	Individual study designed to provide a student the opportunity to work individually on professional problems under the direction of the faculty in Early Childhood Education.
CIEC	6310	The study and design of early childhood curriculum from a best practice/developmental perspective including integrated curriculum, anti-bias approaches, authentic assessment, direct learning strategies. Student self assessment and change project required.
CIEC	6320	Theoretical bases of play behavior and its role in curriculum development/assessment. Students implement and evaluate a sociodramatic play kit and conduct library research on one aspect of play behavior.
CIEC	6330	Study of the language and literacy development of the young child with emphasis upon the factors that influence and support this development. Students will do projects to implement their learning.
CIEC	6750	Focuses upon teaching and learning in a developmental learning environment. Emphases include observing the developmental characteristics of young children and assessment for prescriptive teaching.
CIEC	6900	Examination of research and current issues in early childhood education. Emphasis on theory and research and evaluation models.
CIEC	6920	Student will complete an individual research project under the direction of a committee of at least two faculty members in Early Childhood ordinarily involving the faculty advisor.
CIEC	6940	Placement of a Master's student in an appropriate PreK-Grade 3 school setting under the direction of a CIEC instructor. A maximum of 3 hours can be applied towards a master's degree.
CIEC	6950	Review and analysis of theory and research related to rationale and methods for program options for young children. Critique research and prepare a review of synthesis of research.
CIEC	6960	Students who elect this option will complete a thesis under the direction of committee of at least two faculty members from Early Childhood Education, ordinarily including the faculty advisor.
CIEC	7800	This course is designed to assist the classroom teacher in building positive relationships with the parents of students and to develop effective strategies for communicating with them.
CIEC	7940	Observation and supervised experience in an appropriate setting. Students will be assigned to work as interns under the joint supervision of school and University personnel.
CIEC	7980	A course developed around topics of interest and concern to in-service teachers within districts served by the Center for Educational Research and Services. Stresses solution and resolution of educational problems occurring within the district.



CIEC	8310	The study and design of early childhood curriculum from a best practice/developmental perspective including integrated curriculum, anti-bias approaches, authentic assessment, direct learning strategies. Student self assessment and change project required.
CIEC	8320	Theoretical bases of play behavior and its role in curriculum development/assessment. Students implement and evaluate a sociodramatic play kit and conduct library research on one aspect of play behavior.
CIEC	8330	Study of the language and literacy development of the young child with emphasis upon the factors that influence and support this development. Students will do projects to implement their learning.
CIEC	8340	Introduction to the sequential development of the young child from birth to 3 years. Students will engage in field hours in infant-toddler settings, design learning materials and critique research in topics related to infant/toddler curriculum.
CIEC	8750	Focuses upon teaching and learning in a developmental learning environment. Emphases include observing the developmental characteristics of young children and assessment for prescriptive teaching.
CIEC	8900	This seminar will consider problems and provide advanced study for doctoral students in Early Childhood Education.
CIEC	8930	Individual study is designed to provide the doctoral student opportunity to work individually on professional problems under the direction of Early Childhood faculty.
CIEC	8940	Placement of doctoral students in an appropriate PreK-Grade 3 school, school district or other professional setting under the direction of joint placement personnel and CIEC faculty.
CIEC	8950	Review and analysis of theory and research related to rationale and methods for program options for young children. Critique research and prepare a review of synthesis of research.
CIEC	8960	Original research in an area of early childhood education.
CIVE	1000	Computer literacy, report writing, word processing, table creation, equation, equation writing, data manipulation, data graphical plotting. Introduction to various disciplines in Civil Engineering, Structural, Geotechnical, Transportation, Environmental. Practice in engineering problem solving process.
CIVE	1100	Study of graphical representations of engineering structures and systems and application by hand drawing and computer aided techniques. Instruments and methods for linear and angular measurements. Error theory and propagation. Familiarization with geographical information systems.
CIVE	1110	Study of graphical representation of engineering structures and systems and application by hand-drawing and computer aided techniques.



CIVE	1150	Study of coplanar statics of particles, vector addition, resultant components, equilibrium, free body diagrams, equivalent force systems, vector products, scalar products, 2 & 3 dimensional equilibrium of rigid bodies, analysis of machines, pulleys, trusses. Centroids, moments of inertia, shear and bending moment diagrams.
CIVE	1160	Material properties. Axially loaded members, including eccentric loads and thin wall pressure vessels. Axial load applications: Stress-Strain relationships, Stress & Strain transformations. Torsion: solid sections, circular sections. Torsional load applications: Combined axial and torsion stress. Beams: shear and bending moment diagrams, bending stress deflection. Beam load applications: Combined shear, torsion and bending stress. Buckling of long columns.
CIVE	1170	Fundamental concepts of fluid mechanics required for the solutions of air pollution problems, water resource problems and transportation problems. Use of continuity, momentum and energy equations and dimensional analysis. Application to pipe flow, open channel flow and boundary layer flow. Introduction to turbo machinery. Measurements of fluid flow and discussion on fluid flow devices.
CIVE	1EL	
CIVE	2000	Basic concepts of career planning, co-op performance expectations, necessary skills for maximizing learning from experiences and realities of the professional community.
CIVE	2110	Introduction to properties of aggregates, Portland cement, concrete, steel, glass and bituminous mixtures. Mix designs of cement and asphalt concrete and standard test procedures for strength, workability, serviceability and durability.
CIVE	2990	An opportunity for qualified underclassmen to pursue a relevant area of Civil Engineering of particular personal interest under the supervision of a faculty member.
CIVE	2EL	
CIVE	3120	Systems Approach, optimization by differential calculus techniques, linear programming, transportation and assignment problems, management of construction projects, critical path method, PERT and decision analysis.
CIVE	3210	A study of soil as an engineering material. Geologic origins, physical properties, movement of water through soil, soil stresses, consolidation, shear strength. Engineering properties testing of soils in laboratory.
CIVE	3220	Application of soil mechanics principles to design for problems encountered in excavations, embankments, foundations, retaining structures, abutments, slope stability. Evaluation of the ability of soil to function in various capacities.
CIVE	3310	Analysis of statically determinate structures; analysis of simple and compound trusses, beams and frames; introduction to indeterminate structures; slope deflection and moment distribution. Introduction to computer applications.



CIVE	3320	Introduction to modern computer oriented structural analysis technique. It covers the beam-column element, triangular element and rectangular element. State-of-the-art computer software will be used to analyze bridge trusses, high-rise building frames, foundations, pavements and/or soil masses.
CIVE	3410	An introduction to the principles underlying design of axial tension members, axial compression members, beams, columns and base plates. Also includes welded and bolted connections.
CIVE	3420	Introduction to principles and underlying design of basic structural beams, columns, one-way slabs in reinforced concrete. Shear reinforcement.
CIVE	3510	To provide an overview of transportation systems and operating characteristics of various highway modes. Concept of land use/transportation interaction. Considerations of vehicle and human characteristics in design of highway elements. Introduction to highway capacity and traffic control devices. Transportation planning process leading to local area traffic management with introduction to transportation system management and intelligent transportation systems.
CIVE	3520	Survey of various modes of transport with emphasis on service provided by each and facilities required. Introduction to physical and practical aspects of design of transport facilities including drainage, pavements, railroads, ports and harbors, pipelines and transportation terminals.
CIVE	3610	This course includes lecture, laboratory exercises and a team-based design project. The topics covered will include water quality, water supply, design of the physical and chemical treatment processes, water distribution systems and contemporary issues related to drinking water.
CIVE	3620	Introduction to sources of air pollution, basic meteorological processes, air quality modeling, technology for air pollution control, odor control and noise pollution. Introduction to health effects of air pollutants, risk assessment and global atmospheric change. The students are required to use the USEPA programs for stack design and computations for ground level concentrations.
CIVE	3630	This course includes lecture, laboratory exercises and a team-based design project. The topics covered will include wastewater collection, treatment and discharge, sludge treatment and disposal, and contemporary issues related to wastewater treatment.
CIVE	3940	Approved co-op work experience. Course may be repeated.
CIVE	3950	Approved co-op work experience beyond third required co-op experience. Course may be repeated.
CIVE	3EL	
CIVE	4210	A study of soil behavior including stress distributions, deformation, consolidation and shear strength. The course focuses upon the development and use of well accepted solutions and practical applications.



CIVE	4220	Discussion of advanced topics concerned with the application of soil mechanics to subsurface investigation and characterization, soil compaction and site improvement, shallow foundations, deep foundations, slope stability, lateral earth pressures, design of retaining structures and loads on buried structures.
CIVE	4240	Use of geosynthetic materials in engineering design for reinforcement, barrier, separation and/or drainage functions. Design applications for geotechnical, transportation and environmental uses.
CIVE	4260	Measurement of and research on the engineering properties of soils, with special emphasis on tests not covered in an introductory soil mechanics laboratory. Design of a testing program to include single and three dimensional consolidations, triaxial and direct shear and hydraulic conductivity testing for fine grained soils. SHANSEP soil properties. Two hours lecture and two hour laboratory.
CIVE	4300	Introduction to theory of elasticity, plane-stress and plane-strain problems, yield criteria and failure theories, bending of beams, energy methods, curved flexural members, unsymmetrical bending, torsion, shear center and axisymmetrically loaded members.
CIVE	4320	Matrix analysis of continuous beams, trusses and frames by force method and displacement method. Methods of consistent deformation and slope deflection will be discussed to complement the matrix analysis. Computer applications.
CIVE	4340	Application of experimental techniques to stress analysis. Comparison of experimental and analytical methods. Theory of electrical resistance strain gages. Methods of photoelasticity including photostress. Data acquisition systems and their use.
CIVE	4350	Study of undamped and damped response to free and forced vibrations of single and multi-degree of freedom systems subjected to dynamic loading. Introduction to estimation of seismic loading on structures.
CIVE	4410	Properties of wood and the design of beams, columns, horizontal diaphragms, shearwalls and connections. Basic behavior of structures and how this behavior is reflected in the design of wood structures.
CIVE	4430	Study of local failure in beams, biaxial bending, plate girders, composite beams, semi-rigid composite connections and beam columns.
CIVE	4440	Analysis and design of columns under axial compression and biaxial bending. Consideration of bar cut-off, development lengths. Design of two-way slabs and building frames in reinforced concrete. Deflection of beams. Shear design provisions for deep beams.
CIVE	4480	Study of the design of reinforced and unreinforced masonry design, beams and walls and columns. Working stress design, strength design and empirical design are studied.



CIVE	4510	Mechanical properties of various civil engineering materials including metallic, ceramic, polymeric and composite materials; microstructures; fracture mechanics; fatigue and other failure modes; environmental effects; fiber reinforced concrete; quality control and nondestructive evaluation.
CIVE	4550	To provide a detailed understanding of the basic concepts of traffic engineering together with driver-roadway-vehicle system characteristics. Capacity analysis of freeways, rural highways, multilane and two lane highways. Traffic control devices and traffic signal design and capacity. Traffic studies and data collections; volume, speed and travel time, accident and parking studies. Introduction to other tools to mitigate traffic congestion.
CIVE	4580	A study of the principles of advanced technologies and ideas that improve transportation mobility and efficiency, enhance safety, maximize use of existing transportation facilities, conserve energy resources and reduce environmental impacts.
CIVE	4610	Aspects of Hydrology. Stream gauging. Common and rare event analysis. Hydraulic and hydrologic routing. Irrigation, navigation, flood control and urban drainage. Resource demand conflicts and multiple use planning.
CIVE	4620	Energy and momentum in open channel flow. Channel controls and transitions. Open channel flow with backwater curves. Unsteady flow.
CIVE	4630	Characterization of indoor air pollutants, predictions of indoor air quality levels and indoor air quality control. Four to five design problems involving indoor air quality will be discussed/solved in the class. Special emphasis on the indoor radon and asbestos problems in the United States. Use of USEPA program.
CIVE	4640	Basic concepts of industrial hygiene and occupational health hazards, physical and chemical stresses of the industrial environment; sources; effects; measurements; evaluation; control of exposure; and control methods other than ventilation for conservation of industrial health, such as substitution and personal protection, with reference to special operation and industries.
CIVE	4650	Industrial ventilation as related to need of industrial hygiene engineer, including principles of air flow, natural and power ventilation, supply and exhaust, characteristics and design of systems, fans, collectors, testing instruments. Construction guidelines for local exhaust systems.
CIVE	4660	Use of different flow devices, calibration of pivot tubes, stack sampling, use of high volume sampler, use of weather station, calibration of primary and secondary flow devices and pollution control equipment. One hour laboratory.



CIVE	4670	A basic study of solid waste management concepts including origin, quantities, qualities, collection and disposal of solid waste materials. The course focuses upon municipal wastes and introduces the student to hazardous waste technologies. The primary course objective is to develop environmentally sound landfill design technologies and other ultimate disposal techniques.
CIVE	4680	An overview of the major federal environmental statutes: Clean Air Act, Clean Water Act, RCRA, CERCLA, etc. and legal perspective of why they were developed. Exposure to some basic legal principles which will be integrated into the overall study of environmental law. Provides a practical perspective on how the law can be applied to situations encountered by environmental engineers and scientists in the real world.
CIVE	4710	A systematic approach to the analysis of complicated engineering systems involving uncertain and probabilistic phenomena. Reliability analysis, systems simulation, Markov process, game theory, expert systems and probabilistic decision analysis.
CIVE	4750	To provide real world civil engineering design experience through a design problem as would be developed in an actual civil engineering consultant's office. Two hours lecture, two hours laboratory.
CIVE	4810	To provide an in-depth understanding of contract writing procedures and development of comprehensive specifications for bid documents. Expose students to real world documents and to critically evaluate them in relations to ethics, professionalism and the end product. Pros, cons and necessary elements of a valid contract.
CIVE	4820	Concept of project management in the engineering and construction industry. Development and organization of projects with emphasis on application, preconstruction site investigation, planning, scheduling estimating and design. The bidding and award process. Construction and control methods for specifications. Selection of a professional construction manager. Methods of project management and methods of managing construction.
CIVE	4830	To provide a philosophical base upon which engineering students may anchor the professional practice and growth of their technical skills, as well as the development of business and professional relationship throughout their lives. Discussion of the entire range of the engineer's professional endeavors, obligation to society and commitment to professional ethics.
CIVE	4840	Introduction to the basic concepts to geographic information systems. The use of commercial software to integrate CAD and database to answer questions using both spatial (maps) and attribute (database) data. Topics studies include CAD/GIS conversion, database design, computer mapping.
CIVE	4900	An opportunity for qualified upperclassmen to pursue a relevant area of Civil Engineering of particular personal interest under the supervision of a faculty member.



CIVE	4960	Independent research under the supervision of a faculty member to fulfill the thesis requirement of the University Honors Program.
CIVE	4EL	
CIVE	5210	A study of soil behavior including stress distributions, deformation, consolidation and shear strength. The course focuses upon the development and use of well accepted solutions and practical applications.
CIVE	5220	Discussion of advanced topics concerned with the application of soil mechanics to subsurface investigation and characterization, soil compaction and site improvement, shallow foundations, deep foundations, slope stability, lateral earth pressures, design of retaining structures and loads on buried structures.
CIVE	5240	Use of geosynthetic materials in engineering design for reinforcement, barrier, separation and/or drainage functions. Design applications for geotechnical, transportation and environmental uses.
CIVE	5260	Measurement of and research on the engineering properties of soils, with special emphasis on tests not covered in an introductory soil mechanics laboratory. Design of a testing program to include single and three dimensional consolidations, triaxial and direct shear and hydraulic conductivity testing for fine grained soils. SHANSEP soil properties. Two hours lecture and two hour laboratory.
CIVE	5300	Introduction to theory of elasticity, plane-stress and plane-strain problems, yield criteria and failure theories, bending of beams, energy methods, curved flexural members, unsymmetrical bending, torsion, shear center and axisymmetrically loaded members.
CIVE	5320	Matrix analysis of continuous beams, trusses and frames by force method and displacement method. Methods of consistent deformation and slope deflection will be discussed to complement the matrix analysis. Computer applications.
CIVE	5340	Application of experimental techniques to stress analysis. Comparison of experimental and analytical methods. Theory of electrical resistance strain gages. Methods of photoelasticity including photostress. Data acquisition systems and their use.
CIVE	5410	Properties of wood and the design of beams, columns, horizontal diaphragms, shearwalls and connections. Basic behavior of structures and how this behavior is reflected in the design of wood structures.
CIVE	5430	Study of local failure in beams, biaxial bending, plate girders, composite beams, semi-rigid composite connections and beam columns.
CIVE	5440	Analysis and design of columns under axial compression and biaxial bending. Consideration of bar cutoff, development lengths. Design of two-way slabs and building frames in reinforced concrete. Deflection of beams. Shear design provisions for deep beams.



CIVE	5450	Design of the three most common types of short span bridges: concrete slabs, steel stringers and prestressed concrete. Additional topics are bearings, rehabilitation and retrofit and design to minimize maintenance.
CIVE	5480	Study of the design of reinforced and unreinforced masonry design, beams and walls and columns. Working stress design, strength design and empirical design are studied.
CIVE	5510	Mechanical properties of various civil engineering materials including metallic, ceramic, polymeric and composite materials; microstructures; fracture mechanics; fatigue and other failure modes; environmental effects; fiber reinforced concrete; quality control and nondestructive evaluation.
CIVE	5550	To provide a detailed understanding of the basic concepts of traffic engineering together with driver-roadway-vehicle system characteristics. Capacity analysis of freeways, rural highways, multilane and two lane highways. Traffic control devices and traffic signal design and capacity. Traffic studies and data collections; volume, speed and travel time, accident and parking studies. Introduction to other tools to mitigate traffic congestion.
CIVE	5610	Aspects of Hydrology. Stream gauging. Common and rare event analysis. Hydraulic and hydrologic routing. Irrigation, navigation, flood control and urban drainage. Resource demand conflicts and multiple use planning.
CIVE	5620	Energy and momentum in open channel flow. Channel controls and transitions. Open channel flow with backwater curves. Unsteady flow.
CIVE	5630	Characterization of the indoor air pollutants, predictions of indoor air quality levels and indoor air quality control. Four to five design problems involving indoor air quality will be discussed/solved in the class. Special emphasis on indoor radon and asbestos problems in the United States. Use of USEPA program.
CIVE	5640	Basic concepts of industrial hygiene and occupational health hazards, physical and chemical stresses of the industrial environment; sources; effects; measurements; evaluation; control of exposure; and control methods other than ventilation for conservation of industrial health, such as substitution and personal protection, with reference to special operation and industries.
CIVE	5650	Industrial ventilation as related to need of industrial hygiene engineer, including principles of air flow, natural and power ventilation, supply and exhaust, characteristics and design of systems, fans, collectors, testing instruments. Construction guidelines for local exhaust systems.
CIVE	5660	Use of different flow devices, calibration of pitot tubes, stack sampling, use of high volume sampler, use of weather station, calibration of primary and secondary flow devices and pollution control equipment. One hour laboratory.



CIVE	5670	A basic study of solid waste management concepts including origin, quantities, qualities, collection and disposal of solid waste materials. The course focuses upon municipal wastes and introduces the student to hazardous waste technologies. The primary course objective is to develop environmentally sound landfill design technologies and other ultimate disposal techniques.
CIVE	5680	An overview of the major federal environmental statutes: Clean Air Act, Clean Water Act, RCRA, CERCLA, etc. and legal perspective of why they were developed. Exposure to some basic legal principles which will be integrated into the overall study of environmental law. Provides a practical perspective on how the law can be applied to situations encountered by environmental engineers and scientists in the real world.
CIVE	5710	A systematic approach to the analysis of complicated engineering systems involving uncertain and probabilistic phenomena. Reliability analysis, systems simulation, Markov process, game theory, expert systems and probabilistic decision analysis.
CIVE	5810	To provide an in-depth understanding of contract writing procedures and development of comprehensive specifications for bid documents. Expose students to real world documents and to critically evaluate them in relations to ethics, professionalism and the end product. Pros, cons and necessary elements of a valid contract.
CIVE	5820	Concept of project management in the engineering and construction industry. Development and organization of projects with emphasis on engineering application, preconstruction site investigation, planning, scheduling, estimating and design. The bidding and award process. Construction and control methods for specifications. Selection of a professional construction manager. Methods of project management and methods of managing construction.
CIVE	5830	To provide a philosophical base upon which engineering students may anchor the professional practice and growth of their technical skills, as well as the development of business and professional relationships throughout their lives. Discussion of the entire range of the engineer's professional endeavors, obligation to society and commitment to professional ethics.
CIVE	5930	An opportunity for qualified graduate students to pursue a relevant area of Civil Engineering of particular personal interest under the supervision of a faculty member.
CIVE	6230	Introduction to topics concerning groundwater and its existence, Darcy's law, derivation of flow equation for saturated and unsaturated soil, flow nets, discussion of numerical methods and use of computer programs for groundwater modeling. Includes a term project.



CIVE	6240	A study of the availability and proper use of geotechnical and environmental investigative tools and techniques to include GIS, GPS, RS, non-destructive tests utilizing GPR, XRF and IR, destructive tests utilizing GC and MS, geotechnical testing to include SPT, vane shear, cone penetrometer and geophysical methods.
CIVE	6250	Application of Soil Mechanics to unsaturated soils, physics of unsaturated soils, characterization of unsaturated soils. Relationships for flow, shear strength and volume change. Measurements for flow, shear strength and volume change. Predictions for flow, shear strength and volume change. Includes journal reviews.
CIVE	6260	A study of numerical methods used in geotechnical engineering and their applications. Emphasis on finite element and finite difference methods for stress, displacement, consolidation, stability and seepage analysis.
CIVE	6270	Continuum models of groundwater flow and pollution. Strategies to select domains, boundary and initial conditions to approximate reality. Inherent errors in solution schemes. Use of multidimensional analytic and numerical models to solve groundwater quality problems.
CIVE	6300	A unified approach to the study of the mechanics of continuous media; analysis of tensors; kinematics of material media; analysis of deformation and stress; the mathematical statements of the laws of conservation of mass, momentum and energy and the formulation of the mechanical constitutive equations for various classes of solids and fluids.
CIVE	6310	Study of direct stiffness method, introduction to the minimum potential energy method and the Galerkin method, formulation of truss, beam, triangular and rectangular elements, applications to the analyses of space trusses, building frames, folded plates, fluid flow and seepage problems. Applications of modern computer software.
CIVE	6320	Formulation of isoperimetric elements, coordinate transformation, solids of revolution, bending of flat plates, general shell elements, dynamics, vibrations and time dependent problems, geometric and material nonlinearity.
CIVE	6330	Optimum design methods for structural systems. Techniques considered include unconstrained minimization methods, penalty function methods, constrained search techniques, genetic algorithm and computer application.
CIVE	6340	Differential equations. Buckling of centrally and eccentrically loaded compression members; variational methods of determining critical loads; lateral and torsional buckling of beams; introduction to dynamic stability; parametric excitations; nonconservative stability problems; buckling of plates.



CIVE	6360	Evaluation of dynamic response of structures to arbitrary time-varying loadings; single degree-of-freedom, multi-degree-of-freedom and distributed-parameter systems; partial differential equation formulations of simple systems; mode superposition and wave propagation solutions; time history analysis and estimation of maximum response by spectral analysis; effects of nonlinearities on the structural response.
CIVE	6370	The solutions of linear and nonlinear equations, characteristic value equations. Applications of Monte Carlo, random walk and finite difference techniques to the solution of civil engineering problems such as seepage, temperature distribution, beam-column, footing on elastic foundation, torsion and plates with various boundary conditions. Computer applications.
CIVE	6380	Theory and application of modal analysis. Experiments in modal analysis. Basic measurement techniques. Fourier transforms theory and techniques. Transient and steady state excitation techniques. Windowing and modal parameter estimation.
CIVE	6390	Study of wind, its cause effect and damage mechanisms. Analysis of wind forces on structures and associated structural dynamics. Examination of wind load provisions of building codes.
CIVE	6430	Study of the behavior of structural steel members and systems and their significance in terms of design and the development of specifications.
CIVE	6440	Studies of the behavior and strength of reinforced concrete members by means of reviews of the more significant experimental and analytical investigations. Emphasis is placed on the empirical nature of current design specification and their relation to the results of research.
CIVE	6450	Characterization of strong ground motions for design; development of design criteria for elastic and inelastic structural systems; development of linear and nonlinear design spectra; basis for code design procedures; conceptual basis for seismic isolation and energy dissipation techniques; mechanics of isolation bearings.
CIVE	6460	Introduction to fiber composites and their applications in repair and retrofit of infrastructure. Strengthening of bridges, buildings, pavements. Understanding of basic concepts involved in design of concrete members reinforced with fiber reinforced polymer.
CIVE	6470	Study of the basis of plastic theory and analysis Application of these theories to the design of structures.
CIVE	6480	Structural behavior and failure modes of prestressed concrete structures; design in prestressed concrete, including long-span structures, bridges and precast systems.
CIVE	6510	Understanding of fundamental concepts of various stresses in flexible and rigid pavements; traffic loading and volume considerations; climatic effects; materials characterization and variability; design procedures; performance evaluation and rehabilitation methods.



CIVE	6520	An integrated, systemic approach to the management of infrastructure. Analysis methods are introduced and developed recognizing the multidimensional nature of performance of facilities, resource constraints, technological innovations and institutional factors.
CIVE	6550	To provide a detailed understanding of the basic factors affecting location and design of fixed facilities for urban highways and mass transit systems. Design of Origin and Destination studies. Discussion of changing concerns regarding metropolitan transportation planning, the process of urban transportation planning; trip generation, distribution, modal split models and traffic assignments, new transportation technology and its effect on design of fixed facilities and considerations of urban goods movement in urban street design. Social, environmental and esthetic constraints on location and design.
CIVE	6560	To provide a detailed understanding of the economic principles that is applicable to public infrastructures. Critical analysis of conventional procedure in transportation studies; user and nonuser costs and benefits, the value of travel time, evaluations of transport investments and financing. Discussion on principles of Transportation System Management to maximize the efficiency and effectiveness of existing transportation systems. Funding sources and innovative funding of projects.
CIVE	6570	To develop a theoretical understanding of macroscopic and microscopic traffic flow characteristics. Analytic techniques to analysis demand-supply, shock waves, car following theory and application of queuing theory. Traffic simulation techniques that have potential for use in Intelligent Transportation Systems and Architecture. Exposure to freeway operations and management. Steps in the development of a simulation model. Exposure to computer simulation models.
CIVE	6580	Intelligent Transportation Systems consist of advanced technologies and ideas which, in combination, can improve transportation mobility and productivity, enhance safety maximize use of existing transportation facilities, conserve energy resources and reduce environmental effects. The intent of the course is to study these technologies, their components and functions, and assess their impacts on solving transportation problems.
CIVE	6590	To provide in-depth understanding of traffic control devices in particular to signal design. Role of signalized and unsignalized intersections in traffic operations, measure of performance. Time space correlation, actuated signals and detection, signal coordination. Signal control hardware and maintenance. Arterial performance, operations and management. Computer traffic-signal control systems.
CIVE	6610	Theory and model development for physical, chemical and biological process design of wastewater treatment systems.



CIVE	6620	Translation of the physics of environmental problems into mathematical models for engineering analysis. Topics include mathematics of equilibrium and kinetic chemical reaction systems; reactor modeling; mathematics of mass transfer.
CIVE	6630	Treatment of atmospheric dispersion problems, development of air quality models, components of a physical model, selection and evaluation of air pollution software, evaluation of models, risk modeling, EPA models and recent topics.
CIVE	6640	Study of the chemical progression of inorganic and organic materials that significantly contribute to water pollution. The engineering significance of these materials upon treatment systems and the environment. Selected written and/or oral presentations required.
CIVE	6650	Study of the microbiology, biochemistry and microorganisms of importance to biological waste treatment operations and environmental management systems. The optimization of biological waste treatment facilities and other purification bioremediation processes. Selected written and/or oral presentations required.
CIVE	6660	Theory, development and design of advanced processes for the treatment of water, wastewater and sludge. Processes such as reverse osmosis, electrodialysis, centrifugation, belt filtration, dissolved air flotation and foam fractionation are studied. Selected written and/or oral presentations required.
CIVE	6680	Sediment movement in streams and rivers. Topics include sediment properties, threshold of movement, suspended sediment, stable channel design, sediment waves and bed features. Erosion of channels and the near bank region.
CIVE	6690	Use of USEPA network, use of ten computer programs from the USEPA network, use of Internet and environmental BBS, search for environmental data bases using search engines.
CIVE	6840	Advanced topics in Geographic Information Systems applied to civil engineering. Topics include generating transportation planning maps, environmental mapping, infrastructure mapping. Special techniques used in generating maps.
CIVE	6900	Special assignment of civil engineering problems of various types at the graduate level.
CIVE	6960	MS student should register their adviser's section number.
CIVE	6980	MS student should register their adviser's section number.
CIVE	7450	Design of the three most common types of short span bridges: concrete slabs, steel stringers and prestressed concrete. Additional topics are bearings, rehabilitation and retrofit and design to minimize maintenance.
CIVE	8230	Introduction to topics concerning groundwater and its existence, Darcy's law, derivation of flow equation for saturated and unsaturated soil, flow nets, discussion of numerical methods and use of computer programs for groundwater modeling. Includes a term project.

CIVE	8240	A study of the availability and proper use of geotechnical and environmental investigative tools and techniques to include GIS, GPS, RS, non-destructive tests utilizing GPR, XRF and IR, destructive tests utilizing GC and MS, geotechnical testing to include SPT, vane shear, cone penetrometer and geophysical methods.
CIVE	8250	Application of Soil Mechanics to unsaturated soils, physics of unsaturated soils, characterization of unsaturated soils. Relationships for flow, shear strength and volume change. Measurements for flow, shear strength and volume change. Includes journal reviews.
CIVE	8260	A study of numerical methods used in geotechnical engineering and their applications. Emphasis on finite element and finite difference methods for stress, displacement, consolidation, stability and seepage analysis.
CIVE	8270	Continuum models of groundwater flow and pollution. Strategies to select domains, boundary and initial conditions to approximate reality. Inherent errors in solution schemes. Use of multidimensional analytic and numerical models to solve groundwater quality.
CIVE	8300	A unified approach to the study of the mechanics of continuous media; analysis of tensors; kinematics of material media; analysis of deformation and stress; the mathematical statements of the laws of conservation of mass, momentum and energy and the formulation of the mechanical constitutive equations for various classes of solids and fluids.
CIVE	8310	Study of direct stiffness method, introduction to the minimum potential energy method and the Galerkin method, formulation of truss, beam, triangular and rectangular elements, applications to the analyses of space trusses, building frames, folded plates, fluid flow and seepage problems. Applications of modern computer software.
CIVE	8320	Formulation of isoperimetric elements, coordinate transformation, solids of revolution, bending of flat plates, general shell elements, dynamics, vibrations and time dependent problems, geometric and material nonlinearity.
CIVE	8330	Optimum design methods for structural systems. Techniques considered include unconstrained minimization methods, penalty function methods, constrained search techniques, genetic algorithm and computer application.
CIVE	8340	Differential equations. Buckling of centrally and eccentrically loaded compression members; variational methods of determining critical loads; lateral and torsional buckling of beams; introduction to dynamic stability; parametric excitations; nonconservative stability problems; buckling of plates.
CIVE	8360	Evaluation of dynamic response of structures to arbitrary time-varying loadings; single degree-of-freedom, multi-degree-of-freedom and distributed-parameter systems; partial differential equation formulations of simple systems; mode superposition and wave propagation solutions; time history analysis and estimation of maximum response by spectral analysis; effects of nonlinearities on the structural response.

CIVE	8370	The solutions of linear and nonlinear equations, characteristic value equations. Applications of Monte Carlo, random walk and finite difference techniques to the solution of civil engineering problems such as seepage, temperature distribution, beam-column, footing on elastic foundation, torsion and plates with various boundary conditions. Computer applications.
CIVE	8380	Theory and application of modal analysis. Experiments in modal analysis. Basic measurement techniques. Fourier transforms theory and techniques. Transient and steady state excitation techniques. Windowing and modal parameter estimation.
CIVE	8390	Study of wind, its cause effect and damage mechanisms. Analysis of wind forces on structures and associated structural dynamics. Examination of wind load provisions of building codes.
CIVE	8430	Study of the behavior of structural steel members and systems and their significance in terms of design and the development of specifications.
CIVE	8440	Studies of the behavior and strength of reinforced concrete members by means of reviews of the more significant experimental and analytical investigations. Emphasis is placed on the empirical nature of current design specification and their relation to the results of research.
CIVE	8450	Characterization of strong ground motions for design; development of design criteria for elastic and inelastic structural systems; development of linear and nonlinear design spectra; basis for code design procedures; conceptual basis for seismic isolation and energy dissipation techniques; mechanics of isolation bearings.
CIVE	8460	Introduction to fiber composites and their applications in repair and retrofit of infrastructure. Strengthening of bridges, buildings, pavements. Understanding of basic concepts involved in design of concrete members reinforced with fiber reinforced polymer.
CIVE	8470	Study of the basis of plastic theory and analysis. Application of these theories to the design of structures.
CIVE	8480	Structural behavior and failure modes of prestressed concrete structures; design in prestressed concrete, including long-span structures, bridges and precast systems.
CIVE	8510	Understanding of fundamental concepts of various stresses in flexible and rigid pavements; traffic loading and volume considerations; climatic effects; materials characterization and variability; design procedures; performance evaluation and rehabilitation methods.
CIVE	8520	An integrated, systemic approach to the management of infrastructure. Analysis methods are introduced and developed recognizing the multidimensional nature of performance of facilities, resource constraints, technological innovations and institutional factors.

CIVE	8550	To provide a detailed understanding of the basic factors affecting location and design of fixed facilities for urban highways and mass transit systems. Design of Origin and Destination studies. Discussion of changing concerns regarding metropolitan transportation planning, the process of urban transportation planning; trip generation, distribution, modal split models and traffic assignments, new transportation technology and its effect on design of fixed facilities and considerations of urban goods movement in urban street design. Social, environmental and esthetic constraints on location and design.
CIVE	8560	To provide a detailed understanding of the economic principles that is applicable to public infrastructures. Critical analysis of conventional procedure in transportation studies; user and nonuser costs and benefits, the value of travel time, evaluations of transport investments and financing. Discussion on principles of Transportation System Management to maximize the efficiency and effectiveness of existing transportation systems. Funding sources and innovative funding of projects.
CIVE	8570	To develop a theoretical understanding of macroscopic and microscopic traffic flow characteristics. Analytic techniques to analysis demand-supply, shock waves, car following theory and application of queuing theory. Traffic simulation techniques that have potential for use in Intelligent Transportation Systems and Architecture. Exposure to freeway operations and management. Steps in the development of a simulation model. Exposure to computer simulation models.
CIVE	8580	Intelligent Transportation Systems consist of advanced technologies and ideas which, in combination, can improve transportation mobility and productivity, enhance safety maximize use of existing transportation facilities, conserve energy resources and reduce environmental effects. The intent of the course is to study these technologies, their components and functions and assess their impacts on solving transportation problems.
CIVE	8590	To provide in-depth understanding of traffic control devices in particular to signal design. Role of signalized and unsignalized intersections in traffic operations, measure of performance. Time space correlation, actuated signals and detection, signal coordination. Signal control hardware and maintenance. Arterial performance, operations and management. Computer traffic-signal control systems.
CIVE	8610	Theory and model development for physical, chemical and biological process design of wastewater treatment systems.
CIVE	8620	Translation of the physics of environmental problems into mathematical models for engineering analysis. Topics include mathematics of equilibrium and kinetic chemical reaction systems; reactor modeling; mathematics of mass transfer.

CIVE	8630	Treatment of atmospheric dispersion problems, development of air quality models, components of a physical model, selection and evaluation of air pollution software, evaluation of models, risk modeling, EPA models and recent topics.
CIVE	8640	Study of the chemical progression of inorganic and organic materials that significantly contribute to water pollution. The engineering significance of these materials upon treatment systems and the environment. Selected written and/or oral presentations required.
CIVE	8650	Study of the microbiology, biochemistry and microorganisms of importance to biological waste treatment operations and environmental management systems. The optimization of biological waste treatment facilities and other purification bioremediation processes. Selected written and/or oral presentations required.
CIVE	8660	Theory, development and design of advanced processes for the treatment of water, wastewater and sludge. Processes such as reverse osmosis, electrodialysis, centrifugation, belt filtration, dissolved air flotation and foam fractionation are studied. Selected written and/or oral presentations required.
CIVE	8680	Sediment movement in streams and rivers. Topics include sediment properties, threshold of movement, suspended sediment, stable channel design, sediment waves and bed features. Erosion of channels and the near bank region.
CIVE	8690	Use of USEPA network, use of ten computer programs from the USEPA network, use of Internet and environmental BBS, search for environmental data bases using search engines.
CIVE	8900	Ph.D. student should register their adviser's section number.
CIVE	8960	Graduate research towards the completion of a Doctoral degree.
CLC	1010	An introduction to the civilization of the Greeks and Romans in which history, literature, mythology, art and philosophy are interrelated and interpreted. (not for major credit)
CLC	2040	A survey of the history and civilization of ancient Sumer, Babylonia, Assyria, Egypt, Palestine and Persia.
CLC	2050	A survey of the history and civilization of Hellenic and Hellenistic Greece.
CLC	2060	A survey of the history and civilization of Rome from its origin through the Empire.
CLC	3100	A survey of Greek and Roman mythology in classical literature, sculpture and art.
CLC	3200	Study of the origin and development of words in current use in a variety of fields for those with little or no previous language study in Latin or Greek.
CLC	3250	A study of the origin and development of classical tragedy and comedy with extensive readings in English of the major dramatists from Aeschylus to Seneca.



CLC	4010	A study of selected topics on the political and social institutions of Greece in the classical and Hellenistic periods.
CLC	4020	A study of selected topics on the political and social institutions of Rome in the Republic and the Empire.
CLC	4980	Study of a selected topic in Classics. May be repeated when topic varies.
CMNP	585	Presentation and discussion of current research in six major sensory systems: visual, somatosensory, auditory, vestibular, olfactory, and gustatory.
CMNP	601	Introductory survey course covering important structural, functional and developmental aspects of cells and molecules relevant to the nervous system.
CMNP	610	An introductory reading and discussion of the anatomy, physiology, chemistry, and psychology of auditory function.
CMNP	653	This weekly seminar is based on discussion of assigned research papers in Neurochemistry. Students are graded on class participation and a written research-based paper that is also presented orally to the class.
CMNP	660	Introductory research course in which first-year students are exposed to ongoing work in a neuroscience lab (first half of fall semester) to introduce the issues and methods used in these labs.
CMNP	661	Introductory research course in which first-year students are exposed to ongoing work in a neuroscience lab (second half of fall semester) to introduce the issues and methods used in these labs.
CMNP	662	Introductory research course in which first-year students are exposed to ongoing work in a neuroscience lab (first half of spring semester) to introduce the issues and methods used in these labs.
CMNP	663	Introductory research course in which first-year students are exposed to ongoing work in a neuroscience lab (second half of spring semester) to introduce the issues and methods used in these labs.
CMNP	664	Optional introductory research course in which first-year students are exposed to ongoing work in a neuroscience lab (first half of summer semester) to introduce the issues and methods used in these labs.
CMNP	665	Optional introductory research course in which first-year students are exposed to ongoing work in a neuroscience lab (second half of summer semester) to introduce the issues and methods used in these labs.
CMNP	673	Training in neuroscience research techniques through laboratory experience. May be repeated for credit.
CMNP	785	Presentation and discussion of current research in six major sensory systems: visual, somatosensory, auditory, vestibular, olfactory, and gustatory.
CMNP	801	Introductory survey course covering important structural, functional and developmental aspects of cells and molecules relevant to the nervous system.



CMNP	805	The purpose of this course is to introduce first year Neuroscience students to the research of program faculty. Discussions are based on papers related to faculty members' research interests.
CMNP	810	An introductory reading and discussion of the anatomy, physiology, chemistry, and psychology of auditory function.
CMNP	853	This weekly seminar is based on discussion of assigned research papers in Neurochemistry. Students are graded on class participation and a written research-based paper that is also presented orally to the class.
CMNP	860	Introductory research course in which first-year students are exposed to ongoing work in a neuroscience lab (first half of fall semester) to introduce the issues and methods used in these labs.
CMNP	861	Introductory research course in which first-year students are exposed to ongoing work in a neuroscience lab (second half of fall semester) to introduce the issues and methods used in these labs.
CMNP	862	Introductory research course in which first-year students are exposed to ongoing work in a neuroscience lab (first half of spring semester) to introduce the issues and methods used in these labs.
CMNP	863	Introductory research course in which first-year students are exposed to ongoing work in a neuroscience lab (second half of spring semester) to introduce the issues and methods used in these labs.
CMNP	864	Optional introductory research course in which first-year students are exposed to ongoing work in a neuroscience lab (first half of summer semester) to introduce the issues and methods used in these labs.
CMNP	865	Optional introductory research course in which first-year students are exposed to ongoing work in a neuroscience lab (second half of summer semester) to introduce the issues and methods used in these labs.
CMNP	873	Training in neuroscience research techniques through laboratory experience. May be repeated for credit.
CMPT	1010	Introduction to microcomputers. Topics covered are hardware, software, computer operation, terminology and applications.
CMPT	1020	Introduction to computer software, hardware, and processes associated with contemporary computer systems. Topics include operating systems, user applications, e-mail, WWW, and search capabilities. Emphasis is placed on the Internet and networking.
CMPT	1050	Introduces scripting technology focusing on industry trends and standards. Students will demonstrate the ability to evaluate, learn and adopt new scripting languages such as JavaScript.
CMPT	1100	Concepts and techniques on the application of computers to the solution of business computer information systems. Students will have hands-on experience in word processing, spreadsheet and database on microcomputers.



CMPT	1110	A+ certification aligned study of both command line and graphical user-based current PC operating systems. Topics include installation and upgrade, configuration, management, troubleshooting and network connectivity.
CMPT	1120	A currently popular programming language, such as Microsoft Visual Studio, will be used to create stand-alone applications. Topics such as object-oriented coding, logical procedures and proper documentation are stressed.
CMPT	1320	Internet topics including history of the Internet, IP addressing, Telnet, Gopher, FTP, WAIS and World Wide Web. Students will create a personal home page with Hyper Text.
CMPT	1400	Students will learn the basics of creating custom Web designs by using tables, forms, graphics and interactive features. Plan, write and format Web pages for workplace applications.
CMPT	1410	Hands-on analysis of the use of Excel spreadsheets in solving workplace problems with an emphasis on the design of templates to meet the needs of specific applications.
CMPT	1420	Hands-on analysis of the use of Access in solving workplace problems with an emphasis on the entering, updating, manipulating, storing and retrieving of information.
CMPT	1430	MS Word will teach students word processing concepts and applications using industry standard software. Students will prepare a variety of documents and master basic software functions in an effective and efficient manner.
CMPT	1440	Students will learn basic to advanced features of PowerPoint software from creating a presentation and adding graphics to presenting a slide show and integrating PowerPoint with other software.
CMPT	1450	Students will learn a flexible messaging and personal information management program used to send and receive e-mail and manage messages, contacts, appointments and tasks.
CMPT	1470	Crystal Reports teaches students how to create reports utilizing various data sources such as Microsoft Access, Paradox, and others. It incorporates maps and graphs and presents data in an easy-to read format.
CMPT	1500	Student will use Flash to create interactive websites. Students will learn to create animated banners, action scripts, special effects, movies, buttons and navigation.
CMPT	1510	This course offers a broad overview and extensive practical experience in the production of digital images. Students create digital images using scanners, video and digital cameras. Image resolution, format options, color correction, screen frequency, halftones and reproduction are also covered.



CMPT	1520	Explores the use of computers for digital image creation using Adobe Illustrator. Concepts, techniques and applications also covered. Students create print, presentation and Web graphics.
CMPT	1530	Hands-on exploration of digital imaging using Adobe Photoshop. Topics include photo-retouching, imaging editing techniques, color painting and Web applications.
CMPT	1540	Explores use of video editing software. Students will analyze, evaluate, describe terminology. Also develop proficiency in desktop video production and create an electronic resume using popular video-editing software.
CMPT	1600	This course offers a broad overview and extensive practical experience in the design and production of Web pages. Students learn current Web design technology and create Web pages using Microsoft Expression Web.
CMPT	1700	This course offers a broad overview and extensive practical experience in the design and production of web sites containing podcasts, vodcasts, and blogs. Students will learn how to plan, record, edit, and publish.
CMPT	1EL	
CMPT	2010	Experience in the operation of current mid-range computer architecture. Fundamental programming experience in the RPG language with emphasis on logic and efficiency.
CMPT	2030	Students are introduced to the C family of programming languages. Students will write computer programs using the most up-to-date versions of this language family.
CMPT	2110	The course covers advanced programming techniques and the concepts of object-oriented programming using a currently popular programming language (such as C++).
CMPT	2210	Hands-on course utilizing a multi-user database management system. SQL will be used as a data manipulation and a data definition language.
CMPT	2220	Provides students interested in an information technology career an opportunity to work on a project that will include analysis, design and implementation of a workplace application.
CMPT	2320	Creation of XML applications through document specification and self-defining data definition. The role of XML in business-to-business communication.
CMPT	2400	Provides practical experience in applying concepts studied in previous courses to a systems design project. The project consists of student teams performing the analysis, design, software selection, testing and implementation of a microcomputer system for a business.
CMPT	2410	This course will use Adobe In Design to enable the student to learn the elements of the publishing cycle: writing, editing, typesetting, design, graphic production, page makeup and final publication. Newsletters, brochures, pamphlets and fliers will be produced.



CMPT	2420	This course will use Adobe In Design to cover advanced electronic desktop publishing concepts, procedures and applications. Students will design sophisticated desktop documents for print, internet and prepress.
CMPT	2430	This hands-on course will use Microsoft Word to teach advanced document production skills including generating large documents, and creating professional print, Web, and graphic features.
CMPT	2460	Students will learn intermediate and advanced functions of Microsoft Excel Spreadsheets in order to utilize them effectively in workplace situations.
CMPT	2510	An intermediate, hands-on exploration of Adobe Illustrator for professional illustration creation and manipulation. Students will incorporate typography, image compositing, painting and image-correction techniques.
CMPT	2530	An intermediate, hands-on exploration of Adobe Photoshop for digital imaging. Students capture, create, manipulate and edit images for high-end output.
CMPT	2550	This course covers advanced techniques of video editing software. Students will use professional video-editing techniques to develop short- and long- format movies for video, film, desktops, multimedia and the WWW using popular video-editing software.
CMPT	2620	This course develops skills for students who will function as Web developers or project managers responsible for increasing Web site traffic, updating Web content and designs. Students learn planning issues related to Web design and redesign.
CMPT	2630	Students will reinforce Word, Excel, Access and PowerPoint concepts to prepare them to take Microsoft Office User Specialist (MOUS) certification tests in these areas.
CMPT	2990	Students will study a computer-related subject mutually agreed upon between the student and the instructor. The format may include lecture, computer lab and/or practical experience.
CNET	2100	In-depth study of a contemporary network operating system. Topics include operating system installation and upgrade, configuration, management and troubleshooting.
CNET	2150	Knowledge of computer hardware for the purpose of acquisition, installation and maintenance at the equipment level. The curriculum is aligned with the A+ certification standards.
CNET	2200	Examines the network technologies utilized in today's networks. Emphasis is placed on understanding hardware and software concepts and protocols referred to in technical publications and advanced network studies.
CNET	2300	This course builds on CNET 2100 by offering in-depth study of a second contemporary network operating system. Topics include operating system installation and upgrade, configuration, management and troubleshooting.



CNET	2400	Examines the support aspects of a contemporary network operating system in a local area network environment. Topics include operating system installation, upgrade, configuration, management and troubleshooting.
CNET	2410	This course culminates the CNET server curriculum by focusing on vital network services and supporting network infrastructure. Topics include network budgeting, design, planning and implementation, as well as enterprise-wide internetworking.
CNET	2420	This course builds on CNET 2410 by examining services available on enterprise networks. Topics include enterprise-wide directory and network services design, configuration, management and troubleshooting.
CNET	2940	Practical experience in a networking environment in an educational setting or at a workplace. Conducted under faculty supervision.
CNET	2EL	
COMM	1010	An introductory course that provides instruction and practice in human communication including interpersonal communication, group discussion, public speaking and mass communication. (not for major credit)
COMM	2000	Overview of the media of mass communication, which considers social, economic and intellectual impact on American culture and democracy. Exploration of various mass media and their methods of shaping public perceptions.
COMM	2100	Theory and practice of news writing as journalistic discourse. Emphasis on news style and values, story structure, types of stories. Ethics, taste and rudiments of law integrated throughout.
COMM	2120	Introduction to writing for publication in the student newspaper, developing skills in interviewing, listening, using primary sources, thinking critically, and mastering electronic data-collection methods. (COMM-2400 recommended)
COMM	2150	Introduction to Writing, Editing, Design approach in editing newspapers, newsletters, electronic and similar publications. Fundamentals of desktop publishing, copy editing, headline writing, typography, layout, design, use of photos, illustrations.
COMM	2210	Basic principles of production and programming including training and development in basic performance areas. A study of contemporary station programming theories and techniques. Includes individual weekly lab requirement.
COMM	2220	Study and practice in the use of studio and control room equipment, including editing equipment. Discussion of the role of the director and producer in television production.
COMM	2400	Introductory course for all Communication majors. Identification of primary sources that match information needs, gaining access to these sources, retrieving information and using it for responsible media decision making.
COMM	2600	Applies the principles of informative and persuasive communication in the construction, delivery, and critique of public presentations.



COMM	2630	Application of the principles of visual communication to informing, persuading, and entertaining the public through digital photography, layout & design in print, Web design, and a multimedia presentation.
COMM	2810	Designed to help students read aloud with spontaneity, clarity and feeling by studying the mechanics of oral reading in relation to interpretive treatment of various genre of literature.
COMM	2990	A freshman/sophomore seminar in which the student pursues a problem of special interest in communication. A prospectus must be submitted to the faculty member with whom the student will work.
COMM	3150	Theory and practice in writing in various kinds of discourse for newspapers, magazines and electronic publications and writing for specialized audiences. Developing context, analysis, background and appropriate standards of evidence for publication.
COMM	3180	Case studies and readings in libel, privacy, access and other legal issues arising from constitutional, judicial and administrative laws that affect mass communication.
COMM	3270	Training in the skills required in the preparation, writing and editing of both radio and television news.
COMM	3280	A study of the principles and philosophies involved with successful broadcast communication and performance techniques. Includes laboratory projects in commercials, interviewing, news and ad-lib announcing.
COMM	3290	The study of electronic media systems from an operations perspective. Course includes: programming, marketing, production and ethical considerations.
COMM	3610	Applies principles of effective public relations communication to the practice of developing speeches for others and composing publicity materials.
COMM	3720	Public relations principles, planning and methods in business, government, educational institutions and other organizations. Examination of law, ethics, professionalism, history, theory, strategies and practices of the profession.
COMM	3810	Theory and practice of group communication variables and processes with an emphasis on problem-solving approaches.
COMM	3820	Examination of the theory and practices used in persuasive communication in public presentations, advertising, sales and political campaigns.
COMM	3830	Theory and practice in reasoned discourse; analysis, evidence, logical forms and fallacies. Problems and procedures in administering a forensic program, teaching and directing debate and individual speaking events.
COMM	3840	Review and application of interpersonal communication theory and research in a variety of one-to-one social contexts.



COMM	3850	Introduction to qualitative and quantitative methods in communication research. Focus on evaluating and interpreting reports in various forms of communication.
COMM	3870	A review of human communication theory and research directed toward understanding and applying theory and research in various communication contexts and for various communication outcomes.
COMM	3880	Developing oral and written business communication skills through practice in public speaking, interviewing, resume writing, and communication in various formats.
COMM	3890	An examination of communication variables that may reduce the potential for workplace conflict. Students survey theoretical models, conduct interviews with professionals and write analyses of case studies of successful conflict management.
COMM	4090	Investigation of problems and practical application of classical theories as well as current strategies to confront ethical crises in mass-media settings.
COMM	4100	Developing a thorough understanding of researching, writing, and presenting television news. Includes both studio and remote productions.
COMM	4110	Problems involved in the production of high school newspapers and yearbooks including approaches to design, advertising, content, news, editorials, administration and business management.
COMM	4220	Advanced principles and aesthetic considerations in the production of various television programs. Includes working with remote equipment and digital editing.
COMM	4250	Historical consideration of the media from colonial era to the present, with special emphasis on learning through problem-solving and critical thinking about the role of mass communication as a force in shaping national identity.
COMM	4330	The content is designed to develop a thorough understanding of the ever-emerging field of new technologies and its impact on society.
COMM	4340	Advanced theory, application, and interpretation of visual communication and rhetoric to inform, persuade and entertain the public through digital photography, layout and design in print, Web design, and digital multimedia.
COMM	4630	Examination of practices, techniques, tools and strategies used in public relations. Research theory and techniques; strategic planning and management of public relations programs. In-depth study of one detailed project.
COMM	4640	Analysis of successful and unsuccessful public relations efforts and programs. Emphasis on the theoretical and ethical foundations of successful public relations programming.
COMM	4810	Survey, analysis and application of research in nonverbal communication variables and phenomena.



COMM	4820	Explores variables and processes of family communication emphasizing theory, definitions of family, roles & rules, conflict, intimacy, societal influences, and effects on the individual and the family as a whole.
COMM	4830	Cross-listed as WGST-4350. Explores how gender and culture simultaneously shape and are shaped by communication through relationships, institutions, and society. WAC class.
COMM	4900	An in-depth examination of a communication topic, problem or media event. May be writing intensive.
COMM	4910	Students develop a portfolio for post graduate work that includes an assessment of work from five Communication classes including two from both Applied and Conceptual Communication, cover letter, resume, etc. Course offered P/NC.
COMM	4940	Professional training in communication relating to newspaper work, public relations, broadcasting etc. Arrangements with the appropriate communication organization must be made in consultation with the internship director prior to enrollment. Course offered P/NC.
COMM	4990	A seminar in which the student pursues a problem of special interest in communication. A prospectus must be submitted prior to registration to the participating faculty member.
COMM	6210	This course explores the influence of factors like color and design on human visual communication, the role of Gestalt principles, and the impact of various forms of visual communication.
COMM	6220	This course covers issues in communication technology including media, policy and strategic planning. Particular emphasis is given to the information revolution, communication industry development, and the marketplace for communication products.
COMM	6230	This seminar examines techniques of persuasion in social science research and applications and how this knowledge is used for the engineering of perception, mobilization and consent in organizations and society.
COMM	6240	This course evaluates the impact of ethics on job performance, public perception of companies or agencies, and the ramifications of personal decision-making on the worker's job satisfaction and long-range goals.
COMM	6250	Students will explore the role of communication in organizational conflict management, assess conflict scenes, design correction regimens for those scenes, and present their solutions.
COMM	6260	The course examines how organizations use media and communication strategies. Effective tools of communication to be studied include face-to-face interaction, dissemination of information through mass media, and communication through technologies.
COMM	6980	Examination of emerging issues and topics in the field of communication. May be repeated for credit in different specialized topics.



COMP	702	Because of the increasing volume of available information and increasingly busy schedules, practitioners requires a high degree of skill in identifying and obtaining relevant information for clinical practice, research, and life-long learning. This elective is designed to equip students with core information management skills in support of clinical decision-making and evidence-based health care. The elective meets for two weeks, Monday through Friday, with approximately two hours per day spent in contact with instructors. Students are expected (1) to participate fully in in-class activities; (2) to raise questions about issues which are confusing to them; (3) take advantage of opportunities for formative feedback, including presentation of search strategies for feedback; (4) to make use of time outside of class to practice the skills learned in class; and (5) to demonstrate knowledge and skills through the completion of a search analysis project.
COUN	1110	An introduction to the field of human services, especially mental health, history and current trends in treatment and prevention of disease and the basic skills common to the field. Students will learn skills at the demonstrable level as they will later be used in the field.
COUN	1210	This course is designed to enable students to master the therapeutic interpersonal skills required of mental health professionals. Successful completion of this course is a requirement for continuation into advanced courses.
COUN	1220	An overview of current approaches of psychological theory. This course includes an examination of the basic issues in mental health, including ethical issues and personal implications for the mental health professional.
COUN	1230	This course deals with an introduction to the concepts of abnormal psychology with emphasis on understanding the cultural and historical bases for defining abnormality as well as modern classification systems, the biological model, treatment modalities and theoretical perspectives.
COUN	1240	An overview and survey of addictive disorders, use and abuse, and the personal and cultural effects of chemical dependency.
COUN	2060	Designed for the university student undecided about a career. The student is assisted in self-assessment, exploration of occupations and in career decision-making skills.
COUN	2120	A study of various types of groups and activity skills used in mental health environments both inpatient and community based. Focus on design, principles, procedures and applications of various techniques.
COUN	2130	The various techniques and requirements of assessment and interventions used in the most important mental health environments will be explored and practiced. Special emphasis is placed on interview assessment and crisis intervention; implications for record keeping in the variety of settings are also examined.
COUN	2220	Study of basic family systems and structures and the influences of cultural patterns as they interact and impact the mental health and therapeutic needs of individual family members.



COUN	2940	Students are placed in community agencies relevant to mental health and work in a role related to the function of a mental health technician under the guidance of a supervisor.
COUN	2980	This course is open to an undergraduate student pursuing a degree program and may be a requirement of that program.
COUN	2990	A course designed to provide educational opportunities in a specialized academic area under the direct supervision of a faculty member.
COUN	3070	Overview of aspects of counseling with families. Major focus is on family as a system and a variety of interventions. Ethnic, gender and socioeconomic considerations of family systems will be stressed.
COUN	3110	The study of and practice of using case management models and skills with clients within the mental health environment. Models appropriate for different agency types will be explored and the various modalities available will be introduced.
COUN	3120	The relationship between retardation and mental health with emphasis on the characteristics making this a population of special concern within the treatment protocols of the mental health profession.
COUN	3130	Advanced intervention issues including crisis management, disaster survival, rescue and emergency personnel debriefing and Employee Assistance Programs.
COUN	3140	An evaluation of prevention programs and community resources available in the prevention and treatment of substance abuse.
COUN	3150	A review of the various components of substance abuse and philosophies of treatment. Theories of etiology and maintenance are also addressed.
COUN	3160	The importance of coding, charting and record keeping in various fields of mental health professions is examined. Various types of report writing formats and requirements will be learned.
COUN	3220	Overview of current approaches of psychological theory. This course includes an examination of the basic issues in mental health, including ethical issues and personal implications for the mental health professional.
COUN	3230	Introduction to the concepts of psychopathology with emphasis on understanding the cultural and historical bases for defining abnormality, modern classification systems, the biological model, treatment modalities and theoretical perspectives.
COUN	3380	First semester in development of skills for student leaders through didactic experience, simulation exercises and practicum experiences. Especially designed for student government leaders and peer counselor/advisers.
COUN	3390	Second semester in student leadership training. The development of skills for student leaders through didactic experience, simulation exercises and practicum experiences. Especially designed for student government leaders and peer counselor/advisers.
COUN	3940	Students are placed in community agencies working in the area of substance abuse under the guidance of a supervisor.



COUN	4080	Emphasis upon skills, concepts and practices in the helping professions. Multicultural and ethical issues along with dealing with crisis situations will be covered.
COUN	4090	This course focuses on therapeutic care giving for the aged in institutional settings, addressing techniques for developing activities and responding to sensory changes and social needs of individuals.
COUN	4110	Explores the roles and techniques of consultation and supervision within the mental health professions, including individual and group skills, models, strategies and legal and ethical issues.
COUN	4120	Issues involving clients with a dual diagnosis are explored. Specific treatment strategies for clients dually-diagnosed with substance abuse and mental illness will be learned.
COUN	4240	An examination of ethical and legal issues in substance abuse, as well as examination of the specific skills needed by workers in substance abuse programs.
COUN	4580	This course will provide students in education an overview of the role of art and music in curriculum development. (Students may enroll in either art or music education sections.)
COUN	4940	Students are placed in community agencies relevant to mental health and work in a role related to the function of an advanced level mental health technician under the guidance of a supervisor.
COUN	4980	This course is open to an undergraduate student pursuing a degree program and may be a requirement of that program.
COUN	4990	Individual study is designed to provide the student to work independently on professional problems under the direction of a faculty member in the department of counseling and mental health services.
COUN	5010	Introduction to school counseling; historical foundations; roles and responsibilities; legal and ethical issues; implications of sociocultural diversity, organization and administration, and future trends within the context of the school community.
COUN	5020	An orientation to the counseling profession; ethical and legal issues, counseling process, skills and theories; counselor roles, functions and work settings; and historical foundations of counseling.
COUN	5110	Theories, resources and practices of career counseling and development are presented. Knowledge and skills for promoting career growth among a broad range of individuals across the life span is emphasized.
COUN	5120	This course provides an in-depth understanding of psychological testing through (1) an overview of basic testing concepts, (2) an understanding of test construction, (3) familiarity with instruments and (4) an overview of using test results. History and rationale of testing are included.
COUN	5130	Provides training and experience in group development, dynamics, theories, methods and skills of group counseling, group leadership, research and evaluation, ethical issues and other group work approaches.



COUN	5140	Includes a study of basic counseling and consultation theories and helping relationships from individual, group and systemic perspectives. Explores helper and helpee characteristics, sociocultural factors and legal and ethical considerations. Includes supervised training in counseling and consulting skills.
COUN	5150	Theories of individual and family development across the lifespan are examined. Developmental processes of individuals and families and implications for counseling are presented from a multi-generational family perspective.
COUN	5160	Addresses the cross-cultural theories, knowledge, beliefs and techniques required for providing effective services to culturally diverse populations. Examines assumptions about cultural differences which underlie counseling theories and therapies.
COUN	5190	Students receive supervised, practical experiences in providing counseling services to clients. Performance of counseling skills; relationship skills; intervention techniques; documentation skills; and professional, ethical and legal conduct is expected.
COUN	5250	Explores the various aspects necessary for creating therapeutic physical and social psychological settings for older institutionalized adults. Models of care giving and programmatic skills are examined.
COUN	5980	This course is open to a graduate student pursuing a master's, specialist or doctoral degree program and may be a requirement of that program.
COUN	6210	The study of various paradigms for conceptualizing psychopathology related to children, adolescents and adults. Includes study of specific personality theories and their application to clinical counseling.
COUN	6220	Specialized study of therapeutic techniques commonly emphasized in working with children, adolescents and their families. Approaches to family therapy in a multicultural context, family assessment and ethical issues will be emphasized.
COUN	6230	Instruction in the theories, skills and techniques necessary to intervene into a variety of crisis situations such as suicide, violence, domestic violence, drug and alcohol abuse and family dysfunction.
COUN	6240	Study of the signs, symptoms, etiology and psychodynamics of various mental and emotional disorders based on the most current edition of the Diagnostic and Statistical Manual for Mental Disorders (DSM).
COUN	6470	Study of the psychobiological and psychophysiological effects of psychotropic medications used for the psychopharmacological treatment of mental and emotional disorder. Theoretical, efficacy and ethical concerns are reviewed.
COUN	6500	Advanced study in theories pertaining to the principles and practice of career counseling. Special emphasis on research, legal and ethical issues, and the role of culture in career choice and development.



COUN	6920	In this capstone experience, master's students review the literature, report implications and produce a project which can be applied in counseling-related settings. This can substitute for CMHS 6930.
COUN	6930	In this capstone experience, master's students review and critique the literature and report implications for research, theory and practice on counseling-related topic of interest, approved by the instructor.
COUN	6940	Supervised practical experiences in various settings while assuming a spectrum of counseling roles and functions. Emphasis is placed upon integrating ethical practice, theory and research in work settings.
COUN	6950	Workshops developed around topics of interest and concern to counselors, school psychologists or other mental health care professionals. Practical application of topics will be stressed.
COUN	6960	In this capstone experience, master's students complete an original piece of research, including literature review, methods, analysis and discussion. This can substitute for CMHS 6930.
COUN	6990	Provides students the opportunity to work independently on professional problems under the direction of a faculty member in the Department of Counseling and Mental Health Services.
COUN	7010	Introduction to school counseling; historical foundations; roles and responsibilities; legal and ethical issues; implications of sociocultural diversity, organization and administration, and future trends within the context of the school community.
COUN	7130	Provides training and experience in group development, dynamics, theories, methods and skills of group counseling, group leadership, research and evaluation, ethical issues and other group work approaches.
COUN	7140	Includes a study of basic counseling and consultation theories and helping relationships from individual, group and systemic perspectives. Explores helper and helpee characteristics, sociocultural factors and legal and ethical considerations. Includes supervised training in counseling and consulting skills.
COUN	7150	Theories of individual and family development across the lifespan are examined. Developmental processes of individuals and families and implications for counseling are presented from a multi-generational family perspective.
COUN	7160	Addresses the cross-cultural theories, knowledge, beliefs and techniques required for providing effective services to culturally diverse populations. Examines assumptions about cultural differences which underlie counseling theories and therapies.
COUN	7210	The study of various paradigms for conceptualizing psychopathology related to children, adolescents and adults. Includes study of specific personality theories and their application to clinical counseling.



COUN	7220	Specialized study of therapeutic techniques commonly emphasized in working with children, adolescents and their families. Approaches to family therapy in a multicultural context, family assessment and ethical issues will be emphasized.
COUN	7230	Instruction in the theories, skills and techniques necessary to intervene into a variety of crisis situations such as suicide, violence, domestic violence, drug and alcohol abuse and family dysfunction.
COUN	7240	Study of the signs, symptoms, etiology and psychodynamics of various mental and emotional disorders based on the most current edition of the Diagnostic and Statistical Manual for Mental Disorders (DSM).
COUN	7510	Training in supervision models, methods, roles, ethical issues, research and evaluation. Advanced training in consultation.
COUN	7520	Orient students to the roles and tasks of educators and leaders in mental health professions, curricular issues of programs, professional and ethical issues and current status and future trends in higher education among mental health professions.
COUN	7530	Advanced preparation in theory pertaining to the principles and practice of individual counseling, group work and consultation.
COUN	7540	Administration, scoring and interpretation of selected advanced personality assessment instruments. Special emphasis will be given to the MMPI-2 and the MCMI-III, CPI and report writing.
COUN	7930	Advanced preparation in research problems, design and implementation of quantitative and qualitative research and methodology in the fields of counseling and supervision.
COUN	8410	Students receive supervised, practical experiences in providing counseling in individual and group modes of services. Advanced therapy skills will be emphasized.
COUN	8420	This course is designed to provide specialized opportunity under live supervision to develop specialized skills in family therapy. The student will work in co-therapy with a family experiencing difficulties.
COUN	8440	Advanced training and experience in development, dynamics, theories, methods and skills of group counseling and therapy, leadership, research and evaluation and ethical issues as applicable to normal and abnormal populations.
COUN	8450	Theories and practice of couples and family counseling are explored. Foundations of systems theories and their application to couples and family therapy are presented.
COUN	8460	Review of treatment approaches, techniques and programs for counseling individuals and families experiencing substance-related problems.
COUN	8470	Study of the psychobiological and psychophysiological effects of psychotropic medications used for the psychopharmacological treatment of mental and emotional disorder. Theoretical, efficacy and ethical concerns are reviewed.



COUN	8480	Advanced training in contemporary professional, legal and ethical issues that regulate or affect the work of counselors, psychologists and other mental health professionals.
COUN	8490	Examines the effect of gender role and related dynamics upon the psychological functioning of men and women and considers how these issues can be explored in counseling based upon an interactive model of gender roles emphasizing the learned nature of these characteristics.
COUN	8500	Advanced study in theories pertaining to the principles and practice of career counseling. Special emphasis on research, legal and ethical issues, and the role of culture in career choice and development.
COUN	8930	This seminar will consider problems and provide advanced study. Open only to advanced graduate students.
COUN	8940	Supervised practical experiences in various settings while assuming a spectrum of counseling roles and functions. Emphasis is placed upon integrating ethical practice, theory and research in work settings.
COUN	8950	Workshops developed around topics of interest and concern to counselors, school psychologists, or other mental health care professionals. Practical application of topics will be stressed.
COUN	8960	Dissertation credit may not total less than 10 semester hours and no greater than 32 hours. A doctoral student may register for such credit in more than one semester.
COUN	8980	This course is open to a graduate student pursuing a master's, specialist or doctoral degree program and may be a requirement of that program.
COUN	8990	Provides students the opportunity to work independently on professional problems under the direction of a faculty member in the Department of Counseling and Mental Health Services.
CRIM	1010	The overall history, philosophy and functioning of the criminal justice system in the U.S. The integrated roles of law enforcement, the courts and corrections will be analyzed and discussed.
CRIM	1040	This class will focus on human relations and cultural diversity faced by the criminal justice system, including the police, courts, corrections, and community organizations, and the course will explore general principles in effective human relations, the importance of diversity, and their application in the field of criminal justice.
CRIM	1110	The study of jails, prisons and other types of specialized correctional institutions. The philosophy of incarceration along with the administration, staffing and operations of these facilities will be reviewed.
CRIM	1240	Introduction to law enforcement practices and agencies in the United States, including the history, philosophy and operation of federal, state and local enforcement agencies.
CRIM	2010	A survey of federal, state and local courts, including structure, organization, processes and probation.



CRIM	2050	To present the overall objectives of community-based corrections programs as alternatives to incarceration. Probation and parole along with other specialized community-based, innovative corrections programs will be presented and discussed.
CRIM	2100	Introduction to problems that affect law enforcement organizations and personnel. Topics covered include cultural sensitivity, selection training, police deviance, divorce, suicide, use of force, complaints and additional topics introduced by the instructor or students.
CRIM	2150	This course will focus on the social and psychological explanations of offenders' behaviors. The needs of victims and behaviors of criminal justice professionals will also be addressed.
CRIM	2160	An in-depth analysis of the professional relationships between corrections workers and their clients including the development of effective interpersonal communications and interpersonal relationships that leads to a positive corrections environment.
CRIM	2200	The statutes of Ohio relating to crime and the elements necessary for establishing and providing proof of crimes are studied.
CRIM	2210	Introduction to the processes, theories and principles of criminal investigation. Methods of gathering information, report writing, interview/interrogation strategies, surveillance, search warrant information, affidavit preparation and execution are studied.
CRIM	2220	A thorough study of the evidence rules with specific emphasis on the application of these rules in preparing and presenting evidence.
CRIM	2230	A comprehensive study and analysis of the Bill of Rights of the U.S. Constitution and its effect on the administration of justice.
CRIM	2250	To analyze the causes of juvenile delinquency and the extent of the problem in the U.S. Also, to discuss the inter-workings of the juvenile justice system in response to the delinquency problem, in conjunction with delinquency prevention programs.
CRIM	2300	This is a general course in accident investigation techniques.
CRIM	2950	An examination of criminal justice through placement in the field to observe practices and behavior. Regular class meetings and writing about the experience are also required.
CRIM	2990	Supervised independent study.
CRIM	3100	This course examines the history of Western European and Anglo-American penal institutions and theories. The course will consider the influence of Roman law, canon law and the Enlightenment on Western penology, as well as the impact on penology of modern reform movements.
CRIM	3110	The course examines the genesis, development, theory and practice of hate crimes and how society has and can respond to hate crimes.
CRIM	3180	An examination of the law that governs punishment, institutional and community-based corrections and the rights and liabilities of corrections personnel.



CRIM	3210	This course surveys the relationships between crime, criminal justice and mass media. Topics explored include the history, extent and social impact of media coverage of criminal activities.
CRIM	3220	The course content develops an understanding of the uses of information technologies and psychological profiling in defining criminal behavior as well as the geographic consideration.
CRIM	3230	A historical overview of the evolution of white-collar crime in American Society as well as an understanding of the nature, causes and consequences of different forms of white-collar crime.
CRIM	3240	This course examines the history of victimology and includes topics such as the characteristics of crime victims and specific types of victimization such as hate crimes and sexual assault.
CRIM	3260	The history and evolution of terrorism in the United States and other countries, including the weapons, ideology and people involved in terrorist events and counterterrorist methods plus deterrents.
CRIM	3270	This course will examine the origins and functioning of organized crime and criminal organizations from a criminal justice perspective.
CRIM	3280	An examination of the behavioral, socioeconomic and cultural dimensions of juvenile gang activity in the United States plus prevention, intervention and law enforcement strategies.
CRIM	3290	An introduction to the crime scene, including methods of searching, photography, sketching and gathering of physical evidence. Fingerprint analysis. Methods utilized in drug investigations and development of information sources are studied.
CRIM	3300	This course explores the legal, social, political and moral issues that surround the death penalty.
CRIM	3310	This course explores the enhancement and erosion of civil liberties during times of crisis, especially during war and/or terrorism.
CRIM	3400	An examination of the use of technology to subvert the law and to enforce the law. The legal dimensions of technology in criminal justice will also be included.
CRIM	3420	An introduction to principles governing the organization, structure and administration of law enforcement organizations.
CRIM	3EL	
CRIM	4100	This course provides students with an understanding of criminal justice research, the concepts and logic of research designs and widely used statistical procedures.
CRIM	4200	This course is designed to provide students with an opportunity to integrate ethics in their understanding of criminal justice.
CRIM	4250	Examination of how different countries around the world have organized their law enforcement courts and corrections agencies into a uniquely structured system of criminal justice based on cultural and legal differences.



CRIM	4300	A critical study and appreciation of the theories of criminal justice, including micro and macro theories.
CRIM	4310	An examination of the constitutional dimensions of the criminal justice process, with particular emphasis on the development of analysis skills and an examination of legal theory.
CRIM	4400	An examination of criminal justice operations in metropolitan areas through student participation in applied research and field observations related to program evaluation, policy analysis, etc..
CRIM	4450	The application of management principles to municipal police departments, emphasizing the resources, constraints and strategies of police managers.
CRIM	4490	Examination of selected current issues in criminology/criminal justice that impact our knowledge and understanding of the field.
CRIM	4500	Study of the political, managerial and legal factors in the corrections system.
CRIM	4520	An examination of the role of the police in contemporary America, emphasizing the ambivalence of the self-image of the police and the social and political forces that compete to redefine police function.
CRIM	4590	General systems approach to criminal justice from an organizational and legal perspective with emphasis on the interaction of the major components-police, prosecutors, courts and corrections.
CRIM	4940	Field placement experience within a criminal justice agency to enhance the student's practical knowledge of the field in conjunction with career planning opportunities.
CRIM	4960	Supervised research and writing for students admitted to the honors program in the Department of Criminal Justice.
CRIM	4990	Individual course of study in a selected topic pertaining to Criminal Justice chosen by the student, with the consent of the instructor.
CRIM	5370	The course examines the issue of disproportionate minority confinement of youth in the juvenile and criminal justice systems.
CRIM	5400	An examination of criminal justice operations in metropolitan areas through classroom study and field observations.
CRIM	6000	This course critically examines contributions made by a variety of theorists to an understanding of crime/deviance and reactions to it.
CRIM	6100	Explores the diverse populations and problems encountered by criminal justice and juvenile systems, including major social control systems and policies, victimology, mental health issues, discrimination, and comparative analyses.
CRIM	6200	This course provides students with a basic understanding of fundamental data analysis techniques utilized in criminal justice research.
CRIM	6300	This course is designed to provide students with the opportunity to integrate ethics in an understanding of criminal justice.
CRIM	6310	Criminal justice theories of delinquency are studied and compared with a paradigmatic foundation of current criminal justice processes.



CRIM	6320	This course explores women as offenders, victims and professionals in criminal justice.
CRIM	6330	This course will address crime victims' issues and will challenge students to consider how the criminal justice system can improve its response to victims.
CRIM	6340	This course will examine the historical processes that have led to an influx of persons with mental illness and substance abuse into the metropolitan criminal justice system.
CRIM	6350	This course examines how different countries around the globe have organized their criminal justice agencies into uniquely structured systems of criminal justice. Cultural and legal differences influencing justice are also examined.
CRIM	6360	This course traces the genesis and evolution of genocide and crimes against humanity as distinct categories of international criminality.
CRIM	6400	This course is designed to provide students with an understanding of criminal justice research.
CRIM	6420	This course examines the role of criminal law and procedure in the criminal justice and juvenile systems and prosecution, defense, and court procedures and decision-making issues.
CRIM	6440	This course provides evaluation and application techniques of research based methodologies for teaching students with emotional behavioral disorders/disturbances. Psychosocial educational best practices within the least restrictive environment are presented.
CRIM	6500	This course will review the theoretical and historical roots of corrections. Students will examine metropolitan corrections problems and practices, particularly as they exist in Toledo, Lucas County and other metropolitan areas.
CRIM	6520	The Child Study Institute, Lucas County Juvenile Detention Center, offers frontline knowledge-to-skill practicing in the management of incarcerated children and youth with severe, chronic and potentially violent behaviors.
CRIM	6550	This course examines critical theories and applications of law in reference to a variety of identities, groups and communities designated as "minority."
CRIM	6570	This course examines the law and social science literature concerning the civil and criminal liability that attends working in the criminal justice field.
CRIM	6590	A research-oriented course into the relationship of the major structures of criminal justice-police, prosecutor, courts and corrections with emphasis on the development of performance evaluation criteria.
CRIM	6610	Study of the political, managerial and legal factors in the corrections system.
CRIM	6620	An examination of the role of the police in contemporary America, emphasizing the ambivalence of the self-image of the police and the social and political forces that compete to redefine the police function.



CRIM	6940	Field placement experience in an approved criminal justice agency to enhance the knowledge of the student.
CRIM	6950	This course provides a forum to facilitate the development of individual scholarly criminal justice projects.
CRIM	6960	This course involves research leading to a written thesis. Both the topic of the research and the final thesis must be defended and approved by the student's thesis committee.
CRIM	6980	Content will vary as instructors present a single concentration on developments, problems and controversies in criminal justice.
CRIM	6990	Directed study in criminal justice under the supervision of a criminal justice faculty member.
CRIM	8440	This course provides evaluation and application techniques of research based methodologies for teaching students with emotional behavioral disorders/disturbances. Psychosocial educational best practices within the least restrictive environment are presented.
CRIM	8520	The Child Study Institute, Lucas County Juvenile Detention Center, offers frontline knowledge-to-skill practicing in the management of incarcerated children and youth with severe, chronic and potentially violent behaviors.
CRXM	1000	
CSET	1100	A first course in computer hardware and software for CSET majors. Single and multi-user operating systems, command-line processing, program planning and creation and simple Internet tools are covered.
CSET	1200	Introduction to Windows-based programming for engineering technology applications. Topics include Windows Application Program Interface (API), message processing, Windows Procedures, using Windows resources, modal and modeless dialog boxes and the graphics Device Interface.
CSET	1500	Designed to explore the field of computers. Topics include circuit components, Ohm's Law, DC and AC circuits, power supplies, transistor amplifiers, integrated circuits, and an introduction to computer hardware.
CSET	2200	Current concepts and technologies used with personal computers and PLCs in both industrial (factory-floor) and commercial data networks. Topics include PC networking hardware and software, PLC hardware and programming and PLC networking alternatives.
CSET	3100	HTML forms, creation of static and animated web graphics, Dynamic Fonts, SMIL (Synchronized Multimedia Integration Language) as it relates to G2, Realtext, Realpix and XML. The course also covers Frames, META Tags, Optimizing Speed, Cookies, Image mapping (from both sides), HTML, tables and Shockwave.
CSET	3150	Advanced programming in C++ language using UNIX workstations in a networked environment. Topics include advanced C++ syntax, structures, and object oriented programming. Programming assignments focus on engineering technology applications.



CSET	3200	Covers client/server architecture and programming techniques. Major topics include two-tier and three-tier client server architectures, programming considerations, clean layering, advanced graphical user interface controls, database processing, transaction processing and monitoring.
CSET	3250	Introduction to the Document Object Model (DOM), JavaScript and VBScript scripting languages, cascading style sheets, browser recognition, browser-specific content, data validation and layers.
CSET	3300	Creation of dynamic Web applications that interact with a database using client-side scripts, server-side scripts and compiled server programs. Includes database fundamentals, scripting language fundamentals and server considerations.
CSET	3400	Commands and methods to install and manage a UNIX system. System administration topics include configuration, user and file management, backup procedures, peripheral devices, performance tuning and troubleshooting.
CSET	3600	An introduction to software engineering processes for technology students. Includes: user requirements, software specification, design approaches, human-computer interfacing, software tools, validation, modification, maintenance, documentation, lifecycle models, and intellectual property considerations.
CSET	4100	Covers Common Gateway Interface (CGI) programming on the Internet using the most popular scripting languages. Topics include client-side programs, server-side programs, distributed database creation and searching.
CSET	4150	Installation and configuration of the web server operating systems (e.g., UNIX, Windows NT), installation and administration of web daemon (e.g., Apache, Microsoft IIS). Site management, including file and directory hierarchy, web log analysis, installation and configuration of various utilities for gopher, ftp, text ending and email.
CSET	4200	Introduction to CMOS technology and circuits, MOS transistor switches and CMOS logic. Practical aspects of silicon manufacturing technology including wafer processing, layout design rules and process parameterization. Electrical and physical design of logic gates, clocking schemes, I/O structures and structures design strategies.
CSET	4250	How to select the most appropriate language for a specific engineering technology application. Topics include comparison of programming languages by evolution, formal specifications, structures, features, application domains, programming paradigms, implementation of syntax, semantics and program run-time behavior.
CSET	4650	This course covers the implementation of digital circuits using Field Programmable Logic Devices, with emphasis on Field Programmable Gate Arrays. Students learn to download their designs on Xilinx FPGA's using schematic capture and VHDL code.



CSET	4750	Computer network architectures and their application to industry needs. Major topics include vocabulary, hardware, design concepts, current issues, trends, hardware, multi-user operating systems, network protocols, local and wide area networks, intranet and internet communications, analog and digital data transmissions.
CSET	4850	Theory and practice of network security. Topics include firewalls, Windows, UNIX and TCP/IP network security. Security auditing, attacks, viruses, intrusion detection and threat analysis will also be covered.
CTE	2010	Written examination covering technology. NOTE: Students must have completed 30 semester hours at UT before the examination credit can be applied toward the bachelor of career and technical education degree.
CTE	2020	Performance examination covering the occupation to be taught. NOTE: Students must have 30 semester hours at UT before examination credit can be applied towards the bachelor of career and technical education degree.
CTE	2990	The student will contract with the faculty member assigned to set up an independent field experience that will enable the student to meet personal career objectives.
CTE	3010	The development of pedagogical skills designed to assist the beginning teacher with basic classroom techniques and strategies.
CTE	3020	The development of career and technical teaching concepts, designed to assist teachers with the presentation of occupational knowledge.
CTE	3030	The development and application of career and technical teaching methods and strategies in an actual classroom/laboratory situation or under a simulated classroom setting .
CTE	3040	The continued development and application of career and technical teaching methods and strategies in an actual classroom/laboratory situation or under a simulated classroom setting.
CTE	3060	Study and construction of psychomotor, cognitive, affective and perceptual evaluation instruments for use in laboratory and related technology classes.
CTE	3080	An analysis of occupational skills to identify mathematics, science and communication competencies and apply reflective analysis to teaching affective, cognitive and psychomotor skills using a results oriented teaching model.
CTE	3100	Development of knowledge and skill in competency based education to include occupational analysis, selection of course content, course of study and instructional guide development and credentialing students. Required for certification.
CTE	3120	This course provides the career and technical teacher with the skills to develop and utilize individualized competency based learning activity packets from a previously developed curriculum.



CTE	3160	This course provides the student with an opportunity to upgrade occupational proficiency and technical knowledge through business or industrial experiences or supplemental training for the purpose of improving instruction.
CTE	3910	The study of current developments in specific areas of instruction with the development of course materials as assigned.
CTE	4020	The study of occupational health and safety hazards. Regulations applicable to school, business and industry will be examined. Strategies to minimize exposure to and prevent injuries will be developed.
CTE	4040	Designed for laboratory instructors to increase their operating efficiency and effectiveness. Focus is on arranging the facility and controlling materials, supplies, learning activities and maintenance through various system approaches.
CTE	4060	A study of social issues, historical events and philosophies that provide a basis for the development of career and technical education. Principles and their implications are also reviewed.
CTE	4080	Designed for educators and employers to increase their knowledge and skill to build partnerships between schools and business, industry and labor. Examines transition concepts, components, implementation strategies and models.
CTE	4100	Study of the organization and administration of career and technical education at the national, state and local levels, noting relationships existing between the agencies.
CTE	4120	Development of supervisory skills in career and technical education. Stresses human relations, team building, basic management and leadership skills in program inauguration and operations.
CTE	4140	Designed to present the basic fundamentals of establishing and operating a cooperative occupational program.
CTE	4160	A study of cooperative education curriculum and instructional methods, including the coordination of classroom-related instruction with on-the-job experience based on the commonalities of a variety of occupations.
CTE	4180	A study of career and technical education in the community, and promotion, recruitment and retention strategies, including school publics, theories of community power structure and the career and technical school in a democratic society.
CTE	4220	Designed for teachers and supervisors to increase their skills and knowledge of youth leadership development. Focus is on advising a student career and technical organization and includes both establishing and maintaining functions.
CTE	4570	A study of the unique learning and teaching characteristics associated with adult learners, adult learning theory, learner characteristics, physical effects of aging and strategies consistent with adult learning styles.



CTE	4910	Investigations in such fields as community surveys to determine needs for career and technical education, industrial surveys, follow-up studies of career and technical graduates, developing content of shop-related technology courses.
CTE	4930	A planned field experience held in public school classrooms under the direction of University supervisors. Practicing teacher observed planning, presenting and demonstrating teaching skills and managing the laboratory and classroom..
CTE	4940	Observation and supervised experiences will be offered in a variety of appropriate settings, or students will be assigned to work as interns in a school setting under the joint supervision of school and university personnel.
CTE	4950	Workshops developed around topics of interest and concern for preservice and in-service teachers and other education personnel. Practical applications of workshop topics are emphasized.
CTE	4980	A course developed around topics of interest and concern to in-service teachers. Stresses solution and resolution of educational problems occurring within selected districts.
CTE	4990	Individual study is designed to provide the opportunity to work individually on professional problems under the direction of the faculty in career and technical education.
CTE	5020	The study of occupational health and safety hazards. Regulations applicable to school, business and industry will be examined. Strategies to minimize exposure to and prevent injuries will be developed.
CTE	5040	Designed for laboratory instructors to increase their operating efficiency and effectiveness. Focus is on arranging the facility and controlling materials, supplies, learning activities and maintenance through various system approaches.
CTE	5060	A study of social issues, historical events and philosophies that provide a basis for the development of career and technical education. Principles and their implications are also reviewed.
CTE	5080	Design for educators and employers to increase their knowledge and skill to build partnerships between schools and business, industry and labor. Examines transition concepts, components, implementation strategies and models.
CTE	5100	Study of the organization and administration of career and technical education at the national, state and local levels, noting relationships existing between the agencies.
CTE	5120	Development of supervisory skills in career and technical education. Stresses human relations, team building, basic management and leadership skills in program inauguration and operations.
CTE	5140	Designed to present the basic fundamentals of establishing and operating a cooperative occupational program.



CTE	5160	A study of cooperative education curriculum and instructional methods, including the coordination of classroom-related instruction with on-the-job experience based on the commonalities of a variety of occupations.
CTE	5180	A study of career and technical education in the community, and promotion, recruitment and retention strategies, including school publics, theories of community power structure and the career and technical school in a democratic society.
CTE	5220	Designed for teachers and supervisors to increase their skills and knowledge of youth leadership development. Focus is on advising a student career and technical organization and includes both establishing and maintaining functions.
CTE	5570	A study of the unique learning and teaching characteristics associated with adult learners, adult learning theory, learner characteristics, physical effects of aging and strategies consistent with adult learning styles.
CTE	5810	An analysis of the processes and current instruments available for evaluation of programs and personnel, and an appraisal of the professional development needs of individuals in educational settings.
CTE	5830	Curriculum principles and models are examined. The characteristics of curricula are established and inferences are drawn for the planning, implementation and evaluation phases of curriculum development.
CTE	5940	Observation and supervised experiences will be offered in a variety of appropriate settings, or students will be assigned to work as interns in a school setting under the joint supervision of school and university personnel.
CTE	5950	Workshops developed around topics of interest and concern for preservice and in-service teachers and other education personnel. Practical applications of workshop topics will be emphasized.
CTE	5980	A course developed around topics of interest and concern to in-service teachers and administrators. Stresses solution and resolution of educational problems occurring within selected districts.
CTE	5990	Individual study is designed to provide the opportunity to work individually on professional problems under the direction of the faculty in career and technical education.
CTE	6900	Investigations in such fields as community surveys to determine needs for career and technical education, industrial surveys, follow-up studies of vocational graduates, developing content of shop-related technology courses.
CTE	6920	Open to a graduate student who elects the completion of a research project in fulfilling the research requirement of the master's degree.
CTE	6960	Open to a graduate student who elects the completion of a master's thesis in fulfilling the research requirement of the master's degree.
CTE	7810	An analysis of the processes and current instruments available for evaluation of programs and personnel, and an appraisal of the professional development needs of individuals in educational settings.



CTE	7830	Curriculum principles and models are examined. The characteristics of curricula are established and inferences are drawn for the planning, implementation and evaluation phases of curriculum development.
CTE	7940	Observation and supervised experiences will be offered in a variety of appropriate settings, or students will be assigned to work as interns in a school setting under the joint supervision of school and university personnel.
CTE	7950	Workshops developed around topics of interest and concern for preservice and in-service teachers and other education personnel. Practical applications of workshop topics will be emphasized.
CTE	7980	A course developed around topics of interest and concern to in-service teachers and administrators. Stresses solution and resolution of educational problems occurring within selected districts.
CTE	7990	Individual study is designed to provide the opportunity to work individually on professional problems under the direction of the faculty in career and technical education.
CVMD	601	
CVMD	630	Seminars presented by invited speakers expose CVMD graduate students to the latest advancements in basic research related to cardiovascular and metabolic diseases. Informal discussions sessions are organized which enable students to meet with speakers invited from other institutions.
CVMD	640	This is a one credit course in which students learn the fundamental principles of pharmacodynamics and pharmacokinetics, which are the basis for understanding the actions of drugs and the use of drugs in research and medicine.
CVMD	650	An advanced course focusing on the physiology and pathophysiology of the cardiovascular and metabolic systems. This course will provide a multidisciplinary view of the processes leading to cardiovascular and metabolic diseases through lectures focused on current concepts of the genetic, molecular and cellular biology bases of cardiovascular and metabolic function, dysfunction and responsiveness to therapeutic interventions. The course explores the complex interrelationship between cardiovascular and metabolic diseases covering current research topics in metabolic diseases and endocrine dysfunction such as diabetes, obesity and metabolic syndrome in addition to current research topics in cardiovascular diseases such as hypertension, heart failure and atherosclerosis. Eligibility: Students who have satisfactorily completed the Core Curriculum are qualified for this course.
CVMD	660	Presentation and in depth discussion of original papers to give students an opportunity to assess and report on recent advances in cardiovascular and metabolic diseases. May be repeated for credit.
CVMD	673	
CVMD	689	This is a variable credit course in which a student carries out independent study in CVMD directed by their major advisor.



CVMD	699	
CVMD	830	Seminars presented by invited speakers expose CVMD graduate students to the latest advancements in basic research related to cardiovascular and metabolic diseases. Informal discussions sessions are organized which enable students to meet with speakers invited from other institutions.
CVMD	840	This is a one credit course in which students learn the fundamental principles of pharmacodynamics and pharmacokinetics, which are the basis for understanding the actions of drugs and the use of drugs in research and medicine.
CVMD	850	An advanced course focusing on the physiology and pathophysiology of the cardiovascular and metabolic systems. This course will provide a multidisciplinary view of the processes leading to cardiovascular and metabolic diseases through lectures focused on current concepts of the genetic, molecular and cellular biology bases of cardiovascular and metabolic function, dysfunction and responsiveness to therapeutic interventions. The course explores the complex interrelationship between cardiovascular and metabolic diseases covering current research topics in metabolic diseases and endocrine dysfunction such as diabetes, obesity and metabolic syndrome in addition to current research topics in cardiovascular diseases such as hypertension, heart failure and atherosclerosis.
CVMD	860	Presentation and in depth discussion of original papers to give students an opportunity to assess and report on recent advances in cardiovascular and metabolic diseases. May be repeated for credit.
CVMD	889	This is a variable credit course in which a student carries out independent study in CVMD directed by their major advisor.
DENT	650	Recent developments, critical analysis of recent publications, literature reviews in specific areas of oral biology, e.g., oral surgery, endodontic, pedodontics, prosthodontics, oral pathology, and implant dentistry. May be repeated for credit.
DENT	655	A weekly report on recent advances in oral biology taken from original papers to give students an opportunity to find, assess, and report on important developments in the field. May be repeated for credit.
DENT	656	Presentation of selected papers on oral biology and health-related topics and discussion.
DENT	657	Presentation of advanced dental materials. May be repeated for credit.
DENT	660	Seminar in current reconstructive dentistry, including all the structures of the masticatory system as they relate to occlusal rehabilitation.
DENT	673	Students will participate in selected ongoing research programs of members of the division faculty. May be repeated for credit.



DENT	689	The student and instructor will agree on a program of intense study that will enable the student to achieve his/her objectives including theoretical and experimental work. May be repeated for credit.
DENT	690	Elective experiences that are intended to expand knowledge base in areas of interest related to the field of pediatric dentistry. Departmental approval required.
DENT	691	Presentation of selected articles related to the field of pediatric dentistry and other health related topics with discussion. May be repeated for credit.
DENT	692	Scientific principles underlying the contemporary practice of pediatric dentistry, including the prevention of disease, dental anomalies, habits and other problems in occlusal development and Child Abuse and Neglect. May be repeated for credit.
DENT	701	Student will receive an overview of hospital dentistry and develop an interdisciplinary approach to the study of oral and dental diseases.
DST	2020	An overview of the emergence of disability rights in the U.S. with an emphasis on the independent living movement, disability history, culture and representation in mass media. (Not for credit in the minor).
DST	2980	Special topics in Disability Studies. Topics vary by instructor; may be repeated for credit.
DST	3020	An interdisciplinary exploration of the definitions, models and paradigms of disability, including medical, social, phenomenological, rehabilitative and independent living constructions of disability.
DST	3030	An interdisciplinary exploration of the history and culture of disability, including the issues of stigmatizing and stereotyping, communication barriers and breakthroughs, educational segregation and mainstreaming and the experience of "passing."
DST	3980	Special topics in Disability Studies. Topics vary by instructor, may be repeated for credit.
DST	4890	An interdisciplinary exploration and review of research issues and methodologies suited to the study of disability.
DST	4940	This course is a service learning model internship with on-campus and/or community agencies addressing disability studies issues. Sites must be approved by the instructor.
DST	4980	This course allows Disability Studies minors to take disability studies-related courses for DST credit.
EBUS	3090	This course is an introduction to the networked economy, e-commerce and business transformation. It covers the technological trends, business opportunities, competitive threats, marketing responses and public policy issues concerning e-commerce.
EBUS	3180	A study of Web site design and management process for effective business communication, including authoring software, graphic tools, scripting techniques, java applets and related technical, legal ethical and managerial issues.



EBUS	4040	A study of business intelligence management in an e-commerce environment, including the use of data mining and warehousing tools for market analysis and business decision supports.
EBUS	4150	A hands-on course involving case studies of successful e-commerce business models and a team-based project to develop e-commerce plan for established and start-up businesses.
ECON	1010	Basic concepts and theory applications to major economic problems and controversies. Designed primarily to meet requirements of students not planning to take upper level economics courses. (not for major credit)
ECON	1150	Explaining the level and the growth of economic activity, its fluctuations and ways of achieving greater stability, including the roles of money, banking and international finance.
ECON	1200	Theories of consumer behavior; determination of input and output; prices and quantities in factor and product markets; analysis of international trade and policy; applications include labor markets and income distribution.
ECON	2400	American economic growth in the recent past. Evolution of governmental roles, development of labor markets with respect to race and sex, effects of wars and depressions. Status of American competitiveness.
ECON	2500	Why nations trade; comparative advantage and gains from trade; free trade versus protectionism; free versus "fair" trade; balance of payments problems.
ECON	2810	Included is the study of hypothesis testing, single and multiple regression, correlation analysis, time series and index numbers, and non-parametric statistics.
ECON	2980	Course content varies as changes in the interaction between economic topics and writing assignments occur.
ECON	3030	Economic role of the consumer, theory of choice-making - rational purchasing of food, housing, health care, transportation, insurance, credit, budgeting, investing and tax returns.
ECON	3050	Analysis of labor market outcomes and income distribution characteristics resulting from gender differences; gender-related economic outcomes: the "feminization of poverty," persistent male-female wage differential, expanding proportion of female-headed households.
ECON	3070	Methodologies of Law and Economics; Legal institutions; Economic Theory of Property; Property Rights; Contract Theory; Economic Theory of Torts and Tort Law, Common Law Process; Economics of Crime and Punishment.
ECON	3080	Study of crime as an economic activity; costs of crime to the community; economic approach to crime reduction.
ECON	3120	Current issues in money, banking and finance; interest rate theory; international money and banking; monetary policy and modeling monetary economies.



ECON	3130	The nature and role of money, credit and banking in an economic system. Emphasis on the structure, operation and objectives of the Federal Reserve System.
ECON	3150	National income accounting; theory of income determination; causal relationships; analysis of consumption, investment, government and foreign demand functions; integration of theories of income, output, money and interest.
ECON	3200	Consumer theory, utility and indifference curve analysis, theory of the firm, industry pricing in perfect and imperfect competition and distribution theory.
ECON	3240	Economic analysis of the causes of environmental problems; Examination of various economic policies for addressing current environmental issues such as pollution control policies and optimal use of resources.
ECON	3250	This course will survey the theoretic and applied economic issues within the world of professional and amateur sports, focusing on industrial organization, labor economics and public finance.
ECON	3410	Study of economic growth throughout the world, particularly in Europe, Asia, Africa and Latin America. Analysis of economic institutions, technological change, industrialization and living standards.
ECON	3490	Development of the economic status, problems and role of the African American community from colonial times to the present. Special emphasis on economic writings of African American scholars.
ECON	3500	Theory and ideology of market, socialist and mixed economic systems. Case study of the economies of U.S., Russia, China and India.
ECON	3600	Analysis bearing on intermetropolitan and intrametropolitan growth processes.
ECON	3620	Economic analysis and description of the Toledo area business, consumer, labor and government sectors - includes an introduction to local government forecasting.
ECON	3900	Small group study of special topics initiated either by student or a faculty member.
ECON	3910	Study of special topics initiated either by student or a faculty member.
ECON	3920	Study of special topics initiated either by student or a faculty member.
ECON	3980	Course content varies as changes in the interaction between economic topics and writing assignments occur.
ECON	4050	Interaction of economic changes and demographic variables; topics include birth rates, women's employment, marriage and divorce, aging and mortality, migration and overpopulation.
ECON	4100	Historical and theoretical study of fluctuations in business activities and an examination of the various theories relating to causes and effects of such cycles.
ECON	4120	Modern theories of financial markets, money and the theory of interest rates, money's role in general equilibrium and growth models and money's ability to cause inflation.

ECON	4130	Changes in the quantity of money and alternative government spending, taxation and debt policies, interrelations of fiscal and monetary policies in stabilization programs.
ECON	4150	Theories of consumption and investment. Empirical estimates. Cycle and growth theory, multiplier-accelerator analysis and growth models. The theory and instruments of macroeconomic policy. Dynamic Macroeconomic Theory.
ECON	4160	Various topics in macroeconomics including income determination and growth theory; Keynesian, Neo-Classical, Real Business Cycle models and Monetary and Fiscal Policy analysis.
ECON	4200	Advanced topics in microeconomic theory, consumer behavior, the firm and market structure, distribution theory, equilibrium conditions, welfare economics.
ECON	4210	Extended analysis of microeconomic theory concerning individual and social choice issues. Selected topics may include: rational choice behavior, theory of markets, partial and general equilibrium analysis and welfare economics.
ECON	4230	Causes and consequences of current trends in poverty and income distribution in the U.S.; analysis of policies dealing with problems in these areas.
ECON	4240	The economics of the environment and natural resources using applied welfare theory, benefit-cost analyses, and nonmarket valuation. Examination of economic instruments, such as marketable permits, for solving environmental problems.
ECON	4250	Labor force characteristics, wage determination, hours and condition of work, unemployment, labor union structure and growth, collective bargaining and modern labor legislation.
ECON	4300	Development and applications of the mathematical tools used by economists. Differential and integral calculus, linear algebra, transcendental functions and series.
ECON	4380	The growth of American business enterprise and the relationship to culture, politics, technological developments and economic change.
ECON	4400	Working-class resistance to industrialization and corporatism. Labor visions of empire, race and nation. Labor in the New Deal Order. Globalization of capital and the rusting of America.
ECON	4410	Exploration of economic growth in America from pre-Columbian times to the present day. Analysis of economic institutions, technological change, industrialization and standards of living.
ECON	4440	The development of orthodox and non-orthodox economic thinking in the 20th century.
ECON	4450	Development of economic theory and thought from the 18th century through the present. Considers the theoretical and prescriptive contributions of orthodox and non-orthodox economists.

ECON	4510	Theory of international trade; commercial policy; costs and benefits, economic integration; trade and economic growth and balance of payments problems.
ECON	4520	The monetary aspects of international trade; balance of payments theory, problems and policies, problems and proposals for reform of the international monetary system.
ECON	4550	Economic problems and policies in less-developed countries, including such topics as schooling, population growth, urbanization, landholding, income distribution, capital formation and development strategies.
ECON	4620	Examination of regional income estimates and social accounts, regional multipliers, diverse location theories, supplemented with techniques of regional analysis.
ECON	4660	An analysis of the government sector in the economy, government expenditures, taxation and borrowing and their effects on employment, price levels and growth.
ECON	4700	Analysis of the structure and economic efficiency of business enterprise in the U.S. Emphasis is placed on the manufacturing sector.
ECON	4750	Economic analysis of health and health services. Topics currently include medical and allied manpower, hospitals, drugs and cost-benefit analysis of selected health programs.
ECON	4810	An introduction to econometric methods and their use in quantitative analysis of economic theories. Diagnostics for problems typically encountered are detailed along with techniques for correcting these problems.
ECON	4820	An introduction to forecasting methods for economic time-series including Bayesian methods. Both theory and application of forecasting models and methods are covered.
ECON	4830	Econometric methods that apply to survey, spatial and cross-sectional/time-series data along with other specialized modeling techniques are covered.
ECON	4980	Course content changes from time to time as important economic problems arise.
ECON	5050	Interaction of economic changes and demographic variables; topics include birth rates, women's employment, marriage and divorce, aging and mortality, migration and overpopulation.
ECON	5100	Historical and theoretical study of fluctuations in business activities and an examination of the various theories relating to causes and effects of such cycles.
ECON	5120	Modern theories of financial markets, money and the theory of interest rates, money's role in general equilibrium and growth models and money's ability to cause inflation.
ECON	5130	Changes in the quantity of money and alternative government spending, taxation and debt policies, interrelations of fiscal and monetary policies in stabilization programs.



ECON	5150	Theories of consumption and investment. Empirical estimates. Cycle and growth theory, multiplier-accelerator analysis and growth models. The theory and instruments of macroeconomic policy. Dynamic Macroeconomic Theory.
ECON	5160	Various topics in macroeconomics including income determination and growth theory; Keynesian, Neo-Classical, Real Business Cycle models and Monetary and Fiscal Policy analysis.
ECON	5200	Advanced topics in microeconomic theory, consumer behavior, the firm and market structure, distribution theory, equilibrium conditions, welfare economics.
ECON	5210	Extended analysis of microeconomic theory concerning individual and social choice issues. Selected topics may include: rational choice behavior, theory of markets, partial and general equilibrium analysis and welfare economics.
ECON	5230	Causes and consequences of current trends in poverty and income distribution in the U.S.; analysis of policies dealing with problems in these areas.
ECON	5240	The economics of the environment and natural resources. Examination of economic instruments for solving environmental problems. Analyzed policies include direct regulation, user charges, taxes on polluting products and marketable permits.
ECON	5250	Labor force characteristics, wage determination, hours and condition of work, unemployment, labor union structure and growth, collective bargaining and modern labor legislation.
ECON	5300	Development and applications of the mathematical tools used by economists. Differential and integral calculus, linear algebra, transcendental functions and series.
ECON	5410	Exploration of economic growth in America from pre-Columbian times to the present day. Analysis of economic institutions, technological change, industrialization and standards of living.
ECON	5450	Development of economic theory and thought from the 18th century through the present. Considers the theoretical and prescriptive contributions of orthodox and non-orthodox economists.
ECON	5510	Theory of international trade; commercial policy; costs and benefits, economic integration; trade and economic growth and balance of payments problems.
ECON	5520	The monetary aspects of international trade; balance of payments theory, problems and policies, problems and proposals for reform of the international monetary system.
ECON	5550	Economic problems and policies in less-developed countries, including such topics as schooling, population growth, urbanization, landholding, income distribution, capital formation and development strategies.



ECON	5620	Examination of regional income estimates and social accounts, regional multipliers, diverse location theories, supplemented with techniques of regional analysis.
ECON	5660	An analysis of the government sector in the economy, government expenditures, taxation and borrowing and their effects on employment, price levels and growth.
ECON	5700	Analysis of the structure and economic efficiency of business enterprise in the U.S. Emphasis is placed on the manufacturing sector.
ECON	5750	Economic analysis of health and health services. Topics currently include medical and allied manpower, hospitals, drugs and cost-benefit analysis of selected health programs.
ECON	5810	An introduction to econometric methods and their use in quantitative analysis of economic theories. Diagnostics for problems typically encountered are detailed along with techniques for correcting these problems.
ECON	5820	An introduction to forecasting methods for economic time-series including Bayesian methods. Both theory and application of forecasting models and methods are covered.
ECON	5830	Econometric methods that apply to survey, spatial and cross-sectional/time-series data along with other specialized modeling techniques are covered.
ECON	5980	Course content changes from time to time as important economic problems arise.
ECON	6930	Methods of teaching economics in a university. Supervised teaching of sections in Economic Principles.
ECON	6940	Supplements formal classroom work by providing field experience in some governmental agency through a participant-observer relationship.
EDAS	4100	A study of supervisory skills for education and allied professions. The focus is on the supervisor and how she engages in activities to develop personal growth and development of staff members.
EDAS	4260	An examination of different leadership styles within the organization is the focal point of this course. Participants will conduct research related to directive and non-directive supervisory skills.
EDAS	4280	The course explores the concepts of organizations and people who work in organizations. Participants will be involved in exercises and procedures of organizational diagnosis, evaluation and development.
EDAS	4290	The course examines methods and procedures for improving labor relations in organizations. Participants will analyze a variety of models and issues that confront labor relations in education and allied professions.
EDAS	4940	Working in a guided reflective practice environment, the student will apply knowledge gained in previous coursework to working situations in positions in the private sector.



EDAS	5950	Topical workshops, based on practical application of skills and knowledge, are intended for in-service educational professionals. Credit may be applied to doctoral degrees upon approval of the committee.
EDAS	5980	Courses, based on issues, topics and concerns of educational administrators for the real world. Credit may be applied to degree programs upon approval of the adviser or committee.
EDAS	6000	An overview of the individual in educational administration, i.e., as strategic leader, organizational leader, instructional leader and policy/community leader. Opportunities for personal assessment are provided as students explore critical educational issues.
EDAS	6010	An examination of those principles of supervision which promote improved instruction. Emphasis is on teacher performance evaluation, curriculum management and strategies for staff development to improve staff performance.
EDAS	6020	An in-depth analysis of instructional leadership to improve teacher classroom performance. Attention will focus on instructional analysis, strategies for providing feedback and writing professional growth plans.
EDAS	6030	An exploration of group dynamics/processes. Development of effective action plans to improve school climate/culture and the learning environment is explored using problem-based learning.
EDAS	6110	This course provides students an opportunity to analyze major topics and issues through which law influences education. Participants will examine the basic legal structure for education.
EDAS	6150	A study of administrative leadership for modern schools. Emphasis is on blending current theory and practice and examining the interaction among the organization and the internal and external environment.
EDAS	6200	Course addresses current Pre K-16 national and regional reform agendas, relating them to systemic changes in policies, governance and articulation of learner outcomes in local settings.
EDAS	6210	Issues of multicultural, cross-cultural, race, gender, ethnicity, inter-agency cooperation in school settings are examined in diverse settings - urban, suburban and rural, noting problems, concerns and common issues for leaders.
EDAS	6220	This course examines the administration of special programs that operate at the district and school level. These include special education, Chapter I, vocational education, guidance and athletic programs.
EDAS	6230	The unique role of school systems in the democratic social structure is examined through a theoretical critique of strategies that increase citizen involvement in and build support for schools.
EDAS	6240	Course introduces the theories, techniques and practices of planned organizational learning. Students examine the philosophical, theoretical and practical differences of organizational development as interventionist, consultative and collaborative processes.



EDAS	6320	The purpose of the course is to involve students in an analysis of the role and functions of school business management. Participants will analyze data in each topical area of school business management.
EDAS	6330	The purpose of the course is to examine the issues that arise before, during and after the collective bargaining process in the public sector, including resolving labor disputes and grievances.
EDAS	6350	This course allows the development for increased decision making based on local, state and national retrievable data concerning learning, achievement, efficiency and effectiveness of resource allocations.
EDAS	6360	Course provides insight into the purposes, policies and processes of personnel administration and contract administration in public education, including recruitment, hiring, induction, evaluation, compensation and development.
EDAS	6380	This course examines the issues surrounding planning, building and maintaining educational facilities appropriate for maximizing learning. Included is an examination of legal, health and safety requirements.
EDAS	6420	Course focus is on the day to day politics of school work that increase the complexities of educating. Using case studies and problem-based learning, students will practice skills that support democratic practices in school communities.
EDAS	6430	This course provides students a background in legislation and court decisions that affect the administration of public schools. Students will investigate legal problem areas in schools.
EDAS	6440	Analysis of educational finance and economic issues pertinent to school districts. Analysis of various funding models at the local, state and national level are studied employing various measures of equity.
EDAS	6900	Examination and reflection on the practice of research in Educational Leadership.
EDAS	6920	Open to graduate students who elect the completion of a research project in fulfilling the research requirements of the master's program.
EDAS	6960	Open to graduate students who elect the completion of a research thesis in fulfilling the research requirements of the master's program.
EDAS	6990	Open to graduate students who wish to pursue individual study on professional problems in EDAS under the direction of an EDAS faculty member.
EDAS	7920	Open to graduate students to fulfill the completion of a research project in fulfilling the research requirements of the specialist program.
EDAS	7950	Topical workshops, based on practical application of skills and knowledge, are intended for in-service educational professionals. Credit may be applied to doctoral degrees upon approval of the committee.
EDAS	7980	Courses, based on issues, topics and concerns of educational administrators for the real world. Credit may be applied to degree programs upon approval of the adviser or committee.



EDAS	7990	Individual study on professional problems in EDAS under the direction of a EDAS faculty member.
EDAS	8000	An overview of the individual in educational administration, i.e., as strategic leader, organizational leader, instructional leader and policy/community leader. Opportunities for personal assessment are provided as students explore critical educational issues.
EDAS	8010	An examination of those principles of supervision which promote improved instruction. Emphasis is on teacher performance evaluation, curriculum management and strategies for staff development to improve staff performance.
EDAS	8020	An in-depth analysis of instructional leadership to improve teacher classroom performance. Attention will focus on instructional analysis, strategies for providing feedback and writing professional growth plans.
EDAS	8030	An exploration of group dynamics/processes. Development of effective action plans to improve school climate/culture and the learning environment is explored using problem-based learning.
EDAS	8110	This course provides students an opportunity to analyze major topics and issues through which law influences education. Participants will examine the basic legal structure for education.
EDAS	8150	A study of administrative leadership for modern schools. Emphasis is on blending current theory and practice and examining the interaction among the organization and the internal and external environment.
EDAS	8190	Working in a guided reflective practice environment, the student will apply knowledge gained in previous coursework to working in school building operations.
EDAS	8200	Course addresses current Pre K-16 national and regional reform agendas, relating them to systemic changes in policies, governance and articulation of learner outcomes in local settings.
EDAS	8210	Issues of multicultural, cross-cultural, race, gender, ethnicity, inter-agency cooperation in school settings are examined in diverse settings - urban, suburban and rural, noting problems, concerns and common issues for leaders.
EDAS	8220	This course examines the administration of special programs that operate at the district and school level. These include special education, Chapter I, vocational education, guidance and athletic programs.
EDAS	8230	The unique role of school systems in the democratic social structure is examined through a theoretical critique of strategies that increase citizen involvement in and build support for schools.
EDAS	8240	Course introduces the theories, techniques and practices of planned organizational learning. Students examine the philosophical, theoretical and practical differences of organizational development as interventionist, consultative and collaborative processes.



EDAS	8300	This course analyses policies employed by schools and school districts in providing for education of students and services to the school community. On-site fieldwork is required.
EDAS	8310	Analysis of duties, roles and responsibilities of local school district leadership. Specific competencies of building school support, planning, curriculum development, personnel, legal, financial and planning are covered.
EDAS	8320	The purpose of the course is to involve students in an analysis of the role and functions of school business management. Participants will analyze data in each topical area of school business management.
EDAS	8330	The purpose of the course is to examine the issues that arise before, during and after the collective bargaining process in the public sector, including resolving labor disputes and grievances.
EDAS	8350	This course allows the development for increased decision making based on local, state and national retrievable data concerning learning, achievement, efficiency and effectiveness of resource allocations.
EDAS	8360	Course provides insight into the purposes, policies and processes of personnel administration and contract administration in public education, including recruitment, hiring, induction, evaluation, compensation and development.
EDAS	8380	This course examines the issues surrounding planning, building and maintaining educational facilities appropriate for maximizing learning. Included is an examination of legal, health and safety requirements.
EDAS	8420	Course focus is on the day to day politics of school work that increase the complexities of educating. Using case studies and problem-based learning, students will practice skills that support democratic practices in school communities.
EDAS	8430	This course provides students a background in legislation and court decisions that affect the administration of public schools. Students will investigate legal problem areas in schools.
EDAS	8440	Analysis of educational finance and economic issues pertinent to school districts. Analysis of various funding models at the local, state and national level are studied employing various measures of equity.
EDAS	8600	An analysis of leadership and organizational theory as influences on current thinking about and approaches to educational administration. Emphasis is on understanding dominant themes that impact administrative theory.
EDAS	8610	This course integrates the educational and management theories and knowledge bases on leadership, power, motivation and change to understand the internal and external dynamics of people in educational organizations.
EDAS	8620	This course examines the issues involved in policy formation and analysis along with the political process of public education. Local, intermediate, state and federal levels are considered.



EDAS	8640	Course explores processes and practices used by educators to redesign preK-12 educational systems to improve outcomes for students. Content examines processes of moving espoused organizational values to actionable knowledge. Organizational Development recommended.
EDAS	8650	Seminar focused on interdisciplinary examination of critical issues in educational administration. Multiple theoretical lenses from sociology, political science, economics and science are used to address educational issues.
EDAS	8660	Addresses the knowledge base school leaders must have to evaluate, use and initiate educational research in school settings. Students use action research to monitor implementation of researched ideas in schools. Quant. I and/or Qual. I (E) recommended.
EDAS	8930	The course examines research findings and research methodology in Educational Administration and Supervision as they are pertinent to development of dissertation proposals. Dissertation proposal development is encouraged.
EDAS	8940	An advanced field/seminar experience for doctoral students with fieldwork at the school system level. Fieldwork employs application of graduate coursework under supervision by the school system and the university.
EDAS	8960	Production of an original, scholarly product in the area Educational Administration and Supervision. Dissertation credit may total not less than 12 semester hours.
EDP	1550	Examines a variety of cognitive, affective and social factors associated with academic performance in college. Major emphasis is placed on applications to learning and college success.
EDP	3110	Focuses on selected research findings and theoretical principles on learning and individual differences. Considers relationships of this body of information to learning and performance in a variety of contexts.
EDP	3120	Reviews and analyzes principles, research findings, coping models, as well as personal and situational factors associated with coping and adaptational processes in a variety of life circumstances.
EDP	3200	Examination of the ways in which psychological principles can be applied to the planning and implementation of meaningful instruction in elementary and secondary classrooms.
EDP	3210	Students in early childhood education will be introduced to emotional, social and cognitive factors in child development (birth to age eight) and examine how teachers can create optimal environments for students.
EDP	3230	This course will examine concepts in the physical, cognitive, social, emotional and personality development of children and adolescents. It will provide a necessary background for future teachers to deal effectively with children and youth and to better understand the issues and problems they face. Integrated field and clinical experiences will provide contexts for these concepts as they are exemplified in the lives of young people.



EDP	3240	Students will consider the ways in which an understanding of development can be used to guide teacher behavior. Biological, social and psychological factors will be considered.
EDP	3250	The purpose of this course is to provide pre-service teachers with an understanding of the psychological principles of adolescent development and learning as well as the application of these principles to classroom instruction, assessment, and management. Students develop ways of thinking about teaching and learning in order to make informed decisions concerning various aspects of student learning and instruction. The course focuses on learning theories, cognitive development, personal and social development, achievement motivation, and diversity and their application.
EDP	3280	This course will focus on major conceptions of learning as applied to education, including basic principles of conditioning, information processing and social learning. Concepts such as designing instructional events, classroom management, student assessment and evaluation will be explored.
EDP	3290	This course will examine concepts delineating the physical (including genetic influences), cognitive, social and personality development across the life span. The course is designed to provide a necessary background in the concepts of development as they pertain to a life span orientation for students in special education. An emphasis will be placed on the application of developmental data issues and problems extant in working with special populations.
EDP	4120	Reviews a variety of models, constructs and methodologies for addressing behavior and discipline problems, especially within school and family settings. Emphases are placed on individual and group approaches to discipline.
EDP	4210	Examines the physical, cognitive, social, emotional and personality development of children. Provides helping professionals with background to identify and solve problems related to child growth and development.
EDP	4220	Examines the physical, cognitive, social, emotional and personality development of adolescents. Provides helping professionals with background to identify and solve problems related to adolescent growth and development.
EDP	4230	An overview of life-span development analyzing cognitive, physical, personality and social development from early adulthood through the later years.
EDP	4330	Theoretical and practical study of behavioral and cognitive approaches to behavior management. Students will design, develop, implement and evaluate management plans for themselves and others.
EDP	4990	]Directed study of a current topic in educational psychology. The student meets with the instructor at arranged intervals without formal classes.



EDP	5110	A graduate level introduction to the field of educational psychology. Instruction will cover fundamentals of learning, motivation, cognition, individual differences and instructional applications as well as a research-oriented approach to answering scientific questions.
EDP	5120	Reviews a variety of models, constructs and methodologies for addressing behavior and discipline problems, especially within school and family settings. Emphases are placed on individual and group approaches to discipline.
EDP	5210	Current theory and research on physical, cognitive, social, emotional and personality development are examined and used as the basis for identifying and solving problems related to child growth and development.
EDP	5220	Current theory and research on physical, cognitive, social, emotional and personality development are examined and used as the basis for identifying and solving problems related to adolescent growth and development.
EDP	5230	Emphasizes classical and modern theories of adulthood from a critical perspective, as well as applications of research on cognitive, physical, personality and social development from early adulthood through old age.
EDP	5310	Reviews emergent theory, principles and research findings on cognition and learning and applies these concepts to developing instructional experiences and conditions for optimizing classroom learning and performance.
EDP	5320	Theory and research in psychology that contributes to effective instruction. Topics include varieties and conditions of learning, information processing, learning analysis, constructivism, mastery learning, cooperative learning, norm & criterion-referenced measurement.
EDP	5330	Theory and research related to behavioral and cognitive approaches to behavior management. Students will carry out research-based behavior management projects requiring behavioral analyses, observation, program design, development and evaluation.
EDP	5950	Each workshop is developed around a topic of interest and concern to in-service teachers and other educational personnel. Practical application of workshop topics will be emphasized.
EDP	6130	Considers models, research methodologies and constructs on coping in relation to a range of circumstances during the adult years. Emphasis is placed on coping behavior within an ecological context.
EDP	6140	Graduate-level study of conceptions of motivation in various settings. Emphasis is on understanding major concepts and principles, as well on application to such settings as classroom, counseling and industry.
EDP	6150	This course aims to develop a broader understanding of the role of culture in psychological processes and the implications of such psychological understanding for a culturally diverse society.
EDP	6190	The collaborative study of a specific topic in educational psychology by a group of advanced students under the direction of one or more professors.



EDP	6240	Analysis and evaluation of theories of development with emphasis on the philosophical and psychological evolutionary history of the theories and their usefulness for individuals in the helping professions.
EDP	6250	Critical examination of theory and research on social behaviors such as attachment, aggression and prosocial behavior, including their causes, how they affect the person and how they change with age.
EDP	6260	Builds upon basic understanding of development through direct experiences in child study. This course provides individual/small group experiences in the design, implementation and written/oral presentation of original research.
EDP	6270	Analysis and evaluation of the research on parenting across a variety of sociocultural contexts.
EDP	6340	Intensive inquiry into the study of learning with particular emphasis on more recent theories. Theory application in a wide variety of settings will also be stressed.
EDP	6350	Theory and research on cognition related to learning/instruction, to include study of expertise, knowledge learned from experience, analysis of ill-structured domains, tacit knowledge, and knowledge representation.
EDP	6360	Analysis of theory and research about thinking and reasoning in school subjects and school learning.
EDP	6960	A formal, independent study culminating in a written discourse that advances our understanding of educational psychology.
EDP	6980	A formal, independent project applying principles of educational psychology to solve a particular problem and culminating in a written discourse.
EDP	6990	Directed study of a current topic in educational psychology. The student meets with the instructor at arranged intervals without formal classes.
EDP	7110	A graduate level introduction to the field of educational psychology. Instruction will cover fundamentals of learning, motivation, cognition, individual differences and instructional applications as well as a research-oriented approach to answering scientific questions.
EDP	7230	Emphasizes classical and modern theories of adulthood from a critical perspective, as well as applications of research on cognitive, physical, personality and social development from early adulthood through old age.
EDP	7310	Reviews emergent theory, principles and research findings on cognition and learning and applies these concepts to developing instructional experiences and conditions for optimizing classroom learning and performance.
EDP	7320	Theory and research in psychology that contributes to effective instruction. Topics include varieties and conditions of learning, information processing, learning analysis, constructivism, mastery learning, cooperative learning, norm & criterion-referenced measurement.



EDP	7330	Theory and research related to behavioral and cognitive approaches to behavior management. Students will carry out research-based behavior management projects requiring behavioral analyses, observation, program design, development and evaluation.
EDP	7950	Each workshop is developed around a topic of interest and concern to in-service teachers and other educational personnel. Practical application of workshop topics will be emphasized.
EDP	8130	Considers models, research methodologies and constructs on coping in relation to a range of circumstances during the adult years. Emphasis is placed on coping behavior within an ecological context.
EDP	8140	Graduate-level study of conceptions of motivation in various settings. Emphasis is on understanding major concepts and principles, as well on application to such settings as classroom, counseling and industry.
EDP	8150	This course aims to develop a broader understanding of the role of culture in psychological processes and the implications of such psychological understanding for a culturally diverse society.
EDP	8180	The proseminar will enable doctoral students to improve their understanding of the research process. Students will learn to ask research questions, choose alternative methodologies and interpret the validity of conclusions.
EDP	8190	The collaborative study of a specific topic in educational psychology by a group of advanced students under the direction of one or more professors.
EDP	8240	Analysis and evaluation of theories of development with emphasis on the philosophical and psychological evolutionary history of the theories and their usefulness for individuals in the helping professions.
EDP	8250	Critical examination of theory and research on social behaviors such as attachment, aggression and prosocial behavior, including their causes, how they affect the person and how they change with age.
EDP	8260	Builds upon basic understanding of development through direct experiences in child study. This course provides individual/small group experiences in the design, implementation and written/oral presentation of original research.
EDP	8270	Analysis and evaluation of the research on parenting across a variety of sociocultural contexts.
EDP	8340	Intensive inquiry into the study of learning with particular emphasis on more recent theories. Theory application in a wide variety of settings will also be stressed.
EDP	8350	Theory and research on cognition related to learning/instruction, to include study of expertise, knowledge learned from experience, analysis of ill-structured domains, tacit knowledge, and knowledge representation.
EDP	8360	Analysis of theory and research about thinking and reasoning in school subjects and school learning.



EDP	8960	A formal, independent study culminating in a written discourse that advances our understanding of educational psychology.
EDP	8990	Directed study of a current topic in educational psychology. The student meets with the instructor at arranged intervals without formal classes.
EDU	1000	Academic and student development course offering an introduction to College and University community. Offers strategies for successful transition to University environment by examining University resources, procedures, academic programs and advising.
EDU	1700	Exploration of purposes of schools in society, focusing on professionalism, standards & accountability, education for democracy, legal & organizational issues, diversity, and curriculum & instruction, as well as knowledge and dispositions required to be an effective teacher.
EECS	1000	Orientation to the facilities and procedures available to the student in the University, college and department. Introduction to the fields of Electrical Engineering and Computer Science and Engineering; group project design experience.
EECS	1010	Orientation to the University, college and departmental facilities, procedures and methodologies available to the student for the academic journey. Introduction to engineering design to EECS freshmen with emphasis on a semester long team-based design project.
EECS	1020	This course provides an introduction to various fundamental areas in Computer Science: hardware, software, computer programming, communications, application programs, theoretical limitations of computers and artificial intelligence. The course features a series of computer projects and use of the Internet.
EECS	1050	Covers the concept and properties of an algorithm, analysis and decomposition of computational problems, use of modern programming practices and application of the C/C++ language to problem solving.
EECS	1100	Number representation and Boolean Algebra. Combinational circuit analysis and design. K-map and tabulation methods. Multiplexers, decoders, adders/subtractors and PLD devices. Sequential circuit analysis and design. Registers, counters and recognizers.
EECS	1530	Covers the concept and properties of an algorithm, analysis and decomposition of computational problems, use of modern programming practices. Introduction to arrays and classes. Uses the C++ language.
EECS	1560	Introduces the basics of programming using the Java language. Covers number types, objects, methods, control structures, vectors, files, and inheritance. Utilizes the Java platform to develop GUI interfaces.
EECS	1570	This course looks at stacks, queues, and lists as well as the order of algorithms used to access and modify these structures. In addition recursion, hashing, sorting, and set representation are examined in depth.

EECS	1580	The data structures introduced in EECS 1570 are extended to include trees (binary, balanced, and n-ary), graphs, and advanced sorting techniques. In addition, the C++ language is used as the main vehicle and is introduced in the course. Students are expected to have a strong background in Java prior to this course.
EECS	1590	An introduction to the discrete structures used in computer science to develop software including proof techniques, Boolean logic, graphs, trees, recurrence relations and functions.
EECS	2000	Preparation for entry to the professions of Electrical Engineering and Computer Science and Engineering, including ethics and social responsibilities, employment practices, continuing education and professional registration. One hour lecture.
EECS	2100	Design of CPU, memory, I/O and arithmetic units. Assembly language programming: symbolic coding, macros and program segmentation. Use of interactive debuggers, utility programs and system I/O facilities.
EECS	2300	An introduction to electrical circuit components and laws, including ideal op-amps, DC circuit analysis, AC circuit analysis, transient analysis of RL and RC circuits and computer-aided circuit analysis.
EECS	2340	For students not majoring in EECS. An introduction to electrical circuit components and laws, resistive circuit analysis, AC circuit analysis, phasers, three-phase circuits and computer-aided circuit analysis.
EECS	2550	Examines the external and internal characteristics of computer operating systems and related software. Details of at least one operating system and comparison with other operating systems. An introduction to systems level programming.
EECS	3100	Microprocessor systems design: basic computer system, CPU, embedded assembly programming, memory and peripheral interfaces, I/O techniques, interrupt structures, DMA, memory management, hierarchies and caches.
EECS	3150	Analog and digital data transmission, transmission media, Modulation techniques. Data encoding, asynchronous and synchronous transmissions, USART, RS232-C, RS-449 standards. Data link configuration and control, error control, multiplexing and demultiplexing.
EECS	3200	Signals and system representation. Convolution and impulse response. Fourier series, Fourier transform and Laplace transform. State variable analysis of continuous and discrete systems. Digital computer simulation using MATLAB.
EECS	3300	Techniques for modeling and analysis of random phenomena in EECS, including communication, control and computer systems. Distribution, density and characteristic functions. Computer generation. Functions of random variables.

EECS	3400	Large-signal and incremental characteristics of the an diode, BJT, MOSFET and JFET. Large- signal analysis and computer simulation of devices and digital circuits. Logic gate implementation. Laboratory experiments and projects.
EECS	3420	Analog transistor, diode and integrated circuit analysis and design. Incremental analysis techniques, frequency response and feedback techniques.
EECS	3440	Laboratory experiments and projects in the testing and design of analog and mixed-signal electronic circuits.
EECS	3450	For students not majoring in EECS. An introduction to electrical engineering devices and techniques with an emphasis on applications. Topics include solid-state devices, amplifiers, digital logic circuits, transformers and AC and DC machines.
EECS	3460	Traditional and renewable electrical energy sources, principles of electromechanical energy conversion, magnetic circuits and transformers, steady state performance of synchronous machines, dc machines, single phase and three phase induction motors.
EECS	3480	Laboratory studies of power transformers, synchronous machines, DC machines, single and three phase induction motors.
EECS	3500	Examines formal models of computing (automata and grammars), computability and undecidability and language translation systems.
EECS	3550	An introduction to the Software Engineering process. Includes: the software lifecycle, user requirements, human-computer interaction, functional specification, software design, software tools, testing and modification. A major term project is assigned.
EECS	3700	Analysis of static electric and magnetic fields and steady currents, Faraday's law and time-varying fields. Maxwell's equations, propagation of electromagnetic waves in free space, lossy media and conductors. Transmission line theory.
EECS	3940	Approved co-op work experience. Course may be repeated.
EECS	3950	Approved co-op work experience beyond third required co-op experience. Course may be repeated.
EECS	3EL	
EECS	4000	Student teams select and research a design project and propose a design which is implemented, tested and evaluated. Progress reports, a written final report and an oral presentation are required. One hour lecture, one-hour recitation, 5 hours lab.
EECS	4110	Workload model, hardware and software monitors. Modeling and simulation of central server model with multiple disks, cyclic models, multiprogrammed interactive virtual memory model, product form solution. Case studies.

EECS	4130	The design of digital systems, design methodologies, hardware description language such as VHDL: behavioral-, data flow- and structural-level description of digital systems. Implementation technologies including PLDs and FPGAs.
EECS	4140	Faults testing in combinational and sequential circuits. Design techniques for fault tolerance in digital systems. Evaluation techniques. Fault masking and self-checking systems.
EECS	4150	Introduction to automotive electronic subsystems. Design of various electronic control units and in-vehicle networks. Laboratory multidisciplinary team projects in the design of control units, using state-of-the-art microcontrollers. Project presentation and discussion.
EECS	4160	Design of microcomputers at the system level. Buses for varying types of microcomputers in real-time and parallel processing. Software and hardware requirements for interprocessor communications. IEEE 488 and CAMAC standards buses.
EECS	4170	Programming applications in a real-time environment. C language is used to program various microcontroller functions, including timers, A/D and D/A converters, RS-232 communication and CAN networking.
EECS	4180	ISO/OSI layer models of computer networks. Review of the first two layers. Discussion of network, transport, session, presentation and application layers. Study of LANs and standards. Internetworking, routers and bridges.
EECS	4200	Feedback methods for the control of dynamic systems. Topics include characteristics and performance of feedback systems, state variable analysis, stability, root locus and frequency response methods and computer simulation.
EECS	4220	An introduction to programmable logic controllers (PLCs), process control algorithms, interfacing of sensors and other I/O devices, simulation and networking.
EECS	4240	Single line diagrams and per unit calculations, network matrices and Y-bus, load flow techniques, large system loss formula, real and reactive power dispatch, power system relays and protection.
EECS	4250	The concepts, theory and application of robotics. Topics include: arm geometry, kinematics and transformation matrices, motion kinematics, dynamics of industrial robots, trajectory planning and execution and control robotic systems.
EECS	4260	A general study of computer-aided design of control systems. Topics include: stability, compensation, pole placement, nonlinear systems and digital systems.
EECS	4290	Coupled rotating coils, primitive machines, machine winding transformations, state space modeling of dc, synchronous and three phase induction machines. Control schemes for dc, synchronous and three phase induction machines.



EECS	4320	Systems (cameras and other components) and techniques for machine vision (surface imaging). Nondestructive evaluation (internal inspection) of industrial materials and products, using ultrasound and radiographic systems. Contemporary applications.
EECS	4330	Imaging geometry, image filtering, segmentation techniques, image representation and description, stereo vision and depth measurements, texture analysis, dynamic vision and motion analysis, matching and recognition.
EECS	4340	Video work station components and display hardware; pyramid, pipeline, cellular logic and artificial neural net architectures for vision and image processing; real-time imaging; systolic implementation of image processing algorithms; current advances.
EECS	4360	Fourier transform applications in signal analysis and communication. Signals spectra, filtering, AM and FM modulation, noise and optimum receiver, sampling theorem, multiplexing, PCM, introduction to digital modulators and demodulators.
EECS	4370	Coding concepts, Huffman code, entropy analysis, channel and mutual information, channel capacity and Shannon's theorem, algebraic coding theory and application to blockcode and cyclic code, introduction to convolutional code.
EECS	4380	Discrete Fourier Transform (DFT), discrete convolution and correlation, Fast Fourier Transform (FFT) and its applications, design of IIR and FIR digital filters, multirate/channel digital systems, decimation and interpolation.
EECS	4390	Mobile radio propagation; the cellular concept; multiple radio access; multiple division techniques; channel allocation; mobile communication systems; existing wireless systems; network protocols; AD HOC and sensor networks; wireless LANS and PANS; recent advances.
EECS	4400	A comprehensive treatment of the theory and operation of physical electronic devices emphasizing electrical transport in metals and semiconductors and various models of BJT's and FET's.
EECS	4410	Introduction to laser physics, optics, optical waveguides, optical communication systems and electro-optics. Design of light processing and communication systems will be considered with emphasis on optics and optical communication.
EECS	4420	Analysis and design of active and passive microwave components and systems. Theory and design of transmission lines, solid state and electron beam devices will be considered.
EECS	4430	Laboratory introduction to microwave and millimeter wave hardware and high frequency measurement techniques.
EECS	4440	Introduction to antenna theory and design emphasizing engineering aspects of antenna systems. Dipole, loop and biconical antennas, arrays, broadband and aperture antennas will be considered.

EECS	4450	A general laboratory that provides experiences in several areas of electromagnetics and includes a special student project.
EECS	4460	Power system symmetrical components, fault analysis, transient stability analysis, transmission system modeling, distribution networks.
EECS	4470	Principles and techniques of analog active circuit design. Selected design problems are given and circuits using standard parts are designed and laboratory tested. A design notebook is kept.
EECS	4480	Electronic power switching circuits. Half-wave and full-wave rectification. Characteristics of power semiconductors. Phase-controlled rectifiers and inverters. Isolated and non-isolated dc-dc converters.
EECS	4490	Resonant dc-dc converters. DC-AC inverters and harmonic analysis. Variable-speed motor drives. Laboratory design and analysis of various electronic energy processing circuits.
EECS	4500	Fundamental concepts of modern programming languages. Differences and similarities between procedural, functional, object-oriented and rule-based languages are examined as well as their impact on the programming process.
EECS	4510	Design of translation systems including compilers and interpreters, grammars and parsing methods, error detection and correction schemes and optimization techniques.
EECS	4520	Pertinent concepts of systems programming. Topics covered include: synchronization, distributed programming models, kernel design, peripheral handling, file systems and security history and methods.
EECS	4530	An introduction to typical computer graphics systems and their operation. Interactive techniques will be introduced as well as representations and projections of three-dimensional images. Exercises using graphics equipment are assigned.
EECS	4540	Examines current topics related to realistic and representative 3D computer graphics. Topics include curve and surface geometry, solid modeling, ray tracing, radiosity and real-time computer graphics.
EECS	4550	An audio-visual experience in the design and production of multimedia products. Investigates computer-human interfaces, performance measurement and analysis, storage/retrieval of data, compression/decompression techniques.
EECS	4560	The following topics are covered: relational database modeling, query languages, design issues and implementation issues of databases. An appropriate database language is introduced and used to demonstrate principles.
EECS	4570	The emphasis of this course is on database recovery techniques, integrity constraints and concurrency control. The similarities and differences between distributed, networked, client/server and object-oriented database systems are also investigated.



EECS	4610	CMOS process technologies, CMOS logic families, custom and semi-custom design. Subsystem design of adders, counters and multipliers. System design methods and VLSI design tools.
EECS	4620	Memory categories, functions, architectures, cells and peripheral circuitry in CMOS/BiCMOS. Overview and technology trends in SRAMs, DRAMs, EPROMs, EEPROMs, FPGAs...Class exercises in selected small system circuit and layout design.
EECS	4630	VLSI design process automation and tools, mask level design, compaction, module placement, routing area partitioning, loose routing, channel routing and P/G and clock routing.
EECS	4710	Advanced topics in electromagnetic wave propagation in metals and dielectric waveguides, free space propagation in lossless and lossy media and good conductors, antennas and wave scattering will be considered.
EECS	4740	This course explores the topic of intelligent software agents with a emphasis on hands-on design of adaptive problem-solving agents for environments of increasing complexity ranging from single-agent computer games to complex real-world multi-agent environments.
EECS	4750	This course emphasizes learning algorithms and theory including concept, decision tree, neural network, computational, Bayesian, evolutionary, and reinforcement learning.
EECS	4760	Survey of computer security concepts: ethics and responsibility, OS, vulnerabilities and intrusion detection, viruses and worms, defensive strategies including secret/public key cryptosystems, firewalls and decoys.
EECS	4770	Hacking ethics, beneficial vs. malicious hacking, unconventional (extreme) programming techniques, casing networks and operating systems, exposing system vulnerabilities through penetration, collecting and analyzing digital evidence, forensic tools, case studies.
EECS	4780	Fundamentals of the quantum computing paradigm, data representation, quantum gates, quantum algorithms utilizing entanglement, teleportation, and super dense coding. Applications to cryptography, searching and simulation.
EECS	4810	An introductory treatment of the theory and operation of physical electronic devices, emphasizing electrical transport semiconductors and MOSFET's and application to nanotechnology.
EECS	4820	A comprehensive treatment of the theory and techniques associated with semiconductor nanotechnology and microfabrication of biomedical devices, sensors, MEMS, and microsystems.
EECS	4980	Pilot offerings of new courses involving emerging topics of interest are introduced using this number. One credit per lecture/recitation hour and/or 2.5 lab hours per week.



EECS	4990	Selected topics in electrical engineering or computer science and engineering. The instructor will specify the scope of the investigation and will meet regularly with the student(s). The study is expected to require an average of 3 hours student effort per week per credit.
EECS	5110	Workload model, hardware and software monitors. Modeling and simulation of central server model with multiple disks, cyclic models, multiprogrammed interactive virtual memory model, product form solution. Case studies.
EECS	5130	The design of digital systems, design methodologies, hardware description language such as VHDL, behavioral-, dataflow- and structural-level description of digital systems. Implementation technologies including PLDs and FPGAs.
EECS	5140	Faults testing in combinational and sequential circuits. Design techniques for fault tolerance in digital systems. Evaluation techniques. Fault masking and self checking systems.
EECS	5150	Introduction of automotive electronics and its various subsystems. Sensors and actuators, design of engine control unit, body control unit and vehicle control unit. Display and multiplexing systems.
EECS	5160	Design of microcomputers at the system level. Buses for varying types of microcomputers in real-time and parallel processing. Software and hardware requirements for interprocessor communications. IEEE 488 and CAMAC standards buses.
EECS	5170	Programming applications in a real-time environment. Applications programs in a multitasking environment. Examples from process control, robotics, signal analysis and multiwindow software.
EECS	5180	ISO/OSI layer models of computer networks. Review of the first two layers. Discussion of network, transport, session, presentation and application layers. Study of LANS and standards. Internetworking routers and bridges.
EECS	5220	Programmable Logic Controllers (PLCs), programming, sensors, process control algorithms, interfacing of sensors and other I/O devices, simulation and networking.
EECS	5240	Single Line Diagrams & Per Unit calculations, Network Matrices & Ybus for systems with uncoupled lines, Load Flow Techniques, Large system Loss Formula using Zbus, Real and Reactive Power Dispatch programming, Power systems relays & protection schemes.
EECS	5250	The concepts, theory and application of robotics. Topics include: arm geometry, kinematics and transformation matrices, motion kinematics, dynamics of industrial robots, trajectory planning and execution and control of robotic systems.
EECS	5260	A general study of computer-aided design of control systems. Topics include: stability, compensation, pole placement, nonlinear systems and digital systems.

EECS	5290	Coupled rotating coils, Primitive machines, machine winding transformations, State space modeling of dc, synchronous and 3-phase induction machines. Control schemes for dc motors, synchronous machines and 3-phase induction motors.
EECS	5320	Systems (cameras and other components) and techniques for machine vision (surface imaging). Nondestructive evaluation (internal inspection) of industrial materials and products, using ultrasound and radiographic systems. Contemporary applications.
EECS	5330	Imaging geometry, image filtering, segmentation techniques, image representation and description, stereovision and depth measurements, texture analysis, dynamic vision and motion analysis, matching and recognition.
EECS	5340	Study of the hardware and parallel implementation of various image processing and vision algorithms. Topics include components of a video work station; video display hardware; pyramid, pipeline, cellular logic and artificial neural net architectures for vision and image processing; real-time imaging; systolic implementations of image processing algorithms; current advances.
EECS	5360	Fourier transform applications in signal analysis and communication. Signals spectra, Filtering, AM and FM modulations, Noise and optimum receiver, Sampling theorem, Multiplexing, PCM Introduction to digital modulators and demodulators.
EECS	5370	Coding concepts, Huffman code, Entropy analysis, Channel and mutual information, Channel capacity and Shannon's theorems, Algebraic coding theory and application to block code and cyclic code, Introduction to convolutional code.
EECS	5380	Discrete Fourier Transform (DFT), Discrete convolution and correlation, Fast Fourier Transform (FFT) and its applications. Design of IIR and FIR digital filters, Multi-rate/channel digital systems, Decimation and Interpolation.
EECS	5390	Mobile radio propagation; traffic engineering; cellular concept; multiple radio access; multiple division techniques; channel allocation; mobile communication systems; existing wireless systems; network protocols; Ad Hoc and sensor networks; wireless LANS and PANS; recent advances.
EECS	5400	A comprehensive treatment of the theory and operation of physical electronic devices emphasizing electrical transport in metals and semiconductors and various models of BJT's and FET's.
EECS	5410	Laser physics, optics, optical waveguides, optical communication systems and electro-optics. Design of light processing and communication systems will be considered with emphasis on optics and optical communication.



EECS	5420	Analysis and design of active and passive microwave components and systems. Theory and design of transmission lines, solid state and electron beam devices.
EECS	5440	Introduction to antenna theory and design emphasizing engineering aspects of antenna systems. Dipole, loop and biconical antennas, arrays, broadband and aperture antennas will be considered.
EECS	5460	Fault analysis, Transient Stability Analysis, Transmission System modeling, Distribution Networks.
EECS	5470	Principles and techniques of analog active circuit design. Selected design problems are given; working circuits using standard parts are designed and laboratory tested. A design notebook is kept.
EECS	5480	Basic electronic power switching circuits. Half-wave and full-wave rectification. Characteristics of power semiconductors. Phase-controlled rectifiers and inverters. Isolated and non-isolated dc-dc converters.
EECS	5490	Resonant dc-dc converters. DC-AC inverters and harmonic analysis. Variable-speed motor drives. Laboratory design and analysis of various electronic energy processing circuits.
EECS	5500	The course investigates the fundamentals of modern programming languages. Differences and similarities between procedural, functional, object-oriented and rule-based languages are examined along with their impact on the programming process.
EECS	5510	The course includes: the design of translation systems including compilers and interpreters, grammars and parsing methods, error detection and correction schemes and optimization techniques.
EECS	5520	This course examines pertinent concepts of systems programming. Topics covered include: synchronization, distributed programming models, kernel design, peripheral handling, file systems and security history and methods.
EECS	5530	An introduction to typical computer graphics systems and their operation. Interactive techniques will be introduced as well as representations and projections of three-dimensional images. Exercises using graphics equipment are assigned.
EECS	5540	Examines current topics related to realistic and representative 3D computer graphics. Topics include curve and surface geometry, solid modeling, raytracing, radiosity and real-time computer graphics.
EECS	5550	An audio-visual experience in the design and production of multimedia products. Investigates computer-human interfaces, performance measurement and analysis, storage/retrieval of data and compression/decompression techniques.
EECS	5560	The following topics are covered: relational database modeling, query languages, design issues and implementation issues of databases. An appropriate database language is introduced and used to demonstrate principles.

EECS	5570	The emphasis of this course is on database recovery techniques, integrity constraints and concurrency control. The similarities and differences between distributed, networked, client/server and object-oriented database systems are also investigated.
EECS	5580	This course covers, more in breadth than in depth, the areas that artificial intelligence currently encompasses. Topics examined: history, reasoning, search techniques, knowledge representation, uncertainty and learning.
EECS	5610	CMOS process technologies. CMOS logic families. Custom and semicustom design. Subsystem design; adders, counters, multipliers. System design methods. VLSI design tools.
EECS	5620	Memory categories, functions, architectures, cells and peripheral circuitry in CMOS/BiCMOS. Overview and technology trends in SRAMs, DRAMs, EPROMs, EEPROMs, FPGAs. Class exercises in selected small system circuit and layout design.
EECS	5630	VLSI design process automation and tools. Mask level design. Compaction. Module placement. Routing area partitioning. Loose routing, channel routing, P/G and clock routing.
EECS	5740	This course explores the topic of intelligent software agents with a emphasis on hands-on design of adaptive problem-solving agents for environments of increasing complexity ranging from single-agent computer games to complex real-world multi-agent environments.
EECS	5750	This course emphasizes learning algorithms and theory including concept, decision tree, neural network, computational, Bayesian, evolutionary, and reinforcement learning.
EECS	5760	Survey of computer security concepts: ethics and responsibility, OS vulnerabilities and intrusion detection, viruses and worms, defensive strategies including secret/public key cryptosystems, firewalls and decoys.
EECS	5780	Fundamentals of the quantum computing paradigm, data representation, quantum gates, quantum algorithms utilizing entanglement, teleportation, and super dense coding. Application to cryptography, searching and simulation.
EECS	5920	Independent research project with intensive investigation into an area of practical interest to the student and the instructor.
EECS	5930	All graduate students are expected to attend the seminars and to prepare a report summarizing their experiences, questions and the impact of the seminar series. Students will also present their thesis and dissertation results.
EECS	6110	Architectural development in computer systems and scalability. Processors and arithmetic algorithms. Memory hierarchy, shared memory and cache architecture. Pipeline, superscalar and vector organization.

EECS	6120	Relative importance of performance and reliability. Fault-tolerance in computer systems. Techniques for reliability modeling and analysis. Markov and semi-Markov models. Queuing network models of computer systems. Performability modeling and analysis.
EECS	6130	Survey of computer architectures and languages that support parallelism. Analysis of algorithms for inherent parallelism. Issues surrounding the granularity of the parallelism. Mapping of parallel program structures to architectural topologies.
EECS	6140	Architectural synthesis, scheduling algorithms, resource sharing and binding, multiple-level combinational logic optimization and sequential logic optimization.
EECS	6150	High speed LANs and MANs. Performance analysis of Ethernet, token ring, token bus, FDDI, FDDI-II and DQDB protocols. WANS and their routing protocols. Flow control techniques in WANS.
EECS	6160	ATM overview and B-ISDN networks. ATM adaptation layer and ATM LANs. Issues in traffic management. Admission control and policing. Flow control, priority control and self-learning strategies.
EECS	6170	Petri Net structure, graphs and analysis. Modeling with Petri Nets. Software reliability modeling using Petri Nets and Markov chains. Comparison of software reliability models.
EECS	6200	Analysis and design of digital control systems by classical and state methods. Topics include: stability, pole placement, polynomial manipulation, quadratic optimal control and introduction to digital control system implementation.
EECS	6210	Schemes of adaptive control systems, MIT rule for Model Reference Adaptive Control, self Tuning regulator systems, Recursive Least Squares for system identification, Minimum Variance, PID and other controller design techniques for STR systems.
EECS	6220	The multiple input describing function. Random signals in nonlinear systems. The phase plane, equilibrium points, limit cycles and linearization methods. Liapunov stability theorems. Optimum switching systems. Selected applications.
EECS	6230	Optimization of dynamic systems by the calculus of variations and Pontryagin's Maximum Principle. Solution of optimal control problems using direct and indirect computational methods. Applications include constrained state and/or control parameters.
EECS	6300	Description and properties of random signals and their processing by optimal filters. Correlation and power spectra. GRP. Narrowband noise. Signal detection (matched filter) and estimation (Wiener and Kalman filters).
EECS	6310	Image digitization, image transforms, image enhancement, spatial and frequency domain filtering, image restoration techniques, inverse filtering, least square filtering, image interpolation and motion estimation, video filtering, superresolution.

EECS	6320	Multimedia information representation, Huffman, run length and arithmetic coding, predictive, transform, pyramid coding; vector quantization and subband coding; wavelet-based coding, data packetization, error resilience coding, multimedia compression standards, JPEG, MPEG coding.
EECS	6340	Introduction to detection and estimation and applications to the band pass signals, Binary and M-ary digital modulation techniques, Error-control convolutional coding, Trellis Coded Modulation (TCM), Spread Spectrum (SS) communication techniques.
EECS	6350	Digital transmission over Gaussian/non-Gaussian channels, Satellite systems (GEO and LEO) and multiple accesses, Cellular and satellite communication network, Mobile/wireless Personal communication services (PCS) and its networking.
EECS	6360	Knowledge representation, dealing with uncertainty in knowledge-based systems. Machine learning techniques for rule extraction.
EECS	6370	Bayes decision theory, parameter estimation and supervised learning, nonparametric techniques, linear discriminant functions, pattern recognition with neural networks, feed-forward networks, Hopfield and Kohonen networks, unsupervised learning and clustering.
EECS	6380	MATLAB is used to solve mathematical engineering. Reviews fundamental structural code elements, followed by case study solutions that illustrate MATLAB functionality. Individual/group projects reinforce understanding principles and methodologies.
EECS	6390	Communication network model-based performance evaluation methodology. Principles of stochastic processes in communication networks. Modeling and analysis of LANs, MANs, and WANs. Single class networks and Jackson networks. Multimedia network analysis.
EECS	6400	An advanced study of electrostatic and magnetostatic fields and associated boundary-value problems. Time varying fields, wave propagation, wave scattering and electromagnetic radiation will be considered.
EECS	6450	Cyclic steady-state analysis of the switching power converter using switching functions. Dynamic modeling of the switching converter as a discrete-time system and as a switching-period-averaged system.
EECS	6500	Covers: context-free languages and pushdown automata and their relationship with computer language implementation. Turing machines and U-recursive functions are examined. Uncomputability, the halting problem, computational complexity and NP-completeness are covered.
EECS	6520	This course investigates past and present trends in the design and implementation of operating systems. The unique requirements of real-time, highly reliable and distributed systems are addressed.
EECS	6530	This course studies theoretical and practical issues in concurrent programming. Topics include: mutual exclusion, the producer-consumer problem, the dining philosophers problem, semaphores, monitors, threads and the Ada model for multi-tasking.



EECS	6550	This course covers the software development steps of specification, requirements analysis and design in depth. Computer-human interfaces are also discussed.
EECS	6560	This course investigates issues in software engineering and human aspects of software engineering. Topics user interfaces, programming practices, documentation, programming environments, applications, empirical methods and physical aspects.
EECS	6600	Review of SPICE-based device models and analysis techniques. Bias and small signal design techniques in modern, low-voltage CMOS/BiCMOS. Op-amps, comparators and PLLs are emphasized; other topics as time permits.
EECS	6620	Design styles; static, dynamic, T-gate intensive; optimization of speed and robustness of selected CMOS/BiCMOS examples using SPICE-high fan in/fan out, I/O buffers, other Hi-C loads, sense amps, programming drivers, other examples as time permits.
EECS	6640	Wiring models. Lower bounds on routing quality metrics. Theory of locally optimal braking of cyclic vertical constraints. Genetic, neural and other advanced channel routing algorithms.
EECS	6660	Introduction to FPGA's. Programming technology. Logic block architectures. Routing architectures. FPGA based VLSI design. Design tools.
EECS	6810	A comprehensive treatment of the theory and operation of physical electronic devices emphasizing electrical transport in metals and semiconductors, various models of BJT's and FET's and applications to biochemical and biomechanical sensing will be considered.
EECS	6820	A comprehensive treatment of the theory, principles and techniques associated with microfabrication of electronic circuits and biosensors.
EECS	6900	Selected topics from current EE and CSE research with intensive investigation into recent literature in an area of mutual interest to the student and the instructor.
EECS	6960	Graduate research towards the completion of a Master's degree.
EECS	6980	Selected topics in the field of Electrical Engineering and Computer Science in areas of special interest to the class and the professor.
EECS	6990	In depth study of a selected topic of mutual interest to the student and the instructor.
EECS	8110	Architectural development in computer systems and scalability. Processors and arithmetic algorithms. Memory hierarchy, shared memory and cache architecture. Pipeline, superscalar and vector organization.
EECS	8120	Relative importance of performance and reliability. Fault-tolerance in computer systems. Techniques for reliability modeling and analysis. Markov and semi-Markov models. Queuing network models of computer systems. Performability modeling and analysis.

EECS	8130	Survey of computer architectures and languages that support parallelism. Analysis of algorithms for inherent parallelism. Issues surrounding the granularity of the parallelism. Mapping of parallel program structures to architectural topologies.
EECS	8140	Architectural synthesis, scheduling algorithms, resource sharing and binding, multiple-level combinational logic optimization and sequential logic optimization.
EECS	8150	High speed LANs and MANs. Performance analysis of Ethernet, token ring, token bus, FDDI, FDDI-II and DQDB protocols. WANS and their routing protocols. Flow control techniques in WANS.
EECS	8160	ATM overview and B-ISDN networks. ATM adaptation layer and ATM LANs. Issues in traffic management. Admission control and policing. Flow control, priority control and self-learning strategies.
EECS	8170	Petri Net structure, graphs and analysis. Modeling with Petri Nets. Software reliability modeling using Petri Nets and Markov chains. Comparison of software reliability models.
EECS	8200	Analysis and design of digital control systems by classical and state methods. Topics include: stability, pole placement, polynomial manipulation, quadratic optimal control and introduction to digital control system implementation.
EECS	8210	Schemes of adaptive control systems, MIT rule for Model Reference Adaptive Control, self Tuning regulator systems, Recursive Least Squares for system identification, Minimum Variance, PID and other controller design techniques for STR systems.
EECS	8220	The multiple input describing function. Random signals in nonlinear systems. The phase plane, equilibrium points, limit cycles and linearization methods. Liapunov stability theorems. Optimum switching systems. Selected applications.
EECS	8230	Optimization of dynamic systems by the calculus of variations and Pontryagin's Maximum Principle. Solution of optimal control problems using direct and indirect computational methods. Applications include constrained state and/or control parameters.
EECS	8300	Description and properties of random signals and their processing by optimal filters. Correlation and power spectra. GRP. Narrowband noise. Signal detection (matched filter) and estimation (Wiener and Kalman filters).
EECS	8310	Image digitization, image transforms, image enhancement, spatial and frequency domain filtering, image restoration techniques, inverse filtering, least square filtering, image interpolation and motion estimation, video filtering, superresolution.
EECS	8320	Multimedia information representation, Huffman, run length and arithmetic coding, predictive, transform, pyramid coding; vector quantization and subband coding; wavelet-based coding, data packetization, error resilience coding, multimedia compression standards, JPEG, MPEG coding.

EECS	8340	Introduction to detection and estimation and applications to the band pass signals, Binary and M-ary digital modulation techniques, Error-control convolutional coding, Trellis Coded Modulation (TCM), Spread Spectrum (SS) communication techniques.
EECS	8350	Digital transmission over Gaussian/non-Gaussian channels, Satellite systems (GEO and LEO) and multiple accesses, Cellular and satellite communication network, Mobile/wireless Personal communication services (PCS) and its networking.
EECS	8360	Knowledge representation, dealing with uncertainty in knowledge-based systems. Machine learning techniques for rule extraction.
EECS	8370	Bayes decision theory, parameter estimation and supervised learning, nonparametric techniques, linear discriminant functions, pattern recognition with neural networks, feed-forward networks, Hopfield and Kohonen networks, unsupervised learning and clustering.
EECS	8390	Communication network model-based performance evaluation methodology. Principles of stochastic processes in communication networks. Modeling and analysis of LANs, MANs, and WANs. Single class networks and Jackson networks. Multimedia network analysis.
EECS	8400	An advanced study of electrostatic and magnetostatic fields and associated boundary-value problems. Time varying fields, wave propagation, wave scattering and electromagnetic radiation will be considered.
EECS	8450	Cyclic steady-state analysis of the switching power converter using switching functions. Dynamic modeling of the switching converter as a discrete-time system and as a switching-period-averaged system.
EECS	8500	Covers: context-free languages and pushdown automata and their relationship with computer language implementation. Turing machines and U-recursive functions are examined. Uncomputability, the halting problem, computational complexity and NP-completeness are covered.
EECS	8520	This course investigates past and present trends in the design and implementation of operating systems. The unique requirements of real-time, highly reliable and distributed systems are addressed.
EECS	8530	This course studies theoretical and practical issues in concurrent programming. Topics include: mutual exclusion, the producer-consumer problem, the dining philosophers problem, semaphores, monitors, threads and the Ada model for multi-tasking.
EECS	8550	This course covers the software development steps of specification, requirements analysis and design in depth. Computer-human interfaces are also discussed.
EECS	8560	This course investigates issues in software engineering and human aspects of software engineering. Topics user interfaces, programming practices, documentation, programming environments, applications, empirical methods and physical aspects.



EECS	8600	Review of SPICE-based device models and analysis techniques. Bias and small signal design techniques in modern, low-voltage CMOS/BiCMOS. Op-amps, comparators and PLLs are emphasized; other topics as time permits.
EECS	8620	Design styles; static, dynamic, T-gate intensive; optimization of speed and robustness of selected CMOS/BiCMOS examples using SPICE-high fan in/fan out, I/O buffers, other Hi-C loads, sense amps, programming drivers, other examples as time permits.
EECS	8640	Wiring models. Lower bounds on routing quality metrics. Theory of locally optimal braking of cyclic vertical constraints. Genetic, neural and other advanced channel routing algorithms.
EECS	8660	Introduction to FPGA's. Programming technology. Logic block architectures. Routing architectures. FPGA based VLSI design. Design tools.
EECS	8810	A comprehensive treatment of the theory and operation of physical electronic devices emphasizing electrical transport in metals and semiconductors, various models of BJT's and FET's and applications to biochemical and biomechanical sensing will be considered.
EECS	8820	A comprehensive treatment of the theory, principles and techniques associated with microfabrication of electronic circuits and biosensors.
EECS	8900	Selected topics from current EE and CSE research with intensive investigation into recent literature in an area of mutual interest to the student and the instructor.
EECS	8960	Graduate research towards completion of a doctoral degree.
EECS	8980	Current topics in the field of Electrical Engineering and Computer Science in areas of special interest to the class and the professor. Students will be expected to complete a written project based on a review of the research literature of the area covered in this course.
EECS	8990	In depth study of a selected topic of mutual interest to the student and the instructor.
EEES	1010	Introduction to classification and origins of rocks and minerals, surficial processes and landscape development, groundwater and other natural resources, geologic structures, earthquakes and the earth's interior, plate tectonics and geologic time. No credit if EEES2100 is taken. Natural sciences core course.
EEES	1020	Identification of rocks and minerals. Study of the Earth's surface features and geologic structures through the use of topographic maps and aerial photographs.
EEES	1030	Study of rock and fossil records to discover their tabulation of physical and biological earth history. Three hours lecture, laboratory (GEOL 1040) is optional. Offered as writing intensive.
EEES	1040	Geologic maps and fossil assemblages are studied to interpret earth history and environments of deposition of sedimentary rocks. Two hours lab weekly.



EEES	1050	Introduction to risk mitigation involving hazardous geological processes and materials: volcanic eruptions, earthquakes, floods, ground subsidence and collapse, radon, asbestos and others.
EEES	1130	Evaluation of environmental controversies using ecology, economics and human values. Issues range from global change, overpopulation, food production, pollution, disease, endangered species, to unique habitats including rainforests and coral reefs. (not for credit in the major)[Fall, Spring]. Natural Sciences core course.
EEES	1140	Basic scientific methods are used to conduct laboratory and field studies relevant to contemporary environmental problems.
EEES	1150	An exploration of life in the world's oceans, emphasizing how marine organisms thrive in broadly diverse environments. Topics include the major ocean habitats, and ecological relationships among associated flora/fauna.
EEES	1160	This course centers on the importance of plants to our planet. Includes an introduction to botany and discussion of plants that provide food, materials, spices, medicines, drugs and poisons. (not for major credit)
EEES	1170	This course describes how microbes impact everyday life in areas including food safety, agriculture and bioterrorism. Natural Sciences core course.
EEES	2010	Introduction to issues currently affecting environmental quality. Fundamental scientific concepts relating to those issues and ethical, economic, legal and political considerations that affect the resolution of environmental problems.
EEES	2100	Consideration of earth materials and the dynamic external and internal processes active on earth; the physical and biological history of the earth. Intended for science majors.
EEES	2150	Examination of the diversity of life on earth and its evolution, systematic and behavior; the structure of ecosystems and concepts of population and community ecology.
EEES	2160	Laboratory exercises designed to complement the material covered in EEES 2150.
EEES	2200	An overview of the understanding of climate change and role of human activities, including atmospheric processes, greenhouse effect, carbon cycling, physical evidence, impacts, and proposed global actions in response.
EEES	2210	Crystallization and stability of minerals in the geologic environment. Systematic classification and identification of silicate and non-silicate minerals.
EEES	2220	Megascopic identification and classification of igneous, sedimentary and metamorphic rocks. Rock origins, including plate tectonic settings, are also discussed. Two hours lecture, two hours laboratory.

EEES	2230	The morphology and paleoecology of fossil taxa, significant strata, and tectonic events important to the interpretation of paleoenvironments and Earth history are stressed. Field trip(s) required.
EEES	2400	Physical, chemical, geological and biological nature of oceans and ocean basins. Ocean resources, circulation, climate and the hydrologic cycle. Fresh water resources and resource management.
EEES	2500	Desktop computers used by scientists: word processing, spreadsheets, databases, e-mail and world-Wide Web, table digitizer, processing GPS and data logger files, contour and mapping software.
EEES	2900	Individual presentation and discussion of topics in the environmental sciences appropriate for students interested in environmental sciences but with little or no formal background in the discipline.
EEES	2980	A lower division undergraduate course covering some aspect of environmental sciences not covered in the formal course offerings of the department. Students may repeat the course for different topics.
EEES	2990	Student selects an appropriate approved subject for individualized study and prepares a report or gives equivalent evidence of mastery of the selected subject.
EEES	3000	Study of regional geology of the U.S., focusing on national parks and monuments with the aim of furthering the student's geological knowledge and encouraging visitation as a tourist.
EEES	3030	Instruments and methods for geo-referencing environmental field investigations. GPS, electronic total station, aerial photographs and maps. Organizing an environmental database for use with GIS (ArcView). Field trips.
EEES	3050	The structure, function and regulation of populations, communities and ecosystems, emphasizing human activities and their ecological consequences.
EEES	3060	Laboratory and field exercises demonstrating ecological principles.
EEES	3100	Description and study of the earth's surface features from the point of view of their origin, including landforms created by volcanism, tectonics and erosional/depositional processes. Field trip required.
EEES	3200	Introduction to depositional processes and environments of sediments; stratigraphic relationships of sedimentary rock.
EEES	3210	Mineralogy: Rock-forming mineral characteristics, identification and geologic environments of formation. Igneous and Metamorphic Petrology: Igneous and metamorphic rock characteristics, origins, classification and interpretation of conditions of formation.
EEES	3220	Megascopic description of sediments and sedimentary rocks, including their characteristics, classification and diagenesis; introduction to depositional processes and environments of sediments, and stratigraphic relationships of sedimentary rocks.

EEES	3250	Application of geologic principles to engineering practices (dams, tunnels, drainage, foundations and water supply). Labs stress rock and mineral identification, quality control tests in engineering design and construction using rock.
EEES	3310	Rock deformation and its expression on maps; applying geometrical and trigonometric principles to solve problems involving dipping strata; stereonet applications, interpreting geological maps, constructing cross sections, geological GIS applications.
EEES	3320	Descriptive analysis of rock structures, with emphasis on relationship to regional tectonics; term paper or field trip required.
EEES	3900	Survey and analysis of environmental issues featuring guest experts from a variety of environment-related occupations, readings from the environmental literature and student reports.
EEES	3EL	
EEES	4000	Biologic and stratigraphic significant taxa of invertebrate fossils, principles of taxonomy, morphology and paleoecology. Paleoenvironmental use of fossils. Field trip required.
EEES	4010	Principles of optical crystallography, training and use of the petrographic microscope; classification, occurrence, petrogenesis and petrography of igneous, metamorphic and sedimentary rocks. Two hours lecture, two hours laboratory.
EEES	4100	To understand glaciers and glacial landscapes. Topics include mass balance, ice flow, hydrology, erosion, deposition, landforms, glacial lakes and development of the Ohio glacial landscape. Field trip is mandatory.
EEES	4150	The modern theory of evolution presented within a framework of theoretical genetics and population biology; phylogeny and evolution of the vertebrates.
EEES	4200	To provide understanding of such cyclical events as climate change, sea level fluctuations, vegetation change and ice sheet paleogeography during the Quaternary Period and to explore future changes for planet Earth.
EEES	4220	Chemical reactions of environmental concern. Water and soil chemistry related to contaminant fate and mobility. Petroleum formation, migration and accumulation in the subsurface. Computer software used.
EEES	4240	Basic principles of soil formation, physics, chemistry and biology with emphasis on their influence on fluid and chemical migration and preservation of soil quality from geological, agricultural and environmental perspectives.
EEES	4250	Underlying concepts and theory of modern soil ecology will be reviewed including spatial and temporal distributions, sampling methods, biogeochemical cycles and ecological functions of soil. (Spring, alternate years, odd)
EEES	4260	Laboratory exercises designed to complement the material covered in EEES 4250.



EEES	4300	Introduction to the principles and methodology of plant taxonomy with particular attention to the native plant species.
EEES	4330	Ecology, systematic and conservation of the vertebrates, with special emphasis on forms native to North America.
EEES	4400	Compares environmental impacts of alternative energy with environmental impacts of conventional energy. Identifies obstacles to implementing various sustainable energy technologies and ways to mitigate negative impacts of alternative energy.
EEES	4410	Fundamentals of groundwater flow and geological controls, including applications to water resource evaluation, utilization, chemical characterization, contaminant transport and geological processes.
EEES	4450	Environmental regulations concerning hazardous waste, characteristics of hazardous waste and disposal technologies, toxicology, characteristics of organic chemicals and heavy metals, biodegradation, soil science, groundwater contamination, risk assessment, site investigation.
EEES	4510	The diversity of microbial life and activities, the functioning of microbial ecosystems in energy and carbon flow and remediation of polluted environments, and the detection and control of pathogens.
EEES	4520	The environmental fate and transport of contaminants; their transformation and biodegradation by plants and microorganisms; bioremediation strategies, including solid phase, slurry phase, and vapor-phase treatments, and natural attenuation.
EEES	4530	Course describes the process of phytoremediation with references to both physiological modes of uptake and transformation of contaminants to field applications.
EEES	4540	Students will learn the underlying processes that drive microbial population structure and function in the environment and become familiar with classical and current methodology used in microbial community analysis.
EEES	4550	Student will learn the classical and current methodologies (biochemical and molecular) used in microbial community analysis while developing an understanding of experimental design sample handling and data analysis.
EEES	4610	Survey of theory, field applications, interpretation principles of solid earth and exploration geophysics. Two hours lecture, three hours methods laboratory.
EEES	4620	Electrical resistivity, electromagnetic conductivity, magnetometer and seismic methods are used to investigate subsurface structures and characterize materials concealed under the earth's surface.
EEES	4630	Numerical filters and matrix operations used to process potential field data and wave forms, isolating anomalies and signals of interest; derivative maps, upward and downward continuation; current interpretation software. Term project.
EEES	4640	Weekly field experiments Friday mornings (10 weeks in fall; or 5 weeks in spring) covering a variety of geology topics to simulate professional activity and strengthen concepts. Junior standing required.



EEES	4650	Intensive field studies in the Black Hills, South Dakota and Wyoming; stratigraphic section measuring, geologic mapping and interpretation and other field methods in geology.
EEES	4720	Major freshwater invertebrate taxa are covered. The focus is the interaction of individual invertebrates with their biotic and abiotic environment with emphasis on community and ecosystem level interactions.
EEES	4730	The biology of populations, communities and ecosystems with emphasis on aquatic environments. Includes the application of principles and theory from aquatic ecology to help understand and solve management problems in aquatic systems.
EEES	4740	Laboratory exercises on the biology of aquatic populations, communities and ecosystems.
EEES	4750	The application of principles of ecology, biogeography, genetics, economics, philosophy and other disciplines to the study and maintenance of biological diversity in temperate, subtropical and tropical systems.
EEES	4760	Emphasis will be placed on ecological patterns, processes and management applications at multiple spatial and temporal scales.
EEES	4770	Students will visit freshwater habitats, collect and identify freshwater invertebrate taxa, and conduct an independent project.
EEES	4790	Field trip to a major ecosystem of a region other than northwestern Ohio. Includes analysis of structural and functional relationships within and between ecosystems, with opportunities for individual student projects.
EEES	4800	Study of how form (morphology, anatomy) and function (physiology, metabolism biophysics) affect plant ecology. Laboratory emphasizes experimentation and introduction to techniques. Lecture includes reading and written critiques of scientific literature.
EEES	4900	Individual presentation and discussion of topics in the environmental sciences appropriate for juniors and seniors.
EEES	4910	Research under guidance of faculty member. An acceptable thesis is required for credit toward major.
EEES	4920	Survey of geology at a senior level using readings, class discussions and some lectures. The final exam will be one of the assessment vehicles of the department.
EEES	4940	Student gains up to 4 credits for relevant professional experience with an adviser-approved organization. Student must enroll during the term service is performed.
EEES	4980	An advanced undergraduate course covering some aspect of the environmental sciences not covered in the formal upper- division undergraduate curriculum. Students may repeat the course for different topics.
EEES	4990	Student selects an appropriate approved subject for individualized study and prepares a report or gives equivalent evidence of mastery of the selected subject.



EEES	5000	Invertebrate fossil taxa of biologic and stratigraphic importance; morphology, paleoecology, biostratigraphy of each taxon reviewed. Field project required.
EEES	5100	To understand glaciers and glacial landscapes. Topics include mass balance, ice flow, hydrology, erosion, deposition, landforms, glacial lakes and development of the Ohio glacial landscape. Field trip is mandatory.
EEES	5150	The modern theory of evolution presented within a framework of theoretical genetics and population biology.
EEES	5200	To provide understanding of such cyclical events as climate change, sea level fluctuations, vegetation change and ice sheet paleogeography during the Quaternary Period and to explore future changes for planet Earth.
EEES	5220	Chemical reactions of environmental concern. Water and soil chemistry related to contaminant fate and mobility. Petroleum formation, migration and accumulation in the subsurface. Computer software used.
EEES	5240	Basic principles of soil formation of physics, chemistry and biology with emphasis on their influence on fluid and chemical migration and preservation of soil quality from geological, agricultural and environmental perspectives.
EEES	5250	Underlying concepts and theory of modern soil ecology will be reviewed including spatial and temporal distributions, sampling methods, biogeochemical cycles and ecological functions of soil.
EEES	5260	Laboratory exercises designed to complement the material covered in EEES 5250.
EEES	5300	Principles of plant systematic stressing identification of local taxa; field trips.
EEES	5330	Ecology, systematic and conservation of the vertebrates, with special emphasis on forms native to North America.
EEES	5400	Compares environmental impacts of alternative energy with environmental impacts of conventional energy. Identifies obstacles to implementing various sustainable energy technologies and ways to mitigate negative impacts of alternative energy.
EEES	5410	Fundamentals of groundwater flow and geological controls, including applications to water resource evaluation, utilization, chemical characterization, contaminant transport and geological processes. Primarily for graduate students in environmental sciences, geology and engineering.
EEES	5450	Environmental regulations concerning hazardous waste, characteristics of hazardous waste and disposal technologies, toxicology, characteristics of organic chemicals and heavy metals, biodegradation, soil science, groundwater contamination, risk assessment, site investigation.
EEES	5510	Microbial diversity and activities in an applied environmental context. Topics include function of microbial ecosystems in energy and carbon flow, bioremediation, and the detection and control of pathogens.

EEES	5520	The environmental fate and transport of contaminants; their transformation and biodegradation by plants and microorganisms; bioremediation strategies, including solid phase, slurry phase and vapor-phase treatments, and natural attenuation.
EEES	5530	Course describes the process of phytoremediation with references to both physiological modes of uptake and transformation of contaminants to field applications.
EEES	5540	Students will learn the underlying processes that drive microbial population structure and function in the environment and become familiar with classical and current methodology used in microbial community analysis.
EEES	5550	Student will learn the classical and current methodologies (biochemical and molecular) used in microbial community analysis while developing an understanding of experimental design sample handling and data analysis.
EEES	5610	Survey of theory, field applications, interpretation principles of solid earth and exploration geophysics. Two hours lecture, three hours methods laboratory.
EEES	5620	Electrical resistivity, electromagnetic conductivity, magnetometer and seismic methods are used to investigate subsurface structures and characterize materials concealed under the earth's surface.
EEES	5630	Numerical filters and matrix operations used to process potential field data and waveforms, isolating anomalies and signals of interest; derivative maps, upward and downward continuation; current interpretation software. Term project.
EEES	5650	Intensive field studies in the Black Hills, South Dakota and Wyoming; stratigraphic section measuring, geologic mapping and interpretation and other field methods in geology.
EEES	5720	Major freshwater invertebrate taxa are covered. The focus is the interaction of individual invertebrates with their biotic and abiotic environment with emphasis on community and ecosystem level interactions.
EEES	5730	Advanced cross-disciplinary concepts in the ecology of aquatic environments emphasizing the biology of populations, communities and ecosystems. Includes a project on the application of principles and theory to help understand and solve a management problem in aquatic systems.
EEES	5740	Laboratory exercises on the biology of aquatic populations, communities and ecosystems.
EEES	5750	Advanced cross-disciplinary concepts in the application of principles and theory to the study and maintenance of biological diversity in temperate, subtropical and tropical systems. Lectures, classroom discussion and readings.
EEES	5760	This course is for graduate students from a variety of disciplines. Emphasis will be placed on up-to-date knowledge and methods in landscape analysis, pattern-process relationship and potential management applications at multiple spatial and temporal scales.



EEES	5770	Students will visit freshwater habitats, collect and identify freshwater invertebrate taxa, and conduct an independent project.
EEES	5790	Field trip to a major ecosystems of a region other than northwestern Ohio. Includes analysis of structural and functional relationships within and between ecosystem, with opportunities for individual student projects.
EEES	5800	Study of how form (morphology, anatomy) and function (physiology, metabolism biophysics) affect plant ecology. Laboratory emphasizes experimentation and introduction to techniques. Lecture includes reading and written critiques of scientific literature.
EEES	6100	To integrate glacial sedimentology and stratigraphy, with near-surface, geophysical methodologies. Field work to collect a variety of field data to analyze in the lab is mandatory. Data to be presented as posters.
EEES	6150	Programming the Excel spreadsheet using Microsoft Visual Basic for Applications (VBA); VBA programming language; controls, charts and objects; applications to geological and environmental science. Two hours lecture, two hours laboratory.
EEES	6200	The course is geared towards in-service teachers. Teachers will explore four natural events affecting the earth as a system, using inquiry-based learning and lesson plan development.
EEES	6400	Application of statistical tools to sampling and measurement in biology and testing of hypotheses. Computer lab is included.
EEES	6430	Hydrology and hydraulics of surface water such as rainfall/runoff, infiltration, precipitation, evaporation and stream flow.
EEES	6440	Groundwater contaminant sources, impacts, transport, geochemistry and remediation in relation to geological environments with attention to sampling, detection, characterization, modeling and aquifer protection.
EEES	6450	Applications of hydrogeological monitoring, analyses and modeling using mathematics, statistics and computers. Subjects include: well field and pump test design, sampling strategies, data presentation and analysis and modeling fundamentals.
EEES	6500	Application of multivariate statistical methods to scientific data. Emphasis is on applied regression, cluster, principal components, factor, correspondence, canonical correlation and discriminant analyses.
EEES	6540	A generic materials science approach to the study of crystalline structure, defects (point, line and planar) in crystalline materials and the mechanisms and kinetics of diffusion in the condensed state.
EEES	6550	A materials science approach to the thermodynamics of condensed state equilibria and phase transformation kinetics.
EEES	6600	An overview of the development of ecological concepts for beginning graduate students. Readings and discussion focus on classic papers and historical essays.
EEES	6610	Discussions dealing with current problems in the biology of populations, communities and ecosystems.



EEES	6650	Statistical modeling techniques of factorial design and regression applied to environmental problems.
EEES	6660	This course is for graduate students who are interested in the biophysical environment, energy flows and microclimate. Emphasis will be placed on hands-on experience and discussion on current literature.
EEES	6800	Technology and techniques for determining locations and elevations during field surveys; transferring field measurements to a digital database; total station, GPS and other tools used in ecological and geological research.
EEES	6810	This course will familiarize students with technical and persuasive aspects of scientific text preparation. Writing exercises will focus on basic manuscript formatting for journal submission and grant proposals.
EEES	6930	Individual presentation and discussion of papers in the environmental sciences.
EEES	6960	Research on a particular geologic problem leading to a written thesis which must be presented and defended before a faculty committee.
EEES	6980	A graduate course covering some aspect of environmental sciences not covered in the formal graduate curriculum. Students may repeat the course for credit as topics vary.
EEES	6990	Student selects an approved subject for individual study and prepares a detailed report, or gives equivalent evidence of mastering of the selected subject. Taken only as S/U.
EEES	7150	The modern theory of evolution presented within a framework of theoretical genetics and population biology.
EEES	7300	Principles of plant systematic stressing identification of local taxa; field trips.
EEES	7330	Ecology, systematic and conservation of the vertebrates, with special emphasis on forms native to North America.
EEES	7730	Advanced cross-disciplinary concepts in the ecology of aquatic environments emphasizing the biology of populations, communities and ecosystems. Includes a project on the application of principles and theory to help understand and solve a management problem in aquatic systems.
EEES	7740	Laboratory exercises on the biology of aquatic populations, communities and ecosystems.
EEES	7750	Advanced cross-disciplinary concepts in the application of principles and theory to the study and maintenance of biological diversity in temperate, subtropical and tropical systems. Lectures, classroom discussion and readings.
EEES	7790	Field trip to a major ecosystems of a region other than northwestern Ohio. Includes analysis of structural and functional relationships within and between ecosystem, with opportunities for individual student projects.
EEES	8400	Application of statistical tools to sampling and measurement in biology and testing of hypotheses. Computer lab is included.



EEES	8500	Application of multivariate statistical methods to scientific data. Emphasis is on applied regression, cluster, principal components, factor, correspondence, canonical correlation and discriminant analyses.
EEES	8600	An overview of the development of ecological concepts for beginning graduate students. Readings and discussion focus on classic papers and historical essays.
EEES	8610	Discussions dealing with current problems in the biology of populations, communities and ecosystems.
EEES	8650	Statistical modeling techniques of factorial design and regression applied to environmental problems.
EEES	8660	This course is for graduate students who are interested in the biophysical environment, energy flows and microclimate. Emphasis will be placed on hands-on experience and discussion on current literature.
EEES	8800	Technology and techniques for determining locations and elevations during field surveys; transferring field measurements to a digital database; total station, GPS and other tools used in ecological and geological research.
EEES	8810	This course will familiarize students with technical and persuasive aspects of scientific text preparation. Writing exercises will focus on basic manuscript formatting for journal submission and grant proposals.
EEES	8930	Presentation on research or current literature by graduate doctoral students, faculty or guest speakers.
EEES	8960	Research on a particular problem leading a written dissertation that must be presented and defended before a faculty committee.
EEES	8980	Course covering some aspect of ecology not covered in the formal graduate curriculum. Students may repeat the course for different topics.
EEES	8990	Faculty-directed readings or projects in a specific area of ecology. Students may repeat the course for different topics.
EEES	WAC	
EET	1010	This course constitutes an introduction to electrical components, direct current circuit analysis, circuit theorems and basic electrical measurements. An introduction to sinusoidal waveforms, complex numbers, phasors and Pspice is also included.
EET	1020	This course involves transient analysis of first order, reactive DC circuits and steady state analysis of reactive circuits under AC conditions. Frequency response, three-phase analysis, oscilloscope usage and PSpice simulation methods are included.
EET	1410	Use of electrical and electronic symbols, familiarization with industry standards and codes and familiarization with different kinds of schematics and other electrical drawings. Course work performed on personal computers using CAD software.



EET	2010	Semiconductor devices and applications with emphasis on power supplies and amplifiers. AC/DC analysis of small-signal amplifiers using both bipolar junction and field effect transistors in various biasing configurations.
EET	2020	This course covers principles and applications of electronic circuits and devices such as oscillators, power supplies, thyristors regulators and op amps.
EET	2210	This course covers the fundamentals of digital logic circuits. Topics include number systems, logic gates, Boolean algebra, logic simplification, Karnaugh maps, adders, multipliers, multiplexers and decoders. Elementary digital circuits including flip-flops, counters, shift registers, memory devices, programmable logic devices and integrated circuits are also covered.
EET	2230	The study of machine and assembly language programming and circuit and system applications. Microprocessor architecture and organization are also presented.
EET	2410	A study of programmable controllers emphasizing program development, logic development and troubleshooting. Emphasis on relays, timers, counters, integer math and scan-dependent programming. Factory floor control concepts are stressed.
EET	2420	Provides an opportunity for freshman Computer Science and Engineering Technology students to gain laboratory experience with basic electrical instrumentation and basic computer components.
EET	2980	Student performs work on a specialized project of an advanced nature under the supervision of an Electrical Engineering Technology faculty member.
EET	3250	This course consists of analysis of electrical wave-forms and first order time domain circuits, transient analysis of reactive circuits using Laplace transforms, system transfer functions, Bode plots and the interpretations of Fourier series and transforms.
EET	3350	This course covers the design, analysis and applications of digital systems involving sequential circuits. Special attention is given to the formal analysis and design procedures for synchronous sequential logic circuits and bistable memory devices. Design projects focus on top-down design methodology using CAD tools and the VHASIC hardware description language.
EET	4150	This course emphasizes the design and analysis of transistor and integrated circuits using computer-aided engineering techniques.
EET	4250	This course covers microcomputer architecture and computer organizations. Topics include CPU interface design, system buses, interrupts, pipeline and parallel processing, computer arithmetic, input-output peripherals, memory management and multiprocessors. Data flow, hypercube and systolic architectures are also covered.



EET	4350	This course constitutes a study of AC-DC machines, including transformers, power transmission and the regulations governing them as specified by industry and the National Electrical Code.
EET	4450	This course is an introduction to industrial controls, including the PID control of closed-loop servo and process systems, with emphasis placed on the electronic circuits of the closed-loop sub-systems.
EET	4550	Use of programmable controllers and computers in factory automation. Topics included are process control, supervisory software, PLC networking, PLC/CNC integration, device configuration, use of programming software and PLC languages standards.
EFSB	3480	Course focuses on basics of using financial tools to create and analyze financial statements in new ventures and to understand the sources and management of capital for start-ups and growing businesses.
EFSB	3500	Course provides an extensive overview of issues and opportunities involved in starting new businesses. Focus is on the entrepreneurial environment and opportunities, technopreneurship, and the entrepreneurial mindset. (This course may not be taken with or after taking EFSB 3590).
EFSB	3590	A study of entrepreneurship and the process of starting and/or managing a new venture. Tools for developing and managing in all areas in a new or small business are applied in hands-on consulting with local companies and case analysis.
EFSB	4010	Advanced study of issues pertaining to family and entrepreneurial businesses. Issues of family psychology, growth strategies, financing, valuation, and harvesting the business are studied using hands-on consulting and case analysis.
EFSB	4940	Receive practical entrepreneurship experience working in a family or small business.
EFSB	4980	This course is designed to focus on current issues in entrepreneurship and family business.
EFSB	4990	Individually supervised study in Entrepreneurship and Family Business. Student must submit a proposal to be approved by the Program Advisor or Chair prior to enrolling in the course.
EFSB	6590	Course addresses the issues faced in starting a new venture, including the identification of new business opportunities and the effective and efficient evaluation of the economic feasibility of these opportunities.
EFSB	6690	Course addresses the entire technology commercialization process, from idea to market. A key feature of the course is a "strategic opportunity evaluation" of an actual early stage technology. (Prerequisite: EFSB 6590)
EFSB	6790	Course considers how potential entrepreneurial investments are evaluated, valued, structured, and enhanced. Primarily focuses on financing start-up and early stage firms, later stage investments, and buyouts. (Prerequisites: BUAD 6200 and EFSB 6590)



EFSB	6890	This course offers the unique opportunity to act as a consultant to entrepreneurial ventures. Students will provide analyses and recommendations to prospective entrepreneurs. (Prerequisites: EFSB 6590, EFSB 6690, and Permission of Instructor)
EMBA	5500	This course provides managers with the analytical foundations in economics, computer skills and statistical methods. Internet exercises prior to class meetings provide the basis for continuous discussions of current economic events.
EMBA	6010	
EMBA	6020	
EMBA	6100	An overview of the competitive challenge faced by firms in today's global setting.
EMBA	6120	This course develops the executive's appreciation, knowledge and understanding of different cultures and legal systems as they impact on operational management.
EMBA	6130	
EMBA	6140	Introduces the balance sheet, income statement, statement of retained earnings and statement of cash flows. Financial techniques, domestic and foreign markets are explored.
EMBA	6200	Executives assess their personal values, clarifying their personal goals and develop a career strategy. Identifying market opportunities and developing new businesses for today's technological and global environment are explored.
EMBA	6210	Introduces executives to specific analytical processes for identifying the ethical dilemmas frequently experienced in business, resolving them and then justifying the course of action selected from multiple ethical perspectives. These processes are essential for recognizing and understanding the ethical implications of complex and controversial problems in culturally diverse and competitive organizations. The course involves ongoing practice in ethical dilemma resolution in both group and individual formats involving various ethical scenarios.
EMBA	6220	Emphasizes the preparation and use of financial statements, accounting for international transactions and tax consequences of U.S. and international operatives. Managerial accounting and control systems are examined. Focuses on the tax consequences of selected transactions of both U.S. and international operations.
EMBA	6230	This course focuses on what it means to be market-oriented and provides individuals with a basic understanding of the market-based management practices needed to create superior customer value.
EMBA	6240	Studies the management of international financial activities, including financial planning and forecasting, capital budgeting and leasing, capital structure, working capital management, sources of funds, business valuation and risk management.



EMBA	6250	Executives learn to be visionary leaders by understanding how change, culture and strategy link to vision and mission. Also focuses on employee motivation, development and empowerment.
EMBA	6290	The goal of the capstone course is for each executive to finish an integrated business plan creating value for his or her sponsoring firm. Strategic planning tools are studied.
EMBA	6300	This course focuses on the strategic and technical challenges facing executives who want to take advantage of today's existing and emerging technological developments to enhance business opportunities. Best practices are reviewed and the focus is on how executives can manage technology across functions to best achieve competitive advantage.
EMBA	6310	Examines how e-business models, information technology and globalization have changed supply chain design and management. Effective information management for decision making is explored.
EMBA	6320	This course is designed to provide an understanding of how new products/services and e-business initiatives are developed and managed and explores the tools and skills needed to manage these processes.
EMBA	6330	Strategies for integrating the customer centered areas of business (Sales, Marketing and Customer Services) to identify, attract and retain the best customers are discussed. Investigates customer relationship management.
EMBA	6470	Visit pace-setting firms with best practices in global business or e-business. The destination of the trip changes each year, may be international or domestic and takes 7-9 days.
EMBA	6980	Analysis of current issues in business, specialized industries, or specific markets. Syllabus determined jointly by EMBA office and faculty as special topics are identified.
EMBA	6990	Independent research report on a business topics of interest to the student and faculty member. Students must work with a professor on this project. Permission of Instructor required.
EMHS	1030	This course is required by the State of Ohio for persons employed by police, fire, EMS, industrial and office personnel who as part of their normal duties respond for request for emergency first aid. Student must hold current certification in CPR/AHA Health prior to course completion.
EMHS	1040	Topics covered include patient assessment, advanced airway management, bandaging/splinting. Adult, pediatric emergency medicine topics are covered. Successful completion leads to eligibility to sit for National Registry examination as EMT-B.
EMHS	2030	Roles and responsibilities of the EMT-P, including history and patient assessment techniques. Pathophysiology of shock, cardiac, renal and respiratory emergencies.



EMHS	2040	Clinical experiences are offered in patient assessment, airway management and venipuncture. Emphasis is on advanced assessment, ECG interpretation and skills needed to stabilize and manage critically ill patients.
EMHS	2050	Presentation of intubation, intravenous skills, patient assessment skills, airway and ventilation management skills.
EMHS	2060	A systems approach to multiple casualties incidents will be presented. Topics include planning, organization and control, triage principles and incident command procedures.
EMHS	2070	Advanced physician extender skills for the paramedic. Lecture and laboratory include advanced assessment, suturing, critical care techniques, 12-lead EKGs. The evolving role of paramedics in primary care will be discussed.
EMHS	2080	Integration of practice with current issues in EMS designed to blend field work with up-to-date knowledge base. Research project required.
EMHS	2160	Advanced techniques and knowledge required to manage trauma and pediatric patients is the major emphasis. Also discussed are obstetric and gynecological behavioral and environmental emergencies.
EMHS	2170	Clinical experiences emphasize the initial stabilization and management of the acutely ill and/or injured patient. A wide range of exposure to patients in hospital and in prehospital setting.
EMHS	2180	Presentation of trauma assessment and management skills. Including adult invasive airway procedures. Emergency childbirth skills presentation.
EMHS	2190	Clinical experience is offered providing concentrated experience in the prehospital care of the acutely ill/injured patient. Vehicle-based experience. Includes preparation for national certification examinations.
EMHS	2200	Integration of pathophysiological principles and assessment findings to formulate a field impression and implement treatment plan for neonatal, pediatric, geriatric patients and physically or mentally challenged, chronically ill patients.
EMHS	2210	Properly perform the various psychomotor skills utilized by paramedics. Evaluation of psychomotor skills. Preparation of students for the National Registry written and practical EMT-Paramedic examinations.
EMHS	2990	A course designed to provide educational opportunities in a specialized academic area under the direct supervision of a faculty member.
EMS	1200	An Emergency Medical Services (EMS) course that prepares students to provide medical care at the scene of an emergency. Completion of course makes student eligible for state certification.
EMS	1210	A course providing fundamental knowledge and training across the breadth of Emergency Medical Services (EMS). Completion of course makes student eligible for state certification.



EMS	1310	First three courses that provide training for students to become certified paramedics. The course covers roles, responsibilities, legal considerations, well-being, assessment, pharmacology, venous access, medication administration, EKG interpretation, assessment/management of cardiovascular emergencies. Prerequisite: Basic EMT certification.
EMS	1320	Second of three courses that provide training for students to become certified paramedics. This course covers obstetric and gynecological emergencies, childbirth and neonatology, assessment and management of both medical and traumatic situations that involve pediatrics, geriatrics, and adults.
EMS	1330	Third of three courses that provide training for students to become certified paramedics. This course completes all clinical and EMS internship requirements required by students to take the National Registry Practical examination for Parametric and affords certification in Advanced Cardiac Life Support and Pediatric Advanced Life Support.
ENGL	1020	Course work focuses on the major grammatical patterns of academic writing in English as well as accuracy in the mechanics of academic writing. The primary emphasis is on these features in the context of the students' own written work. Eligibility by placement exam only. A maximum of 3 semester hours in ENGL 1020 and 1120 may be counted toward fulfilling the 124 hour requirement for graduation.
ENGL	1100	Explanatory and persuasive writing in both personal and public genres; instruction and practice in generating, focusing, developing, researching and presenting ideas in ways consistent with one's subject, purposes and intended audiences. Placement through examination or portfolio evaluation. Students receiving a grade of C or better enroll in Composition II; those who receive No Credit enroll in Composition I. From Composition I with Workshop, Composition I and Composition II, no more than 6 hours apply toward graduation.
ENGL	1110	Explanatory and persuasive writing in both personal and public genres; instruction and practice in generating, focusing, developing, researching and presenting ideas in ways consistent with one's subject, purposes and intended audience. Placement through examination or portfolio evaluation or through completion of ENGL 1100 with grade of NC. (ESL students must have completed ENGL 1020 with grade of Pass. Students of ESL may be required to take ENGL 1120 as a co requisite.) From Composition I with Workshop, Composition I and Composition II, no more than 6 hours apply toward graduation.



ENGL	1120	The co requisite of ENGL 1120 is an ESL section of 1110. Graded PS/NC. Writing laboratory using students' writings from ENGL 1110 as well as other supplementary materials. May be required based on placement exam or ENGL 1020 final exam score. (Note: A student required to take this course who does not receive a PS cannot receive a passing grade in an ENGL 1110 taken concurrently.) Eligibility by placement exam only. A maximum of 3 semester hours in ENGL 1020 and 1120 may be counted toward fulfilling the 124 hour requirement for graduation.
ENGL	1130	Reading and analyzing the documents from multiple disciplines to synthesize results from different perspectives and produce disciplinarily appropriate writing. Web enhanced. Critical reading, research papers required.
ENGL	1140	Reading and analytical writing growing from the study of and participation in specific communities. Web enhanced. Critical reading, research papers required.
ENGL	1150	Reading and analyzing the ways languages construct identities through interactions of race, class, gender, sexual orientation, disability, age and religion. Web enhanced. Critical reading; research paper required.
ENGL	1930	Instruction and practice in writing technical reports and documents for the field of engineering. Students will compose on the computer.
ENGL	1EL	
ENGL	1EN	
ENGL	1EU	
ENGL	2010	Instruction and practice in writing expository and persuasive prose for a variety of audiences with particular attention to the effect of content and style upon readers.
ENGL	2710	Exploration of various kinds of fiction with goals of literary appreciation and analytical insight. (not for major credit)
ENGL	2720	Exploration of various kinds of drama with goals of literary appreciation and analytical insight. (not for major credit)
ENGL	2730	Exploration of various kinds of poetry with goals of literary appreciation and analytical insight. (not for major credit)
ENGL	2740	This course offers students an opportunity to study British literature in a lecture/discussion format. Lectures provide historical and critical background, while discussion sections provide in-depth study of individual works.
ENGL	2760	This course offers students an opportunity to study American literature in a lecture/discussion format. Lectures provide historical and critical background, while discussion sections provide in-depth study of individual works.
ENGL	2800	A writing-intensive (WAC) course introducing the process of writing various types of papers and analyzing literary works. Special emphasis on discovering a topic and on revision and structure in expository writing.



ENGL	2950	Instruction and practice in writing informational and analytical reports to varied audiences in medical, scientific or technical fields.
ENGL	2960	Instruction and practice in report writing within an organizational context. Emphasis on the analytical report based on research.
ENGL	2990	Supervised independent study in special topics.
ENGL	2EL	
ENGL	2EN	
ENGL	2EU	
ENGL	3000	A non-technical overview of the nature of human language, including issues relating to spoken and written language, language change and language development, and other aspects of language use in a variety of contexts.
ENGL	3010	A basic introduction to creative writing. Students write poems, stories or creative nonfiction which serve as the basis for classroom discussion and for conferences with instructor.
ENGL	3050	Analysis of and practice in the techniques of persuasive writing. Emphasis varies from writing about legal issues to writing about issues of public controversy.
ENGL	3060	This course involves practical analysis of screenplays, emphasizing story structure and characterization. Students plan, write and refine story lines before writing actual scripts.
ENGL	3080	This course examines all aspects of the printed book - from scrolls to Gutenberg to contemporary publishing - as students work towards designing, printing and binding a finely printed edition.
ENGL	3150	An introduction to modern linguistic theories about the nature and structure of language with emphasis on English.
ENGL	3250	A survey of the genre, giving special attention to differences in the British and American versions of the genre. Includes Poe, Doyle, Christie, Sayers, Hammett and Chandler. Recommended: ENGL 2700, 2710, or 2800.
ENGL	3260	A study, primarily for non-majors, of recent trends in American, British and Continental fiction. Recommended: ENGL 2710, 2800, or 3790.
ENGL	3280	A study of recent trends in contemporary poetry. Recommended: ENGL 2730, 2800, or 3790.
ENGL	3360	A course designed to enhance the student's appreciation and understanding of the art of poetry. Primarily for non-majors. Recommended: ENGL 2730, 2800 or 3790.
ENGL	3600	A study, primarily for non-majors, of selected American literary works such as "The Scarlet Letter," "Walden," "Leaves of Grass," "The American," "The Great Gatsby" and "The Bear." Recommended: ENGL 2710 or 2800.



ENGL	3610	Introduction to literary history, and the terminology and techniques of the historical study of British literature, intended as preparation for the English major. Texts may include works from the Medieval period to the 21st-century.
ENGL	3650	This course examines literary works of science fiction and fantasy, and related scholarship, from a variety of perspectives. Readings are selected from prominent writers in both genres.
ENGL	3710	A study of the Old Testament from the literary point of view, including ancient poetry, history, romance, short story, hymn, prophecy and wisdom writing. Recommended: ENGL 2800.
ENGL	3720	Study of classical and biblical mythologies in modern Western literature, private mythologies and literary adaptations of patterns from legend and folklore. Recommended: ENGL 2800.
ENGL	3730	A survey of the field of folklore with an emphasis on folk narrative, folk music and material culture in America. Recommended: Consent of instructor and/or Composition II.
ENGL	3740	A study in the relationship of oral and written literature. Focus is on the literary uses of folk forms and use of tradition by specific writers and schools. Recommended: ENGL 3730.
ENGL	3750	Offered as Writing Across the Curriculum (WAC) course. Examines literary works in light of major issues raised by feminist criticism. Specific emphasis varies. Recommended: ENGL 2800 or 3790.
ENGL	3760	The literary European heritage from its Biblical and Classical origins to the 16th century (in English translation). Includes such writers as Homer, Virgil and Dante. Recommended: ENGL 2800 or 3790.
ENGL	3770	This course examines texts and cultures from around the world (and in particular the non-western world). The genres examined include autobiography, poetry, short fiction, novels, plays and histories.
ENGL	3780	Continental European literature from the 17th to the early 19th century. (In English translation.) Includes such writers as Dostoyevsky, Baudelaire and Rilke. Recommended: ENGL 2800, or 3790.
ENGL	3790	Writing Across the Curriculum Course An overview and introduction to the discipline of literary study, its history, its methods, and its specialized languages. Humanities Core Course.
ENGL	3800	Writing Across the Curriculum course. Lecture/studio, utilizes Toledo Museum of Art collection. Origins of writing, letterforms, artist's books, medieval manuscripts, collaborations, journals, sketchbooks, writing about visual art, concrete poetry.
ENGL	3810	A careful examination of several of Shakespeare's plays and a rapid reading of others. Recommended: ENGL 2720, 2800 or 3790.
ENGL	3980	Group study of a period, genre, author or special literary topic. May be repeated with change of specialty number. Topics will be announced in the semester Time Schedules. Recommended: ENGL 2800 or 3790.
ENGL	3EL	



ENGL	3EN	
ENGL	3EU	
ENGL	4030	Directed study of nonfiction genres, rhetorical forms and elements of style; extensive practice in the writing and critical evaluation of prose.
ENGL	4060	For students familiar with the fundamentals of screenplays, this course devotes attention to writing a complete script. Students are expected to come to the class with a planned story line.
ENGL	4070	An advanced workshop in writing poetry emphasizing a wider range of readings, craft and technique.
ENGL	4080	An advanced workshop emphasizing a wider range of readings, craft and technique. May be repeated once for credit.
ENGL	4090	A study of current theory and research connecting reading, critical thinking and writing with applications of theory to students' writing practice.
ENGL	4100	Description of the changes that have taken place in the English language from the earliest days to the present.
ENGL	4110	A study of phonology, morphology and syntax with representative readings in verse and prose.
ENGL	4120	Study of the phonology, morphology and syntax of Middle English, with special attention to literary and cultural background. Representative readings in verse and prose.
ENGL	4130	A study of the major regional and social dialects of the United States, their origins and the methods of modern dialectology.
ENGL	4140	Focuses on the distinctive elements of African American Vernacular English, its historical origins, its sociocultural development, and its implications for pedagogy and language policy.
ENGL	4150	Focus on the methods of applied linguistics in the broad sense, including their use in studies of first and second language acquisition, language teaching, the teaching of reading and writing, and other related areas.
ENGL	4170	Focuses on theories of second/foreign language acquisition, especially, but not exclusively, as they relate to English as a Second Language.
ENGL	4200	The development and achievement of British fiction in the 18th Century, including Defoe, Richardson, Fielding, Smollett and Sterne. Recommended: ENGL 2710, 2800, or 3790.
ENGL	4220	The development and achievement of British fiction from Romanticism to the mid-19th Century, including Austen, Scott, early Dickens and Thackeray. Recommended: ENGL 2710, 2800, or 3790.
ENGL	4230	The development and achievement of British fiction in the later 19th century, including the later Dickens, Bronte, Eliot, Hardy and Trollope. Recommended: ENGL 2710, 2800, or 3790.
ENGL	4240	A study of the major trends in 20th century British fiction with particular emphasis on changes in technique and approach. Includes Woolf, Joyce, Lawrence and Conrad. Recommended: ENGL 2710, 2800, or 3790.



ENGL	4280	Major developments in content and form of the 20th-century American short story and novel. Writers studied include Hemingway, Faulkner, Fitzgerald and Steinbeck. Recommended: ENGL 2710, 2800 or 3790.
ENGL	4310	A study of the drama in England to the closing of the theaters, excluding Shakespeare but including Marlowe, Jonson and Webster. Recommended: ENGL 2710, 2800, or 3790.
ENGL	4340	A study of Western Drama from the 1870's to the 1930's. Special emphasis on Ibsen, Strindberg, Chekhov, Brecht, O'Neill, Beckett, Pinter and Shepard. Recommended: ENGL 2710, 2720, 2800, or 3790.
ENGL	4400	The study of British literature before 1500, often in translation. Topics vary and may include Anglo-Saxon, Norse, and Celtic literature; Norman, English, and Scots literature; or specific themes or genres. Recommended: ENGL 2800 or 3790.
ENGL	4420	Poetry and prose of the English Renaissance. Authors may include Spenser, Sidney, Shakespeare (nondramatic works), More, Raleigh, Queen Elizabeth I and others. Recommended: ENGL 2730, 2800, or 3790.
ENGL	4440	Poetry and prose from 1603 to 1660 and beyond, including such authors as Milton, Donne, Jonson, Herrick, Herbert, Bacon, Cary, Lanyer, Marvell and others. Recommended: ENGL 2730, 2800, or 3790.
ENGL	4460	Drama, poetry, and essays of the Restoration, neo-classical and pre-Romantic periods. Recommended: ENGL 2730, 2800, or 3790.
ENGL	4500	Study of major authors and genres of the Romantic period: approximately 1789 to 1837.
ENGL	4520	Study of major authors, genres and ideas of the Victorian period: approximately 1837 to 1901.
ENGL	4540	Twentieth century British poetry and criticism with particular attention to the works of Hardy, Woolf, Yeats, Lawrence, Auden and Thomas. Recommended: ENGL 2730, 2800, or 3790.
ENGL	4600	The poetry and theology of the New England Puritans, especially Bradstreet and Taylor, the literature of the American Enlightenment, the beginnings of American Romanticism in Bryant and Cooper. Recommended: ENGL 2800, or 3790.
ENGL	4620	This course focuses on the literature of the United States from the early nineteenth century through about 1865, with concentration on the literary production between 1840 and 1865. Recommended: ENGL 2800, or 3790.
ENGL	4630	American literature from the post-Civil War period to the early 20th Century, particularly the fiction of Twain, James, Howells and Stephen Crane; some attention to humor, "naturalism" (in Kate Chopin or Dreiser) and poetry. Recommended: ENGL 2710, 2800 or 3790.



ENGL	4640	Significant developments in American poetry 1900-50 from the perspective of other literary and intellectual movements; includes, among others, such major writers as Frost, Pound, Eliot, Stevens, H. Crane and Williams. Recommended: ENGL 2730, 2800, or 3790.
ENGL	4650	A survey of African-American prose, poetry, drama and fiction from 1760 to 1915. Recommended: ENGL 2800, or 3790.
ENGL	4660	Study of the literary achievement of major African-American writers beginning with DuBois and ending with Gwendolyn Brooks and Ed Bullins. Recommended: ENGL 2800, or 3790.
ENGL	4680	The postwar literary sensibility in poetry and fiction; the influence of existentialism and naturalism; includes such writers as Albee, Barthelme, Bellow, Lowell, Plath and Updike. Recommended: ENGL 2800, or 3790.
ENGL	4690	Native American literature interrogates a selection of texts by and about Native Americans, including the oral traditions of storytelling and mythology.
ENGL	4730	World Cinema focuses on the question of representation across cultures in terms of the relations between film, its subjects and the camera.
ENGL	4750	Historical development of folk narrative in the form of ballads from England and America. Development of the Blues as an American form of folk lyric.
ENGL	4780	A comparative study of the principles of literary criticism, including readings from representative critics of all ages, and of basic aesthetic theories underlying the major approaches to literature. Recommended: ENGL 2800, or 3790.
ENGL	4800	A study of Chaucer's major works and historical contexts, with emphasis on Troilus and Criseyde and the dream visions or on The Canterbury Tales in their entirety. Recommended: ENGL 2730, 2800, or 3790.
ENGL	4810	A study of Shakespeare's plays with emphasis on his development as a dramatist. Recommended: ENGL 3810.
ENGL	4820	A study of the poetry and selected prose of Milton. Recommended: ENGL 2730, 2800, or 3790.
ENGL	4850	Author changes with each offering. Consult Time Schedules for authors to be studied. Recommended: ENGL 2800, 3790.
ENGL	4860	Author changes with each offering. Consult Time Schedules for authors to be studied. Recommended: ENGL 2800, or 3790.
ENGL	4870	Literary seminar/writing workshop in which students formulate critical judgments, polish, and synthesize knowledge and skills gathered in the course of the major.
ENGL	4880	Focused study of a significant literary theme, topic, or group of writings. Course work normally includes concentrated reading, discussion and a substantial writing project.



ENGL	4890	Focusing on a single topic which varies term-by-term, this capstone course offers students the opportunity to demonstrate the ability to write in a variety of genres, e.g. personal essay, poem, documented paper, reportage.
ENGL	4900	The Honors Seminar is taken in conjunction with the Honors Thesis (English 4960). Required of all candidates for departmental honors.
ENGL	4940	Internship with an approved program, company or agency employing research, writing editing or linguistics expertise. Student must submit proposal for approval by advisory and a departmental committee. (Repeatable for a maximum of 4 hours credit.)
ENGL	4950	An advanced course in genre writing. Content varies with each offering. May be repeated once for credit.
ENGL	4960	Research and writing of a thesis on a topic in English or linguistics required of all candidates for departmental honors.
ENGL	4980	An undergraduate course on a special topic. Consult Time Schedules for topic to be studied and semester offered. Recommended: ENGL 2800, or 3790.
ENGL	4990	Supervised independent study in special topics of British and American language and literature. Courses may be repeated more than once for credit.
ENGL	4EL	Students present their poetry and/or creative prose for peer critique and discussion. Readings in primary texts. Portfolio.
ENGL	4EN	
ENGL	4EU	
ENGL	5010	
ENGL	5020	For graduate students who speak English as a second language (ESL). Students will plan, draft, revise and edit several academic writing tasks. Not for major credit.
ENGL	5050	An introduction to the methods, history and practice of Comparative Literature, with special attention to the areas of this discipline useful to the student specializing in the study of English or American literature.
ENGL	5090	An intensive study of current theories and research connecting reading, critical thinking and writing with applications of theory to students' literate practices and research.
ENGL	5100	Study of the origins and development of the English language.
ENGL	5110	Study of the phonology, morphology and syntax of Old English, with special attention to literary and cultural backgrounds. Representative readings in verse and prose.
ENGL	5120	Study of the phonology, morphology and syntax of Middle English, with special attention to literary and cultural background. Representative readings in verse and prose.
ENGL	5130	A study of the major regional and social dialects of the United States, their origins and the methods of modern dialectology.
ENGL	5140	

ENGL	5150	Intensive study of modern linguistic theories about the nature and structure of language, with emphasis on English.
ENGL	5200	A course in 18th Century fiction with emphasis on the novels of Defoe, Richardson, Fielding, Smollett, and Sterne and their relation to historical background and literary theory.
ENGL	5220	Major developments in British fiction beginning with Scott and concluding with novels of the 1840's; particular attention to the works of one author.
ENGL	5230	Critical study of 19th Century British fiction, particular attention to the works of one author.
ENGL	5240	Major developments in British fiction from Conrad to the present, with particular emphasis on changes in technique and approach.
ENGL	5280	A study of the chief developments in content and form of the American short story and novel since World War I, partly through intensive analysis of works by selected major writers.
ENGL	5310	A study of early British drama exclusive of Shakespeare, with particular attention to Elizabethan drama and its background.
ENGL	5340	A study of Western Drama from the 1870's to the 1980's, concentrating on Ibsen, Strindberg, Chekhov, Brecht, O'Neill, Williams, Pinter, Shepard and other dramatists, with special attention to modern theories of theater and performance.
ENGL	5410	Study of Old and Middle English Literature, using translations where necessary, with emphasis on major works and genres, cultural, philosophical, and historical contexts and backgrounds.
ENGL	5420	Poetry and prose of the English Renaissance, including the sonnet tradition; "Spenser's Fairie Queene"; Shakespeare's longer poems; the prose of Raleigh, Hoby, Ascham, and Elyot; "Defense of Poesy"; More's "Utopia."
ENGL	5440	Early and mid-17th Century non-dramatic texts. Including such authors as Milton, Donne, Jonson, Herrick, Herbert, Marvell, Bacon and Browne. Non-canonical writing by women and figures of historical as well as literary importance.
ENGL	5460	Drama, poetry, and prose of the Restoration, Neo-classical and pre-Romantic periods, focusing on literary strategies and themes, political and cultural contexts.
ENGL	5500	Study of major authors and genres of the Romantic period: approximately 1789 to 1837.
ENGL	5520	Study of major authors, genres and ideas of the Victorian period: approximately 1837 to 1901.
ENGL	5540	British poetry of the early 20th century, including the works of such poets as Hopkins, Housman, Hardy, Yeats, Owen, Lawrence, Auden and Thomas, and the research and criticism relevant to them.
ENGL	5600	The poetry and prose writings of the New England Puritans and the American Enlightenment with emphasis on Bradford, Bradstreet, Taylor, Franklin, Jefferson, Paine and Wheatley.



ENGL	5620	American literature from 1798 to 1865, from the beginnings of Romanticism in Bryant and Cooper through the Transcendental movement, with emphasis on Hawthorne, Melville, Stowe and Douglass.
ENGL	5630	American literature from the post-Civil War period to the early 20th century: some emphasis on naturalism and humor; such writers as Twain, James, Howells, Dreiser and Wharton.
ENGL	5640	Study of American literature from 1900 to World War II, focusing on literary modernism and its social, political and philosophical contexts.
ENGL	5650	Study of African American prose, poetry, drama and fiction from 1760 to 1915.
ENGL	5660	A literary, historical and social consideration of the achievement of black American writers since 1915.
ENGL	5680	Major trends in postwar American literature, including traditional and uncanonical writers. Emphasis may be on poetry or prose by instructor's option.
ENGL	5690	Native American literature interrogates a selection of texts by and about Native Americans, including the oral traditions of storytelling and mythology.
ENGL	5730	World Cinema focuses on the question of representation across cultures in terms of the relations between film, its subjects and the camera.
ENGL	5750	A chronological examination of literary criticism, analyzing the variety of claims and practices which contribute to the current frameworks used to interpret and analyze literary texts.
ENGL	5770	The focus is first the British and American folk and broadside ballad and then the down-home and urban blues.
ENGL	5780	An intensive examination of contemporary literary theories and criticism, focusing on selected issues and on representative theorists and critics.
ENGL	5790	An introduction to the discipline(s) of English, the methods and resources of scholarship in the field.
ENGL	5800	A study of Chaucer's major works and historical contexts, with emphasis on either Troilus and Criseyde and the dream visions, or on The Canterbury Tales in their entirety.
ENGL	5810	A study of Shakespeare's plays with emphasis on his development as a dramatist and with readings in major Shakespearean criticism.
ENGL	5820	A study of the poetry and selected prose. Particular attention is given to biography and criticism.
ENGL	5850	Author changes with each offering. Consult Time Schedules for authors to be studied.
ENGL	5860	Author changes with each offering. Consult Time Schedules for authors to be studied.
ENGL	5950	A seminar in which special problems, specific authors, the foreign relations of English literature, and other subjects can be considered from a comparative perspective.



ENGL	5980	Consideration of a special topic in literature and language.
ENGL	6010	For prospective college instructors of composition. Includes supervised teaching of composition. Graded S/U only.
ENGL	6060	Seminar and extensive supervised practice teaching/observation for prospective teachers of English as a Second Language. Graded S/U only.
ENGL	6150	Focus on the methods of "applied linguistics" in the broad sense, through case studies including research on first and second language acquisition, language teaching, the teaching of reading and writing, and other related areas.
ENGL	6160	Computer lab for Applied Linguistics Research and Theory I.
ENGL	6170	Focuses on theories of second/foreign language acquisition, especially, but not exclusively, as they relate to English as a Second Language.
ENGL	6180	Students will learn to use rhetorical analysis, discourse analysis and ethnographic research methodologies to write a substantial research proposal, and to design a course and write criteria for assessment of student writing accomplished in such a course.
ENGL	6190	In the course, students learn how to identify English as a Second Language learners' linguistic needs and to design and evaluate environments for ESL learning.
ENGL	6410	Seminar on a specialized topic in Old and/or Middle English literature.
ENGL	6420	Seminar on a specialized topic in English Renaissance literature.
ENGL	6440	Seminar on a specialized topic in early 17th century English literature.
ENGL	6460	Seminar on a specialized topic in Restoration and 18th century British literature.
ENGL	6500	Seminar on a specialized topic in British Romantic literature.
ENGL	6520	Seminar on a specialized topic in Victorian literature.
ENGL	6540	Seminar on a specialized topic in 20th century British literature.
ENGL	6600	Seminar on a specialized topic in early American literature.
ENGL	6620	Seminar on a specialized topic in American literary Romanticism.
ENGL	6630	Seminar on a specialized topic in American literary realism.
ENGL	6640	Seminar on a specialized topic in 20th century American literature.
ENGL	6890	This course completes the certificate program. Students will fulfill research on writing piloted in ENGL 6180, culminating in a research essay that will be submitted for publication to an appropriate scholarly journal.
ENGL	6940	Supervised practice teaching in the form of a community-service externship in English as a Second Language. Graded S/U only.
ENGL	6960	Research on, and writing of the master's paper or thesis.
ENGL	6980	Seminar on a specialized topic in English studies.
ENGL	6990	By permission of department; may be repeated for additional credit.
ENGL	7010	Students present their poetry and/or creative prose for peer critique and discussion. Readings in primary texts. Portfolio.



ENGL	7020	For graduate students who speak English as a second language (ESL). Students will plan, draft, revise and edit several academic writing tasks. Not for major credit.
ENGL	7050	An introduction to the methods, history and practice of Comparative Literature, with special attention to the areas of this discipline useful to the student specializing in the study of English or American literature.
ENGL	7090	An intensive study of current theories and research connecting reading, critical thinking and writing with applications of theory to students' literate practices and research.
ENGL	7100	Study of the origins and development of the English language.
ENGL	7110	Study of the phonology, morphology and syntax of Old English, with special attention to literary and cultural backgrounds. Representative readings in verse and prose.
ENGL	7120	Study of the phonology, morphology and syntax of Middle English, with special attention to literary and cultural background. Representative readings in verse and prose.
ENGL	7130	A study of the major regional and social dialects of the United States, their origins and the methods of modern dialectology.
ENGL	7140	
ENGL	7150	Intensive study of modern linguistic theories about the nature and structure of language, with emphasis on English.
ENGL	7200	A course in 18th Century fiction with emphasis on the novels of Defoe, Richardson, Fielding, Smollett, and Sterne and their relation to historical background and literary theory.
ENGL	7220	Major developments in British fiction beginning with Scott and concluding with novels of the 1840's; particular attention to the works of one author.
ENGL	7230	Critical study of 19th Century British fiction, particular attention to the works of one author.
ENGL	7240	Major developments in British fiction from Conrad to the present, with particular emphasis on changes in technique and approach.
ENGL	7280	A study of the chief developments in content and form of the American short story and novel since World War I, partly through intensive analysis of works by selected major writers.
ENGL	7310	A study of early British drama exclusive of Shakespeare, with particular attention to Elizabethan drama and its background.
ENGL	7340	A study of Western Drama from the 1870's to the 1980's, concentrating on Ibsen, Strindberg, Chekhov, Brecht, O'Neill, Williams, Pinter, Shepard and other dramatists, with special attention to modern theories of theater and performance.
ENGL	7410	Study of Old and Middle English Literature, using translations where necessary, with emphasis on major works and genres, cultural, philosophical, and historical contexts and backgrounds.



ENGL	7420	Poetry and prose of the English Renaissance, including the sonnet tradition; "Spenser's Fairie Queene"; Shakespeare's longer poems; the prose of Raleigh, Hoby, Ascham, and Elyot; "Defense of Poesy"; Mores' "Utopia."
ENGL	7440	Early and mid-17th Century non-dramatic texts. Including such authors as Milton, Donne, Jonson, Herrick, Herbert, Marvell, Bacon and Browne. Non-canonical writing by women and figures of historical as well as literary importance.
ENGL	7460	Drama, poetry, and prose of the Restoration, Neo-classical and pre-Romantic periods, focusing on literary strategies and themes, political and cultural contexts.
ENGL	7500	Study of major authors and genres of the Romantic period: approximately 1789 to 1837.
ENGL	7520	Study of major authors, genres and ideas of the Victorian period: approximately 1837 to 1901.
ENGL	7540	British poetry of the early 20th century, including the works of such poets as Hopkins, Housman, Hardy, Yeats, Owen, Lawrence, Auden, and Thomas, and the research and criticism relevant to them.
ENGL	7600	The poetry and prose writings of the New England Puritans and the American Enlightenment with emphasis on Bradford, Bradstreet, Taylor, Franklin, Jefferson, Paine and Wheatley.
ENGL	7620	American literature from 1798 to 1865, from the beginnings of Romanticism in Bryant and Cooper through the Transcendental movement, with emphasis on Hawthorne, Melville, Stowe and Douglass.
ENGL	7630	American literature from the post-Civil War period to the early 20th century: some emphasis on naturalism and humor; such writers as Twain, James, Howells, Dreiser and Wharton.
ENGL	7640	Study of American literature from 1900 to World War II, focusing on literary modernism and its social, political and philosophical contexts.
ENGL	7650	Study of African American prose, poetry, drama and fiction from 1760 to 1915.
ENGL	7660	A literary, historical and social consideration of the achievement of black American writers since 1915.
ENGL	7680	Major trends in postwar American literature, including traditional and uncanonical writers. Emphasis may be on poetry or prose by instructor's option.
ENGL	7750	A chronological examination of literary criticism, analyzing the variety of claims and practices which contribute to the current frameworks used to interpret and analyze literary texts.
ENGL	7770	The focus is first the British and American folk and broadside ballad and then the down-home and urban blues.
ENGL	7780	An intensive examination of contemporary literary theories and criticism, focusing on selected issues and on representative theorists and critics.



ENGL	7790	An introduction to the discipline(s) of English, the methods and resources of scholarship in the field.
ENGL	7800	An examination of selected works in the light of important theories about medieval literature.
ENGL	7810	A study of Shakespeare's plays with emphasis on his development as a dramatist and with readings in major Shakespearean criticism.
ENGL	7820	A study of the poetry and selected prose. Particular attention is given to biography and criticism.
ENGL	7850	Author changes with each offering. Consult Time Schedules for authors to be studied.
ENGL	7860	Author changes with each offering. Consult Time Schedules for authors to be studied.
ENGL	7950	A seminar in which special problems, specific authors, the foreign relations of English literature, and other subjects can be considered from a comparative perspective.
ENGL	7960	Graded S/U only.
ENGL	7980	Consideration of a special topic in literature and language.
ENGL	8010	For prospective college instructors of composition. Includes supervised teaching of composition. Graded S/U only.
ENGL	8020	Seminar for prospective college instructors of literature in English. Includes supervised teaching of an introductory literature course. Graded S/U only.
ENGL	8030	Seminar for prospective college instructors of linguistics and English language. Includes supervised teaching of an introductory courses in grammar and language. Graded S/U only.
ENGL	8060	Seminar and extensive supervised practice teaching/observation for prospective teachers of English as a Second Language. Graded S/U only.
ENGL	8150	Focus on the methods of "applied linguistics" in the broad sense, through case studies including research on first and second language acquisition, language teaching, the teaching of reading and writing and other related areas.
ENGL	8160	Computer lab for Applied Linguistics Research and Theory I.
ENGL	8170	Focuses on theories of second/foreign language acquisition, especially, but not exclusively, as they relate to English as a Second Language.
ENGL	8190	In this course, students learn how to identify English as a Second Language learners' linguistic needs and to design and evaluate environments for ESL learning.
ENGL	8410	Seminar on a specialized topic in Old and/or Middle English literature.
ENGL	8420	Seminar on a specialized topic in English Renaissance literature.
ENGL	8440	Seminar on a specialized topic in early 17th century English literature.
ENGL	8460	Seminar on a specialized topic in Restoration and 18th century British literature.
ENGL	8500	Seminar on a specialized topic in British Romantic literature.

ENGL	8520	Seminar on a specialized topic in Victorian literature.
ENGL	8540	Seminar on a specialized topic in 20th century British literature.
ENGL	8600	Seminar on a specialized topic in early American literature.
ENGL	8620	Seminar on a specialized topic in American literary Romanticism.
ENGL	8630	Seminar on a specialized topic in American literary realism.
ENGL	8640	Seminar on a specialized topic in 20th century American literature.
ENGL	8940	Supervised practice teaching in the form of a community-service externship in English as a Second Language. Graded S/U only.
ENGL	8960	Graded S/U only Maximum of 30 hours.
ENGL	8980	Seminar on a specialized topic in English studies.
ENGL	8990	By permission of department; may be repeated for additional credit.
ENGT	1000	Overview of careers in engineering technology, information about each program in Engineering Technology, and skills required for success in technological fields, such as computer skills.
ENGT	1050	Concepts and techniques on the application of computers to the solution of manufacturing and engineering technology problems. Provides an introduction to computer operating systems, programming language and technical software.
ENGT	2000	An introduction to the performance expectations of the engineering profession. Topics covered include resume writing, public speaking, interviewing skills, ethics, social responsibilities and the value of continuing education and professional registration.
ENGT	2500	General methodology of managing a technical project from concept to operational use. Emphasis is on the functions and responsibilities of the project manager related to maintaining project control and team management.
ENGT	3010	Introduction to probability, statistical inference and design of experiments. Topics include confidence intervals, tests of hypothesis, regression, analysis of variance, factorial experimental designs and propagation of experimental errors.
ENGT	3020	Introduction to partial derivatives, series expansions, complex variables, differential equations and Laplace transform analysis. Application of computers for numerical solution techniques.
ENGT	3040	Study of the relationships between structures and properties for common engineering materials, including metals, polymers, ceramics and composites. Mechanical behavior, temperature effects, heat treatment, corrosion and electrical properties are covered.
ENGT	3050	An introduction to basic analytical techniques for resistive and reactive DC and AC electric circuits, and an introduction to electronic devices, including diodes and transistors. No credit towards EET degree.
ENGT	3940	Approved co-op work experience. Course may be repeated.
ENGT	3950	Approved co-op work experience beyond third required co-op experience. Course may be repeated.



ENGT	4050	A comprehensive problem in engineering technology is assigned to a group of students who work together as a team to present a solution in a formal written and oral report.
ENGT	4900	A review and application of general engineering principles and procedures in preparation for the Fundamentals of Engineering (FE) exam. Offered for students preparing to take the exam and for those considering it.
ENGT	4980	Selected topics in engineering technology with emphasis on intensive investigation of recent literature in areas of special interest.
ENGT	5400	Fundamentals of applied heat transfer by conduction, laminar and turbulent convection, condensation and boiling, radiation exchange between surfaces, and heat exchangers. Finite Element Analysis software is used for solving practical heat transfer problems.
ENGT	5500	A course in analysis for engineers. Topics include: Linear differential equations, continuous and discrete series representations. Laplace transforms matrix methods, eigenvalues and eigenvectors, systems of equations.
ENGT	6920	A special project is intended for the graduate student to investigate or solve a problem in an area of mechanical, electrical, construction or computer science engineering technology. The scope of the project is defined by the instructor in the area of mutual interest of the instructor and the student.
ENGT	6980	A special topic in advanced engineering or technology emphasizing investigation of literature and /or methods in areas of special interest to the class and the instructor.
ERMD	745	In the summer after the second year of medical school, MD/PhD students will identify a clinical mentor who will be responsible for overseeing clinical training for the student during a portion of his/her graduate school phase of the program, and will provide formative and summative feedback concerning the development of clinical skills and a foundation for subsequent clinical clerkship training. The mentor may change during the course of the student's graduate school years, but changes should occur after the end of a semester. Clinical Setting and Training: Students schedule specific hours (which may include evenings or weekends) with their clinical mentor. Patients will be assigned to the student for evaluation, and students will be involved in all aspects of emergency patient care, under direction of their clinical mentor or assigned Emergency Medicine attending. Students should see about one patient per hour of training. Students are expected to document their patient encounters as appropriate, and should be given feedback on these notes. Students should keep a log of their patients, their diagnoses, and any procedures performed. An electronic logging system for patient experiences will be developed. Student time commitment: Students are expected to spend 8 hours per month in clinical training. This can be divided into weekly 2 hour session, biweekly 4 hour sessions or an 8 hour day per month. Students are encouraged to discuss the most appropriate schedule with their laboratory mentor to ensure that the clinical experience does not interfere with graduate coursework or research progress. If students wish to limit their commitment to 4 hours per month, with



permission of the course director, they should only sign up for one credit for that semester.

Student/Mentor Contract: The student/mentor relationship should be formalized in a brief contract in which both acknowledge their time commitment, as well as the student's research mentor (to ensure that the dissertation advisor understands that this is an essential part of the student's training). Completed contracts should be submitted to the MD/PhD Director and to Pat Munier. The clinical mentor is responsible for ensuring that the student has a high quality training experience, but need not be the attending physician for all patient experiences. The mentor is responsible for providing a grade (submitted through the clerkship director) and both formative and summative evaluations.

Credit:

MD/PhD Students enrolled in graduate school will sign up for 1 or 2 credit hours during the fall or spring term while enrolled in graduate school and 1 credit hour during the summer term, consistent with an average of 8 contact hours per month (2 per week). Students may earn a maximum of 4 credit hours per academic year. For every 6 hours of credit, 4 weeks of fourth year clinical elective credit will be granted. In the course of 3 years of graduate training, students may earn a maximum of 12 credits and thus be eligible for a maximum of 2 months of clinical elective credit. This credit should allow further flexibility in 4th elective scheduling, enabling additional research months, off site rotations, etc. If students require more than 3 years of graduate work, continued participation in the clinical training program is strongly encouraged, but no more than 2 months of elective time will be awarded.

Prerequisites: Successful completion of all preclinical coursework and passing Step I of the USMLE examination

ETPT	2020	Emphasizes the development of computing skills with a focus on productivity tools in organizing, managing, multimedia authoring, homepage development, software evaluation and presenting lessons for professional communication in K-12.
ETPT	4200	Emphasizes developing skills in the use of this common productivity software and the use of computer technology in solving typical classroom problems.
ETPT	4400	Provides an introduction to human performance technology (HPT), with an emphasis on the use of training as an HPT intervention.
ETPT	4950	Workshops are developed around topics of interest in all areas of educational technology and performance technology. Students should discuss specific content for each offering with educational technology faculty.
ETPT	4990	Individual study designed to provide a student the opportunity to work individually on professional problems under the direction of educational technology & performance technology faculty.
ETPT	5000	Introduces the field of Educational Technology and its relevant competencies. Examines current trends in Educational Technology.



ETPT	5100	An introduction to various ISD models and approaches for designing effective systems of instruction. Students will begin to acquire experience in the actual analysis, design, development and evaluation of instruction.
ETPT	5200	Emphasizes developing skills in the use of this common productivity software and the use of computer technology in solving typical instructional problems.
ETPT	5210	An introduction to the software, hardware and processes involved in the design and development of multimedia and Web-based instructional materials.
ETPT	5270	An introduction to all facets of producing video for use in various instructional settings.
ETPT	5550	An introduction to effective use of Internet resources in instruction.
ETPT	5950	Workshops are developed around topics of interest in all areas of educational technology and performance technology. Students should discuss specific content for each offering with educational technology faculty.
ETPT	5980	Special offerings are of interest to graduate students in educational technology and performance technology. Students should discuss specific content for each offering with ETPT faculty.
ETPT	5990	Individual study designed to provide a student the opportunity to work individually on professional problems under the direction of educational technology & performance technology faculty.
ETPT	6110	Based on the knowledge and skills acquired in ETPT 6100/8100, students design, develop and evaluate multimedia-based instructional modules and systems.
ETPT	6150	Focuses on instructional designer's role in assessing and addressing such differences as performance environment, culture, ethnicity, physical attributes, age/experience and socioeconomic factors to maximize learning.
ETPT	6220	Teaches design and development of instructional software, using multimedia development environments and strategies.
ETPT	6230	Students apply previously acquired skills in multimedia and Web design to develop instructional materials for delivery via the World Wide Web.
ETPT	6300	Provides teachers and technology coordinators with the knowledge and skills necessary to manage instructional computer laboratories and services in K-16 settings.
ETPT	6400	Provides an introduction to human performance technology (HPT) for the graduate educational technology major.
ETPT	6410	Investigates the options available to the human performance technology (HPT) professional for improving performance.
ETPT	6420	Focuses on the theoretical foundations and techniques for assessing gaps in results at individual, group and organizational levels in order to improve performance.



ETPT	6430	Students investigate current trends in human performance technology (HPT) and assist one another in pursuing detailed individual study of one major topic area in HPT.
ETPT	6440	Addresses relevant models, practices and concepts of both internal and external consulting in human performance improvement (HPT) contexts in all types of organizations.
ETPT	6470	Focus is on the conceptual framework and procedures involved in the analysis of various HRD interventions (including training) for improving performance and, ultimately, organizational results.
ETPT	6510	Investigates various applications of distance learning for education and training.
ETPT	6710	Examines the process of change in the diffusion and adoption of innovations in education as well as business and industry. Adoption theory is analyzed.
ETPT	6810	Investigates current major research trends and topics in various areas of educational technology and performance technology. Students develop and present a research proposal.
ETPT	6900	This course is the culminating experience in the ETPT master's program. Students complete a project under supervision of an educational technology faculty member.
ETPT	6930	Student will complete an individual research project under the orientation of a committee of at least two faculty members in ETPT, ordinarily including the faculty adviser.
ETPT	6940	Students apply ETPT course work to solve an instructional and/or performance problem for a client organization under the supervision of educational technology faculty.
ETPT	6960	Students who elect this option will complete a thesis under the direction of committee of at least two faculty members from ETPT, ordinarily including the faculty adviser.
ETPT	7000	Introduces the field of educational technology and its relevant competencies. Examines current trends in educational technology.
ETPT	7100	An introduction to various ISD models and approaches for designing effective systems of instruction. Students will begin to acquire experience in the actual analysis, design, development and evaluation of instruction.
ETPT	7210	An introduction to the software, hardware and processes involved in the design and development of multimedia and Web-based instructional materials.
ETPT	7270	An introduction to all facets of producing video for use in various instructional settings.
ETPT	7550	An introduction to effective use of Internet resources in instruction.
ETPT	7940	Observation and supervised experience in an appropriate setting. Students will be assigned to work as interns under the joint supervision of school and University personnel.



ETPT	7980	Special offerings are of interest to graduate students in educational technology and performance technology. Students should discuss specific content for each offering with ETPT faculty.
ETPT	7990	Individual study designed to provide a student the opportunity to work individually on professional problems under the direction of Educational Technology faculty.
ETPT	8110	Based on the knowledge and skills acquired in ETPT 6100/8100, students design, develop and evaluate multimedia-based instructional modules and systems.
ETPT	8150	Focuses on instructional designer's role in assessing and addressing such differences as performance environment, culture, ethnicity, physical attributes, age/experience and socioeconomic factors to maximize learning.
ETPT	8220	Teaches design and development of instructional software, using multimedia development environments and strategies.
ETPT	8230	Students apply previously acquired skills in multimedia and Web design to develop instructional materials for delivery via the World Wide Web.
ETPT	8300	Provides teachers and technology coordinators with the knowledge and skills necessary to manage instructional computer laboratories and services in K-16 settings.
ETPT	8400	Provides an introduction to human performance technology (HPT) for the graduate educational technology major.
ETPT	8410	Investigates the options available to the human performance technology (HPT) professional for improving performance.
ETPT	8420	Focuses on the theoretical foundations and techniques for assessing gaps in results at individual, group and organizational levels in order to improve performance.
ETPT	8430	Students investigate current trends in human performance technology (HPT) and assist one another in pursuing detailed individual study of one major topic area.
ETPT	8440	Addresses relevant models, practices and concepts of both internal and external consulting in human performance improvement (HPT) contexts in all types of organizations.
ETPT	8470	Focus is on the conceptual framework and procedures involved in the analysis of various HRD interventions (including training) for improving performance and, ultimately, organizational results.
ETPT	8510	Investigates various applications of distance learning systems for education and training.
ETPT	8710	Examines the process of change in the diffusion and adoption of innovations in education as well as business and industry. Adoption theory is analyzed.
ETPT	8810	Investigates current major research trends and topics in various areas of educational technology and performance technology. Students develop and present a research proposal.



ETPT	8900	This seminar will consider problems and provide advanced study for doctoral students in educational technology and performance technology.
ETPT	8920	Considers issues and problems in various areas of educational technology and performance technology. Intended for advanced ETPT doctoral students.
ETPT	8930	Individual study is designed to provide the doctoral student opportunity to work individually on professional problems under the direction of educational technology and performance technology faculty.
ETPT	8940	Students apply ETPT course work to solve an instructional and/or performance problem for a client organization under the supervision of educational technology faculty.
ETPT	8960	Original research in an area of educational technology and performance technology.
FACD	625	Introduction to the fundamental principles of curriculum development and assessment of learning outcomes. Application of the theoretical concepts to the development of curriculum and instructional strategies. The concept of instructional alignment will be at the foundation of various experiences that will expose students to knowledge and skill relevant to the development of instructional units and appropriate evaluation strategies.
FACD	635	Introduction to various theories of teaching and learning. Explores current issues in medical and health science education relative to the theoretical foundations of teaching. Current challenges faced by educators in the health sciences will be discussed and relevant literature reviewed and assessed.
FACD	670	Students evaluate their own teaching and reflect on how they integrate concepts presented in FACD 635 and FACD 625 into their own performance.
FACD	697	Students are provided with the opportunity to synthesize the concepts presented and discussed in FACD 625 and FACD 635 into a unique curriculum development or educational research project.
FDNU	535	Nutrition of infants and young children in health and disease, from prenatal period to adolescence (BGSU).
FDNU	536	Psychological, physiological and socioeconomic factors affecting dietary practices and nutritional needs of the elderly in group and individual situations (BGSU). Prerequisite: F&N 535.
FDNU	609	Emphasis on human needs and food sources of vitamins and minerals during health and disease conditions. Identification and discussion of the chemical and physical properties of these micronutrients in foods and human systems (BGSU).



FILM	1310	Introduction to the history and interpretation of cinema as art form, with emphasis on discovering how meaning is encoded in film at the levels of shot, sequence and narrative construction. (Not recommended or required for majors.)
FILM	2310	An intensive introduction to the theory and practice of creative filmmaking utilizing the professional 16 mm format. Individual and group production exercises. Students must purchase supplies.
FILM	2320	Introduction to theory and practice of digital video. Students purchase supplies.
FILM	2320	An intensive production seminar course where digital video is explored as a means for creative expression. Students purchase supplies. For majors and minors only, or by permission of instructor. Prerequisites: Comp I and Grade of C or better in FILM 2340. May not take simultaneously with FILM 2310. Writing-intensive (WAC) course.
FILM	2340	A critical approach to the development of cinema as an industrial, artistic and ideological practice. Emphasis on theories of film construction and interpretation and the development of research skills for cinema studies.
FILM	2350	A study of the major movements and authors of Cinema History. Screenings included in class.
FILM	2980	Topics of Cinema Studies, concentrating on a specific style, genre, or national cinema, such as, Italian Cinema, Non-Western Cinema, etc. Topics vary. May be repeated for 9 hours.
FILM	2990	Individual study provides the student an opportunity to work independently on a problem of special interest in Film/Video under the direction of the faculty. For Freshman and Sophomore students.
FILM	3310	Intermediate 16mm filmmaking workshop. Emphasis on sync-sound and narrative film, advanced lighting and exposure techniques, and camera movement. Individual and group projects. Students are required to purchase supplies.
FILM	3320	Intermediate video production; emphasis on personal and political uses of the medium. Individual and group projects. Students are required to purchase supplies.
FILM	3350	This course involves practical analysis of screenplays, emphasizing story structure and characterization. Students plan, write and refine story lines before writing actual scripts.
FILM	3360	Topics of Film or Video production including Animation, Sound, Lighting, Editing, etc. Individual and group projects. Students must purchase supplies.
FILM	3370	A study of the major movements and authors of Documentary Film. Screenings included in class.
FILM	3380	A study of the major movements and authors of Experimental Film. Screenings included in class.
FILM	3390	A study of the major movements of the History of Video Art and Installation. Screenings included in class.



FILM	3410	A study of the major movements and authors of European cinema. Screenings included in class.
FILM	3420	A study of the major movements and authors of Third World Cinema. Screenings included in class. FILM 2350 is recommended before taking this class.
FILM	3730	Directing dramatic scenes for camera with emphasis on effective director/actor communication and the creation of dramatically meaningful camera and actor blocking.
FILM	3980	A non-historical approach to specific topics of cinema studies, concentrating on problems of film theory and individual research projects. Topics vary. (May be repeated to 12 hours.)
FILM	4320	Advanced independent production projects, including screenwriting. Weekly critiques of work in progress. Requires proposal for admission. Larger projects may be completed over successive semesters. May be repeated up to 8 hours.
FILM	4340	Cross listings of film classes with the Department of Women's and Gender Studies. Specific topics vary. Check Course Schedule for specific subject and prerequisites.
FILM	4350	For students familiar with the fundamental elements of screenplays, this course devotes attention to writing a complete script. Students are expected to come to the class with a planned story line.
FILM	4360	A study of the development of French film and its place in world cinema.
FILM	4370	A research oriented seminar concerning a specific topic of cinema studies, emphasizing original research culminating in an individual research project.
FILM	4940	Internship with an approved program, company, or agency in Film. Video or television. (repeatable for 6 credit hours)
FILM	4950	Research or a creative project on a topic in Film or Video. Required of all BA candidates seeking department honors. (Repeatable for 6 credit hours.)
FILM	4990	Individual study provides the student an opportunity to work independently on a problem of special interest in Film/Video under the direction of the faculty. For Junior and senior students.
FINA	2000	Learn about common stocks and other securities, how to invest, and how to build financial security, using a real time stock market simulation. Not applicable toward Finance major.
FINA	3060	Designed for the non-business major, encompasses personal financial planning such as credit, insurance, home ownership, stocks, bonds, mutual funds, income tax planning and strategies. Not applicable toward finance major.
FINA	3480	An introduction to investment alternatives, risk-reward trade-offs valuation techniques and performance evaluation. Developing investment strategies based on objectives and constraints.



FINA	3500	Examines the role of a financial manager in international transactions. The international environment and the role of international asset markets are emphasized.
FINA	3600	Investigates non-speculative risks and the methods used to deal with them. Emphasizes on the insurance mechanism. Explores the functional aspect of the insurance operations.
FINA	3610	Combines a discussion of the economic aspects of life and health insurance with basic analysis on life insurance, health and annuity contracts. Includes investigation of major functional aspects.
FINA	3660	A basic discussion in real estate economics, valuation theory, transfer procedures, legal characteristics, brokerage, taxation and financing techniques. Emphasis on residential properties. A term project is required.
FINA	3670	Methodology of appraising large and small commercial real properties and the theory underlying appraisal techniques and valuation. A term project is required.
FINA	3680	An integrative analysis of real estate, insurance, taxes and legislation as they impact commercial real estate ownership returns and risk. A term project is required.
FINA	3890	The financial applications of economic forecasting, economic model building, univariate and multivariate analysis, hypothesis testing and probability theory. Uses statistical package for analysis. Applications come from all areas of finance.
FINA	4080	Explores financial decision making in depth, using case studies and computer projects. Topics include cost of capital, capital budgeting, leasing, financial planning, financial statement analysis, leverage and capital structure.
FINA	4090	The operation and function of financial institutions and markets are examined. Emphasis on interest rate theory, institutions management and the role of e-commerce, internationalization, and the role of government through regulation and monetary policy.
FINA	4100	Emphasizes the importance of portfolio management techniques and evaluation. Techniques of financial statement analysis, economic analysis, industry analysis, theoretical issues of efficient markets, technical analysis and fundamental analysis.
FINA	4480	Course provides selected students active portfolio management training utilizing an endowed portfolio. Student Portfolio Managers apply equity selection analysis and portfolio risk analytics, with fiduciary responsibilities.
FINA	4670	Applies financial analysis techniques and outside information through case studies of small, medium, and large companies to formulate policies, practices and funding approaches that resolve their problems and/or achieve their goals.



FINA	4840	Financial management and planning in small and medium-sized firms. Course focuses on the financial analysis and management of their problems, policies, practices and funding requirements.
FINA	4870	Seminar focusing on current issues in financial institutions and services management.
FINA	4880	Methodology of managing large and small commercial properties and buildings to maximize current earnings, earnings potential and asset value for the property owners.
FINA	4890	Nature and methods of Financial planning. Creation, conservation and distribution of estates. Emphasis is on investments, insurance wills, trusts and tax laws.
FINA	4900	Seminar course in advanced and specialized topics. Current readings from finance journals. Written paper required.
FINA	4940	A prearranged work-study program where students gain on-the-job experience while learning some basic concepts and techniques. A written report is required.
FINA	4990	An independent, professor supervised, course dealing with an in depth investigation of a financial area not covered adequately in another listed course.
FINA	5160	Information about accounting and the financial environment of the health care industry provide a foundation for financial concepts and techniques necessary for health care administrators. For non-business students only.
FINA	5310	A course that focuses on how firms raise capital and how they allocate this capital in a manner consistent with the maximization of a firm's value.
FINA	6130	Emphasizes integrated financial decision making tools, techniques and theory. Stresses interpretation and analysis of data to manage long and short-term capital expenditure and financing decisions.
FINA	6140	Includes investment alternatives, risk-reward trade-offs, index models, strategies of using common stock, bonds and derivative securities, and portfolio evaluation criteria. Investment policy and strategies illustrated through a portfolio simulation.
FINA	6150	Operations of financial institutions and financial markets. Topics include financial institutions as intermediaries, interest rate theory, financial instrument characteristics, institution management, internationalization and government regulation.
FINA	6160	Information about the health care industry provides a foundation for knowledge of financial management theory, principles and concepts required for analysis and decision-making by health care administrators.
FINA	6330	An in-depth analysis of capital budgeting, capital structure, cost of capital, valuation, dividend policy, mergers and acquisitions, agency theory, options and corporate finance, immunization, duration, swaps and risk management.



FINA	6340	An in-depth analysis of individual and institutional portfolios, active portfolio management, derivative security analysis, hedging techniques, international diversification and financial innovations.
FINA	6350	Topics include current issues in financial institution management, such as interest rate risk measurement and management, credit and liquidity risk, capital adequacy, institution marketing banking structures.
FINA	6370	Techniques and theory of financial management in an international environment. The role of international markets in risk reduction and profit maximization are emphasized.
FINA	6380	Topics include investment and liquidity management, lending policies, bank marketing, liability management, capital management and banking structure. Cases and PC applications are used.
FINA	6480	Course provides selected students active portfolio management training utilizing an endowed portfolio. Student Portfolio Managers apply equity selection analysis and portfolio risk analytics, with fiduciary responsibilities.
FINA	6750	Independent research, professor supervised, on a specific topic in finance that is not covered adequately in another listed course.
FINA	6840	In depth financial management and planning in small and medium-sized firms. Course focuses on the financial analysis and management of their problems, policies, practices and funding requirements.
FINA	7310	A course that focuses on how firms raise capital and how they allocate this capital in a manner consistent with the maximization of a firm's value.
FLAN	3440	This course offers a survey of major concepts in intercultural communication. It emphasizes a balance between theoretical and practical learning opportunities and seeks to promote intercultural understanding.
FMMD	701	Family Medicine (6 weeks)
FMMD	702	Inpatient, outpatient or mixed rotation experiences are available. The Toledo Hospital Family Medicine Residency offers a four-week ambulatory experience or a combination of both inpatient and ambulatory family medicine experiences. The ambulatory experience can be tailored to include obstetrics, pediatrics.
FMMD	703	Rotation is a one-to-one experience with a family physician. Student is responsible for hospital and office workups unless otherwise specified by the preceptor. Written orders and all workups will be discussed and countersigned.
FMMD	707	The student, with the aid of the Community Health Center physician and staff, will meet with the community leaders to determine community needs pertaining to health education. The student will focus on one of the issues deemed most important by the community, develop an appropriate educational program using available resources, and present the program to the targeted population.



FMMD	708	Students will be designated as an Acting Intern with increased responsibility for patient management $\hat{z}$ under supervision.
FMMD	710	Flower Hospital Family Medicine offers a four-week experience which can include both ambulatory and inpatient experiences that can be tailored to include obstetrics and geriatrics
FMMD	719	The purpose of the Complementary and Integrative Medicine (CIM) rotation is to prepare medical students to communicate knowledgeably and effectively with patients in regards to their use of these modalities. The format of the rotation will consist of both clinical and academic components. The clinical component will consist of observation and participation in the integration of CIM therapies in clinical practice. Students will spend time in the clinical setting with both UT/COM faculty and community preceptors. CIM topics to be covered during the rotation will include, acupuncture, yoga, massage therapy, chiropractic, and herbal counseling as available. The academic component will involve presentations, reading assignments and review of project. Each participant will be required to do a comprehensive review of the literature in regards to a given herbal or nutritional supplement. A written summary of the research will be presented at the end of the rotation. The student will also be required to do a review of the literature in regard to the treatment of two common clinical problems utilizing complementary and integrative therapies. The student will choose the topics from experiences in the clinic or from a designated list. A written summary of the two cases will be submitted. The student is required to take a written take home test.
FMMD	721	This elective provides students with an opportunity to participate in the care of ambulatory patients in an underserved community setting. Students will also have the opportunity to precept first and second year students who volunteer for the Community Care Clinic. During the elective students will be expected to (1) perform health screenings, (2) arrange medical appointments for individuals with local providers, (3) survey individuals seeking care to track access to care, employment, housing and insurance status, (4) perform case write ups assessing needs for services and barriers to care and include plans to obtain needed services and overcome barriers to care. Students will also write a final paper evaluating access to care in the community and offering their suggestions and ideas for possible solutions to systemic barriers to care.



- FMMD 722 This elective provides students with an opportunity to participate in the care of ambulatory patients in an underserved community setting. Students will also have the opportunity to precept first and second year students who volunteer for the Community Care Clinic. During the elective students will be expected to (1) perform health screenings, (2) arrange medical appointments for individuals with local providers, (3) survey individuals seeking care to track access to care, employment, housing and insurance status, (4) perform case write ups assessing needs for services and barriers to care and include plans to obtain needed services and overcome barriers to care. Students will also write a final paper evaluating access to care in the community and offering their suggestions and ideas for possible solutions to systemic barriers to care.
- FMMD 723 Law and Medicine: Intercollegiate Seminar (Informed Consent) is an interdisciplinary case-based elective that will provide medical students the opportunity to join with law students to review, analyze, and discuss legal cases (appellate court opinions) applying the statutory and common law of informed consent and their affect on healthcare provider behavior. Medical students will learn how to read and interpret legal cases and will develop an understanding of the academic and practice perspective differences of the medical and legal disciplines. Students will be required to 1) attend and actively participate in class sessions at the COL and clinical experiences on the Health Science Campus, including informed consent observation; 2) complete two written assignments (one case brief and one reflective paper); and, 3) prepare and complete an oral presentation.
- FMMD 724 This elective provides upper level medical students with an introduction to teaching in various settings. The content of the elective will focus on (1) giving presentations, (2) facilitating small group discussions, (3) teaching and giving feedback in clinical settings, and (4) educating patients. Students will review and discuss principles of learning that inform best practices for teaching and observe and critique instruction in each of the four contexts. They will also be required to provide instruction in each setting and evaluate their own recorded performance. Students will be required to complete an instructional project relative to an area of personal interest that is characterized by appropriate instructional alignment and valid evaluation strategies.



- FMMD 725 Healthcare Systems: Issues, Trends, and Perspectives explore and analyze the organization, delivery, financing, and evaluation of health care in the United States. The elective focuses on contemporary issues in healthcare policy, including access, cost, and quality, and their impact on key industry stakeholders (patients, providers, and payers). Topics include organized delivery models, healthcare financing and regulation, and quality assessment and management. Each student, in consultation with the instructor, will determine an area of scholarly concentration. The student will be required to make a formal written and oral presentation related to the area of concentration.
- FMMD 745 In the summer after the second year of medical school, MD/PhD students will identify a clinical mentor. This faculty member will be responsible for the clinical training program of the student, and will provide formative and summative feedback concerning the development of clinical skills and a foundation for subsequent clinical clerkship training. The mentor may change during the course of the student's graduate school years, but any change should occur after the end of a semester. Although students may choose a clinical mentor from any department, the following specialties are particularly suited to training MD/PhD students with limited prior clinical training and restricted hours of availability:
- Family Medicine: Students may schedule sessions in the outpatient clinic or on the hospital Family Practice service. Contact Dr. Thomas Tafelski, Clerkship Director.
- Student time commitment:
Students are expected to spend 8 hours per month in clinical training. This can be divided into weekly 2 hour session, biweekly 4 hour sessions or an 8 hour day per month. Students are encouraged to discuss the most appropriate schedule with their laboratory mentor to ensure that the clinical experience does not interfere with graduate coursework or research progress. The program should be formalized in writing, and submitted to the MD/PhD Director for approval. Students should see about one patient per hour of training. Students should keep a log of their patients, their diagnoses, and any procedures performed. An electronic logging system for patient experiences will be developed.
- Credit:
Upon completion of 3 years of graduate training, assuming 40 weeks per year of participation, students will have accumulated about 300 hours of clinical experience. This is approximately equivalent to 2 months of clinical electives (8 h/d X 5 d/w X 4 weeks = 160 h/mo), and students will be awarded 2 months of 4th year elective credit for this training upon re-enrolling in the College of Medicine. This credit should allow further flexibility in 4th elective scheduling, enabling additional research months, off site rotations, etc. If students require more than 3 years of graduate work, continued participation in the clinical training program is strongly encouraged, but no more than 2 months of elective time will be awarded.



FREN	1080	A study of the French-speaking world with emphasis on the relationship between its culture and its business and economic institutions and practices. Taught in English. (Not for major credit.)
FREN	1090	This course focuses on modern French and Francophone culture and their historical and geographical sources. Taught in English. (Not for major credit.)
FREN	1110	A comprehensive introductory course in French language and culture through the four basic skills: aural comprehension, reading, speaking and writing. Laboratory practice required. (not for major credit)
FREN	1120	A comprehensive introductory course in French language and culture through the four basic skills: aural comprehension, reading, speaking and writing. Laboratory practice required. (not for major credit)
FREN	1500	Review of first-year college French for students who studied the language in high school and who need to strengthen communication skills, vocabulary, grammar and pronunciation before study at the 2000 level. (not for major credit)
FREN	2140	Review and further development of command of the French language and culture through the four basic skills: aural comprehension, reading, speaking and writing. Laboratory practice required. (not for major credit)
FREN	2150	Further review and development of command of the French language and culture through the four basic skills: aural comprehension, reading, speaking and writing. Laboratory practice required. (not for major credit)
FREN	2190	This course is designed to permit and encourage non-majors to spend time in a country where French is spoken. Credit granted in accordance with established departmental procedures. (Not for major credit.)
FREN	3010	Idiomatic conversation practice, dictation and pronunciation drill as well as development of practical writing skills.
FREN	3020	Further aural/oral development with emphasis on the mechanics of writing in French and the organization of ideas. A writing-intensive course.
FREN	3170	An introduction to the language of the French-speaking world, with emphasis on business and commerce.
FREN	3210	French literature from its origins through the eighteenth century.
FREN	3220	French and Francophone literature from the 19th and 20th centuries.
FREN	3400	An examination of the notions of culture, multiculturalism and Francophone cultures. Course content emphasizes issues of race, class and gender in U.S. and Francophone contexts.
FREN	3410	A study of the many ways in which France has contributed to world culture through architecture, painting, sculpture, music, literature, folklore, science, philosophy and education.
FREN	3420	An introductory study of selected sociological, political, cultural and economic issues of contemporary France and Francophone areas.
FREN	3710	Introduction to phonetic theory and practice in pronunciation.



FREN	4010	A thorough study of syntax, morphology, phonetic principles and grammatical structure of French. Emphasizes various writing activities and styles.
FREN	4020	Emphasizes various writing activities and styles. Includes a research component and basic literary criticism as well as a review of syntax and grammar. A writing-intensive and capstone course.
FREN	4040	Key issues in French linguistics and contrastive structures of French and English.
FREN	4050	Advanced practice in speaking idiomatic French. Special attention to problems of pronunciation and oral proficiency.
FREN	4070	Practice in translation of texts from French into English and English into French. Subject matter area will include commerce, natural, physical, and social sciences and the humanities.
FREN	4160	A course in the theory and practice of teaching French and of second language acquisition in general.
FREN	4190	Designed to permit and encourage the French major to pursue study in a country where French is spoken. Credit granted in accordance with established departmental procedures.
FREN	4200	A study of contemporary France and/or Francophone cultures including discussion of economics, daily life, the family, social groups, industry, politics and education.
FREN	4230	The European Union has political, economic and social functions that resemble those traditionally carried out by individual countries. French civilization will be seen in terms of both French and European political, economic, social and cultural structures today. Course given in French.
FREN	4310	Introduction to Old French and readings in the major genres from the twelfth through fifteenth centuries.
FREN	4410	Literature reflecting major currents of the Renaissance.
FREN	4510	A study of the development of French Classicism.
FREN	4610	Readings from the novels, plays and prose of the major writers of the Enlightenment.
FREN	4710	Literary and intellectual trends from Romanticism to Symbolism.
FREN	4720	Literary and intellectual trends from Romanticism to Symbolism.
FREN	4810	Literature of all genres from the period before World War I to the present.
FREN	4820	Literature of all genres from the period before World War I to the present.
FREN	4850	A study of the development of French film and its place in world cinema.
FREN	4860	A study of texts produced by women in the French language in various fields (for example, literary theory, film, literature, philosophy, psychoanalysis, semiotics, post-colonial theory).
FREN	4910	Independent research in special topics. May be repeated once for additional credit.



FREN	4950	Readings of the works of an author or authors of French or Francophone literature. May be repeated when topic varies.
FREN	4980	Study of a selected topic in French or Francophone language, literature, or culture. May be repeated when topic varies.
FREN	4990	Independent research in special topics. May be repeated once for additional credit.
FREN	5010	A study of structural and stylistic principles of French with emphasis on various writing activities.
FREN	5020	A study of structural and stylistic principles of French with emphasis on various writing activities.
FREN	5040	Key issues in French linguistics and contrastive structures of French and English.
FREN	5050	Intensive practice in speaking French.
FREN	5070	Practice in translation of texts from French into English and English into French. Subject matter area will include commerce, natural, physical, and social sciences and the humanities.
FREN	5160	A course in the theory and practice of teaching French and of second language acquisition in general.
FREN	5170	A course in the theory and practice of teaching French and of second language acquisition in general.
FREN	5190	Graduate credit may be granted for foreign study on the basis of credentials that certify the nature of the student's academic achievements in a French-speaking country.
FREN	5200	A study of contemporary France and/or Francophone cultures including discussion of economics, daily life, the family, social groups, industry, politics and education.
FREN	5210	Course designed to develop sufficient reading proficiency to conduct and process research in French. (Not for majors)
FREN	5220	Course designed to develop sufficient reading proficiency to conduct and process research in French. (Not for majors)
FREN	5230	The European Union has political, economic and social functions that resemble those traditionally carried out by individual countries. French civilization will be seen in terms of both French and European political, economic, social and cultural structures today. Course given in French.
FREN	5310	Introduction to Old French and readings in the major genres from the twelfth through fifteenth centuries.
FREN	5410	Literature reflecting major currents of the Renaissance.
FREN	5510	A study of the development of French Classicism.
FREN	5610	Readings from the novels, plays and prose of the major writers of the Enlightenment.
FREN	5710	Literary and intellectual trends from Romanticism to Symbolism.
FREN	5720	Literary and intellectual trends from Romanticism to Symbolism.
FREN	5810	Literature of all genres from the period before World War I to the present.



FREN	5820	Literature of all genres from the period after World War I to the present.
FREN	5850	A study of the development of French film and its place in world cinema.
FREN	5860	This course deals with examples of feminine production which have influenced French culture in the areas of film, literary criticism, literature, philosophy, psychoanalysis and semiotics.
FREN	5980	Study of a selected topic in French or Francophone language, literature, or culture. May be repeated when topic varies.
FREN	5990	Independent research in special topics. May be repeated once for additional credit.
FREN	6900	Independent research of a selected topic in French or Francophone language, literature, or culture. May be repeated once for additional credit.
FREN	6930	Study of selected topics in French or Francophone language, literature, or culture. May be repeated once for additional credit.
GEPL	1010	Presentations of major approaches to geographic thought: the natural environment, regional studies, human ecology, development issues and spatial interrelationships. (not for major credit)
GEPL	1100	While gaining a fundamental understanding of the world's physical environment, students explore issues regarding humanity's interaction with the earth. Current issues such as global warming, acid rain, ozone depletion, deforestation and desertification are addressed.
GEPL	2010	An introduction to basic geographic concepts of both physical and human geography, with emphasis on the interrelationships of people with their physical and cultural environments.
GEPL	2030	A learning-through-writing course. Systematic applications of the concept of cultural to geographic themes: culture areas, cultural landscapes, culture history, cultural ecology and cultural diversity.
GEPL	2040	The course examines the geographical distribution of urban, cultural, economic and demographic phenomena in several contrasting regions of the world.
GEPL	2200	An overview of the understanding of climate change and role of human activities, including atmospheric processes, greenhouse effect, carbon cycling, physical evidence, impacts, and proposed global actions in response.
GEPL	2980	Explores a topic representing a contemporary and significant issue of interest to geographers, the study of which reveals appropriate geographical principles, concepts and methodologies.
GEPL	3030	A detailed study of several regions. Special consideration of agriculture, industry and commerce from a regional viewpoint. Russia excluded.
GEPL	3050	Systematic and regional survey of physical, social and economic geography of the region. Emphasis on the region with respect to worldwide/continental problems and prospects in economic development, management of resources and population adjustment.



GEPL	3120	Compares and contrasts physical and human aspects of Asian countries and peoples in relation to economic development.
GEPL	3220	Course begins with a general overview of Africa's physical environment, its colonial history and its people and cultures. It then examines a variety of themes associated with development, population, urban and political geography.
GEPL	3300	Survey and analysis of the physical and cultural characteristics of Latin America.
GEPL	3420	The presentation of quantitative methods and statistics in a spatial context with an emphasis on cartographic display of results.
GEPL	3440	Learning through writing course. Space and place facets of population size, growth, migration, distribution and composition with emphasis on the population trends and patterns in both developing and developed nations.
GEPL	3460	An examination of the spatial dynamics and socioeconomic problems associated with housing submarkets in the US and in selected countries. Innovative policies for neighborhoods, communities and cities are reviewed.
GEPL	3610	An examination of the basic philosophies, principles and ethics of conservation and resource use. Case studies of selected resource management and environmental problems.
GEPL	3650	An introduction to industrial geography; including industrial location theory, competing production systems, and shifts from manufacturing to service-based economies.
GEPL	3860	Traces the development and institutionalization of gender roles and how these influence spatial decisions and the formation of perceptual landscapes.
GEPL	3890	Analysis and evaluation of all types of natural disasters within a geographic framework. Some discussion of physical processes, but focus is on social/economic implications of natural hazards and disasters on a worldwide scale.
GEPL	3900	GEPL 1100, 3550 or 3540 recommended. Explores history, goals, methods, ethics and social dilemmas encountered when trying to achieve environmentally sensitive planning. Presents case studies of environmental planning successes and failures, both within and outside the U.S.
GEPL	4040	Use of geographic inquiry in the emerging integrated social studies and standard geography education curricula for K -12 instructions.
GEPL	4060	A geographic regional study of the Great Lakes, including the physical characteristics, impacts of resource uses, human activities, and related management and planning issues, with special focus on Lake Erie.
GEPL	4110	Introduction to computerized methods for the capture, storage, management, analysis and display of spatially-referenced data for the solution of planning, management and research problems.

GEPL	4160	An examination of contemporary global economic patterns and trends. Compares and contrasts population problems; the diffusion of multinational corporations, and the emergence of post-industrial economies.
GEPL	4180	Advanced applications in geographic information systems (GIS) with an emphasis on advanced GIS analysis techniques, Global Positioning System applications in GIS, database design, and a survey of vector- and raster-based GIS software and databases.
GEPL	4210	A broad review of urban and regional planning in the US and Western Europe, introducing land use planning concepts and practices and their role in shaping the direction of urban development.
GEPL	4310	Explorations into identities and distributions of Gypsies (Romanies) and Travelers (GR&T peoples) worldwide and the challenges that their study presents to Geography and to other social science disciplines.
GEPL	4420	The presentation of quantitative methods and statistics in a spatial context with an emphasis on cartographic display of results.
GEPL	4490	Introduction to theory, methods and techniques used to gather and analyze remote sensor data. Topics range from low altitude air photo interpretation through satellite image acquisition. Recommended: GEPL 3550.
GEPL	4500	Explores digital image analysis techniques such as classification and principle component analysis. Terrestrial and coastal applications of satellite image analysis are performed in intensive laboratory sessions.
GEPL	4520	The theoretical and mathematical foundations of the mapping process in a digital environment. An introduction to the structure and manipulation of graphic and nongraphic geographical data to produce maps.
GEPL	4530	An introduction to planning theory. the planner's role in land use regulation economic development, housing and social service delivery is reviewed.
GEPL	4540	A survey analysis of meteorology and climatology. The physical processes of weather and the pattern of climate provide the basis for this course.
GEPL	4550	This course explores community-based alternatives and bottom-up development as a response to economic and social difficulties. The specific issues, strategies and applications of this approach are discussed.
GEPL	4570	The exploration of theoretical location analysis, pragmatic land development issues and analytic feasibility tools, and the consequences of land use policies that affect development.
GEPL	4580	The application of geographic location theory, spatial interaction modeling, optimization techniques and geographic information system processing to the solution of facility location problems.
GEPL	4600	Concepts and procedures for the organization, design and development of public and private urban forms and spaces at the micro level, including a survey of intraurban elements, cultural, ecological and aesthetic considerations, and interdisciplinary collaboration.



GEPL	4650	The development, characteristics and distribution of landforms, soils, vegetation, water resources and climates are presented.
GEPL	4700	This course introduces the skills and techniques used by practitioners in the planning process. Assignments will focus on the collection, analysis and communication of information by following community planning approaches.
GEPL	4710	Social, political and economic functions of cities. Geographic perspectives on land use, residential and consumer behavior, health care, recreation and criminal justice systems in contemporary and future cities.
GEPL	4750	The role of transportation and communication in the economic development of places. Theories of geographic interaction, location of transport routes and the developmental implications of transport investments are explored.
GEPL	4810	An examination of geopolitical and geostrategic issues at the nation-state and international level.
GEPL	4890	Personal explorations of urban space and place emphasizing an array of practical and ethical issues in the collection and interpretation of primary geographic data.
GEPL	5040	Graduate level preparation for K - 12 educators with geography specialization. Integrates social studies and standard geography curricula in response to state and federal mandates.
GEPL	5060	An examination of the problems and concerns currently facing planning and management of the Great Lakes as the result of effects from human uses and activities. This course will provide students with an overview of the complexity of understanding and addressing environmental issues and the human impacts from settlement and development in the Great Lakes basin.
GEPL	5110	Introduction to computerized methods for the capture, storage, management, analysis and display of spatially-referenced data for the solution of planning, management and research problems.
GEPL	5160	Examination of contemporary global economic patterns and trends. Topics receiving special attention include population problems, the spread of multinational corporations, and the causes and consequences of the emergence of postindustrial economics.
GEPL	5180	Advanced applications in geographic information systems (GIS) with an emphasis on advanced GIS analysis techniques, Global Positioning System applications in GIS, database design, and a survey of vector- and raster-based GIS software and databases. Research project required.
GEPL	5210	A broad review of urban and regional planning in the US and Western Europe, introducing land use planning concepts and practices and their role in shaping the direction of urban development.
GEPL	5310	Explorations into identities and distributions of Gypsies (Romanies) and Travelers (GR&T peoples) worldwide and the challenges that their study presents to Geography and to other social science disciplines.



GEPL	5420	use existing description for GEPL 3420 (modified to course number GEPL 4420)
GEPL	5490	Immersion in theory, methods and techniques used to gather and analyze remote sensor data. Topics range from low altitude air photo interpretation through satellite image acquisition.
GEPL	5500	Explores digital image analysis techniques such as classification and principal components analysis. Terrestrial and coastal applications of satellite image analysis are performed in intensive laboratory sessions.
GEPL	5520	The theoretical and mathematical foundations of the mapping process in a digital environment. An introduction to the structure and manipulation of graphic and nongraphic geographical data to produce maps.
GEPL	5530	Elaborations on planning theory. The planner's role in land use regulation, economic development, housing and social service delivery is reviewed.
GEPL	5540	Survey analysis of meteorology and climatology. The physical processes of weather and the pattern of climate provide the basis for this course.
GEPL	5550	This course explores community-based alternatives and bottom-up development as a response to economic and social difficulties. The specific issues, strategies and applications of this approach are discussed.
GEPL	5570	The exploration of theoretical location analysis, pragmatic land development issues and analytic feasibility tools, and the consequences of land use policies that affect development.
GEPL	5580	The application of geographic location theory, spatial interaction modeling, optimization techniques and geographic information system processing to the solution of facility location problems.
GEPL	5600	Concepts and procedures for the organization, design and development of public and private urban forms and spaces at the micro-level, including a survey of intraurban elements, cultural, ecological and aesthetic considerations, historic preservation, and interdisciplinary collaboration. Research project required.
GEPL	5650	This course will introduce you to the fundamental aspects of physical geography: the understanding of the physical elements and processes which comprise the environment and the spatial patterns of these elements and processes.
GEPL	5700	This course introduces the skills and techniques used by practitioners in the planning process. Assignments will focus on the collection, analysis and communication of information by following community planning approaches.
GEPL	5710	Examines urban areas, the approaches to studying them, and explanations offered for urban processes and forms.
GEPL	5750	The role of transportation and communication in the economic development of places. Theories of geographic interaction, location of transport routes and the developmental implications of transport investments are explored.



GEPL	5810	Space and place facets of population size, growth, migration, distribution and composition with emphasis on the population trends and patterns in both developing and developed nations.
GEPL	5890	Personal explorations of urban space and place emphasizing an array of practical and ethical issues in the collection and interpretation of primary geographic data.
GEPL	6000	This course provides an introduction to the history and theories of urban planning, addresses the historical evolution of contemporary urban form and the politics of planning and urbanization.
GEPL	6100	Past and current trends in geographic thought and related methodological implications, with elaborations by current faculty members.
GEPL	6150	A computer-based course in geographic research methodology. The course includes an introduction to research design, data measurement, spatial sampling and multivariate approaches to the study of area networks and spatial distributions.
GEPL	6160	A computer-based laboratory course in multivariate spatial analysis methodologies. The course includes the study of spatial graphics and mapping, computerized regionalization, areal forecasting and predictive modeling techniques.
GEPL	6190	Seminar in advanced GIS topics which include database design, spatial analysis and specialized application to spatial problems.
GEPL	6200	The course is geared towards in-service teachers. Teachers will explore four natural events affecting the earth as a system, using inquiry-based learning and lesson plan development.
GEPL	6250	Explores advanced remote sensing techniques using satellite imagery and applications, including water resources, urbanization and agriculture.
GEPL	6300	Intensive group study of major themes in the resource management literature. Primary emphasis is placed on individual student research projects oriented toward resource management problems.
GEPL	6400	Explores current research in environmental perception/behavioral geography. Addresses how environmental perception (or, cognition) affects the way people respond to and interact with their surroundings.
GEPL	6530	The course applies forecasting and projection techniques to urban and regional problems. Population, economic base, land use, retail and fiscal impact analyses are examined.
GEPL	6550	Intensive group study of major goals and methodologies of environmental planning. Major emphasis is placed upon individual student research projects oriented toward specific environmental planning problems.
GEPL	6570	Intensive group study of major themes in the revitalization of urban neighborhoods, both residential and commercial. Major emphasis is placed upon individual residential and commercial. Major emphasis is placed upon individual student research projects oriented toward specific revitalization problems.



GEPL	6580	Course examines the changing land use and functions of metropolitan regions. City suburban linkages, urban restructuring, urban policy and metropolitan planning issues are examined.
GEPL	6590	A seminar in theoretical and applied location issues related to medical geography and health care delivery systems. Emphasis is placed on the allocation of services to meet the geographic distribution of health needs.
GEPL	6660	This course develops the necessary regional teaching units based on the Ohio K- Social Studies Academic Content Standards, including geography, people in societies, and social studies skills and methods.
GEPL	6700	Methods of teaching geography in a university of college setting. Supervision of labs or discussion.
GEPL	6910	The course is used for the completion of the comprehensive exam requirement for M.A candidates.
GEPL	6920	The course will have students prepare all the main components of a thesis proposal leading to the completion presentation of the proposal to their thesis advisory committee.
GEPL	6930	
GEPL	6940	Professional work experience with a Greater Toledo planning organization related to academic education.
GEPL	6950	Capstone course for GIS/Applied Geographic certificate program to provide hands-on experience in applying GIS, remote sensing and desktop mapping systems to spatially-oriented problems that are unique to their individual disciplines.
GEPL	6960	Work on a thesis is the culmination of graduate education and occupies most of the second year.
GERM	1080	Study of German culture and society with emphasis on business and economics. Taught in English. (Not for major credit.)
GERM	1090	An introduction to principal social, artistic and literary aspects of modern German culture. Taught in English. (Not for major credit.)
GERM	1110	An introduction to German language and culture through listening, speaking, reading and writing. Laboratory practice required.
GERM	1120	An introduction to German language and culture through listening, speaking, reading and writing. Laboratory practice required.
GERM	1500	Review of first-year college German for students who studied the language in high school and who need to strengthen communication skills, vocabulary, grammar and pronunciation before study at the 2000 level. (not for major credit)
GERM	2140	Practice of the four language skills with grammar review and readings of a literary-cultural nature. Laboratory practice required. (not for major credit)
GERM	2150	Further practice of the four language skills with grammar review and readings of a literary-cultural nature. Laboratory practice required. (Not for major credit)

GERM	2190	The course permits beginning students of German to study or work in a country where German is spoken. Credit will be awarded in accordance with established departmental procedures. (Not for major credit.)
GERM	3010	Work on advanced listening, speaking, reading and writing skills through intensive work with authentic texts that deal with contemporary issues relating to the German-speaking world.
GERM	3020	Work on advanced speaking, listening, reading and writing skills through intensive work with authentic texts that deal with contemporary issues relating to the German-speaking world. A writing-intensive course.
GERM	3170	An introduction to the language and practices of German business and commerce.
GERM	3180	An introduction to and the practical application of scientific and technical German language in the German-speaking world. Course is conducted in German.
GERM	3200	A survey of German literature from its origins to the present, with emphasis on literature after 1750.
GERM	3410	A study of different aspects of German culture and civilization such as fine arts, history, science and philosophy.
GERM	3420	A study of different aspects of German culture and civilization such as fine arts, history, science and philosophy.
GERM	3EL	
GERM	4010	Refinement of conversation and composition skills through the analysis of texts and written and oral exercises.
GERM	4020	A practical application of language skills in the preparation of a German-related project chosen developed and presented by the student. A writing-intensive and capstone course.
GERM	4160	A course in the theory and practice of teaching German and of second language acquisition in general.
GERM	4190	The course permits the German major or minor to study or works in a country where German is spoken. Credit awarded in accordance with established departmental procedures.
GERM	4200	Study of major trends and current developments in German Landeskunde. May be repeated when topic varies.
GERM	4500	The course traces the emergence of the German language from its Indo-European roots to its present-day form with regard to phonological, morphological, semantic and syntactic developments.
GERM	4510	Study of major works, figures and trends in a period of German literary history before 1750 such as Middle High German or Baroque.
GERM	4610	Study of writers from Leibniz to Lessing and their contributions to German Enlightenment.
GERM	4620	Study of Classical writers of Germany: Goethe, Schiller and their contemporaries.
GERM	4710	Study of selected works by authors from Buchner to Fontane.



GERM	4720	Study of Romantic writers of Germany such as Novalis, Eichendorff, E.T.A. Hoffmann and Bettina Brentano.
GERM	4810	Study of selected works by authors from the turn of the century to the present.
GERM	4850	Study of a selected literary or film genre, its development, and its influence on German culture. May be repeated for credit when topic varies.
GERM	4870	In-depth study of selected works of German literature in English translation. (Not for major credit).
GERM	4900	Readings of the works of a major author or authors of German literature. May be repeated when topic varies.
GERM	4910	Independent research in special topics. May be repeated once for additional credit.
GERM	4940	Educational work experience in a selected professional field. Experience must be carried out in a German-speaking country. Maximum of 3 hours may be applied to the German major or minor program.
GERM	4980	Study of a selected topic in German language, literature, or culture. May be repeated for credit when topic varies.
GERM	4990	Independent research in special topics. May be repeated once for additional credit.
GERM	5010	A review of German stylistic structures through the analysis of texts and written and oral exercises.
GERM	5020	Further review of German stylistic structures through the analysis of texts and written and oral exercises.
GERM	5160	A practical course in the theories, methods and specific techniques of teaching German. May be repeated once for additional credit.
GERM	5190	Graduate credit may be granted for foreign study on the basis of credentials that certify the nature of the student's academic achievements in a German-speaking country.
GERM	5200	Study of major trends and current developments in German Landeskunde. May be repeated when topic varies.
GERM	5210	Elements of pronunciation, structure and vocabulary most appropriate to preparing graduate students to read effectively in German. (Not for major credit).
GERM	5220	Elements of pronunciation, structure and vocabulary most appropriate to preparing graduate students to read effectively in German. (Not for major credit).
GERM	5500	The course traces the emergence of the German language from its Indo-European roots to its present-day form with regard to phonological, morphological, semantic and syntactic developments.
GERM	5510	Study of major works, figures and trends in a period of German literary history before 1750 such as Middle High German or Baroque.
GERM	5610	Study of writers from Leibniz to Lessing and their contributions to German Enlightenment.



GERM	5620	Study of Classical writers of Germany: Goethe, Schiller and their contemporaries.
GERM	5710	Study of selected works by authors from Buchner to Fontane.
GERM	5720	Study of Romantic writers of Germany such as Novalis, Eichendorff, E.T.A. Hoffmann and Bettina Brentano.
GERM	5810	Study of selected works by authors from the turn of the century to the present.
GERM	5850	Study of a selected literary or film genre, its development, and its influence on German culture. May be repeated for credit when topic varies.
GERM	5870	In-depth study of selected works of German literature in English translation. (Not for major credit).
GERM	5940	Educational work experience in a selected professional field. Experience must be carried out in a German-speaking country.
GERM	5950	Readings of the works of a major author or authors of German literature. May be repeated when topic varies.
GERM	5980	Study of a selected topic in German language, literature, or culture. May be repeated for credit when topic varies.
GERM	5990	Independent research in special topics. May be repeated once for additional credit.
GERM	6900	Independent research of a selected topic in German language, literature, or culture. May be repeated once for additional credit.
GERM	6930	Study of selected topics in German language, literature, or culture. May be repeated once for additional credit.
GERO	540	This course is designed to investigate health-related issues in older adults. The psychosocial aspects of disability and disease will be explored. Practical application of material will be emphasized.
GERO	541	Designed to explore introductory issues in older adults. Biological, psychological and sociological perspectives of aging will be addressed. Practical application of the material will be emphasized.
GERO	542	Grief and bereavement issues related to loss in later life will be explored. The role of the health care professional in facilitating the grief process will be introduced.
GERO	543	Funding opportunities and resource generation for older adult programming will be introduced. Students will be taught basic needs assessment, grant writing and proposal development skills.
GERO	544	Intensive discipline specific study in geriatrics and gerontology, including theoretical and experimental work. May be repeated for credit.
GIFT	4100	Examination of major topics about the development of talents and gifts with an emphasis on developmentally appropriate practices with young children.
GIFT	5100	Survey of major topics about the education and development of talents and gifts, including history, identification, social-emotional development, curriculum, creativity, intelligence, programming and evaluation.



GIFT	5200	The study of assessment and evaluation as it pertains to the special educational needs of talented and gifted persons. Theoretical and practical issues in assessing talent domains and educational programs are emphasized.
GIFT	5300	Examination of the social and emotional needs of talented and gifted persons within the context of roles in family, school and society. Attention to issues of guidance, parenting, special populations and underachievement.
GIFT	5400	Explores existing theories about creativity; examination of approaches and their implementation within various educational settings.
GIFT	5500	The study of curriculum models, theories and trends, principles and practices of differentiation, and application of content within various educational settings.
GIFT	5600	The study, development and implementation of curriculum models across content areas both vertically and horizontally within various educational settings. Focuses on multi-exceptionalities and implications of varied service delivery plans.
GIFT	5700	Provides opportunities for field experience to use and refine the strategies for persons with talented and gifted abilities.
GIFT	6000	The course examines the current theoretical and practical issues that are dominating the literature in the field. Perennial issues such as identification and intelligence will be discussed, as well as emergent topics such as the biological bases of advanced development and creativity and emotional adjustment.
GIFT	6100	The course explores social, cultural and political contexts related to advanced development or expression of talents. Emphasizes personal reflection and recognition of hegemony related to gifted individuals' past, present and future.
GIFT	6900	The course studies teaching, learning and curriculum from theoretical and historical perspectives to establish defensible lines of scholarly inquiry in gifted education.
GIFT	6910	The course studies the theoretical and research basis of development of specific academic domains, such as science, mathematics, language and literature, etc. Attention is paid to tacit as well as more public kinds of knowledge.
GIFT	6920	The course studies development and expression of aesthetic abilities and talents such literacy, theatrical and/or musical expressiveness, visual and performing arts, emotional giftedness, movement and dance.
GIFT	6930	The course studies the theoretical and research basis for development of talents in folk, practical and athletic domains. Attention is paid to tacit, esoteric and public forms of knowledge.
GIFT	6950	Independent research project that integrates and synthesizes concepts and practices in gifted and talented education with implementation of action research and practical inquiry study.



GIFT	6980	Collaborative inquiry into emerging topics in the field. This course is open to advanced graduate students in the master's or doctoral program.
GIFT	6990	Directed readings and/or study on a topic selected in conjunction with a faculty mentor.
GIFT	7100	Survey of major topics about the education and development of talents and gifts, including history, identification, social-emotional development, curriculum, creativity, intelligence, programming and evaluation.
GIFT	7200	The study of assessment and evaluation as it pertains to the special educational needs of talented and gifted persons. Theoretical and practical issues in assessing talent domains and educational programs are emphasized.
GIFT	7300	Examination of the social and emotional needs of talented and gifted persons within the context of roles in family, school and society. Attention to issues of guidance, parenting, special populations and underachievement.
GIFT	7400	Explores existing theories about creativity; examination of approaches and their implementation within various educational settings.
GIFT	7500	The study of curriculum models, theories and trends, principles and practices of differentiation, and application of content within various educational settings.
GIFT	7600	The study, development and implementation of curriculum models across content areas both vertically and horizontally within various educational settings. Focuses on multi-exceptionalities and implications of varied service delivery plans.
GIFT	7700	Provides opportunities for field experience to use and refine the strategies for persons with talented and gifted abilities.
GIFT	8000	The course examines the current theoretical and practical issues that are dominating the literature in the field. Perennial issues such as identification and intelligence will be discussed, as well as emergent topics such as the biological bases of advanced development and creativity and emotional adjustment.
GIFT	8100	The course explores social, cultural and political contexts related to advanced development or expression of talents. Emphasizes personal reflection and recognition of hegemony related to gifted individuals' past, present and future.
GIFT	8900	The course studies teaching, learning and curriculum from theoretical and historical perspectives to establish defensible lines of scholarly inquiry in gifted education.
GIFT	8910	The course studies the theoretical and research basis of development of specific academic domains, such as science, mathematics, language and literature, etc. Attention is paid to tacit as well as more public kinds of knowledge.



GIFT	8920	The course studies development and expression of aesthetic abilities and talents such literacy, theatrical and/or musical expressiveness, visual and performing arts, emotional giftedness, movement and dance.
GIFT	8930	The course studies the theoretical and research basis for development of talents in folk, practical and athletic domains. Attention is paid to tacit, esoteric and public forms of knowledge.
GIFT	8940	Supervised internship in college teaching, or administration/leadership in agencies, or research and evaluation for advanced graduate students to practice skills and knowledge within settings relevant to career goals in talented and gifted education.
GIFT	8960	Developing, conducting analyzing and writing the dissertation.
GIFT	8980	Collaborative inquiry into emerging topics in the field. This course is open to advanced graduate students in the master's or doctoral program.
GIFT	8990	Directed readings and/or study on a topic selected in conjunction with a faculty mentor.
GLST	2000	A multidisciplinary exploration of the world. Global processes will be examined using many viewpoints, such as culture, politics, economics, geography and philosophy.
GLST	2980	An exploration of a specific global issue. Approaches will be explicitly multidisciplinary and will make use of a variety of perspectives. May be repeated for credit.
GLST	4900	Theories and research methods in global studies will be examined. A major component of the course will be a research project on some aspect of global studies.
GLST	4960	Supervised research and writing for honors students only. May be taken twice for credit.
GLST	4980	An advanced multidisciplinary exploration of a specific issue in global studies. May be repeated for credit.
HCAR	4360	Purpose and philosophy of quality assessment and system design. Selection/application of tools for data collection, analysis and problem resolution. Incorporates requirements of Joint Commission on the Accreditation of Healthcare Organizations.
HCAR	4500	Case study approach to application and evaluation of health care-related information systems. Includes different information systems used in health care organizations. Basic systems concepts and interrelation between departments and entire organizations.
HCAR	4510	Coverage of historical development of legal controls in health care facilities, contemporary legal medical analysis and strategy. Also involves major factors influencing education in the allied health professions.
HCAR	4530	An investigation and study of problem solving and effective decision making within the dynamics of current health care organizations.
HCAR	4540	Internship in institutional health care focusing on mid-management.



HCAR	4550	Study of financial problems and current sources of reimbursement to health care organizations. Emphasis on departmental financial management as integrated with financial management of organizations.
HDSC	501	This course introduces the student to the history of organ procurement and transplantation, the role of the organ procurement coordinator, consent, privacy issues, diversity and multicultural issues related to death and other issues related with the profession.
HDSC	511	This course provides students with clinical information, cases and experiences to compliment HDSC 521. Students also will observe organ procurement coordinators and will be assigned "on call" rotations.
HDSC	512	Enables the learner to develop proficiency in the practice of human donation science in a clinical setting under the supervision of a professional organ procurement coordinator.
HDSC	513	Supervised full-time clinical experience in organ procurement organizations to prepare students for clinical practice. Builds upon classroom and practicum coursework.
HDSC	521	This course provides the foundation of the basic science and medical/surgical information required for the organ procurement coordinator. Topics include structure, normal and pathological function, pharmacology, brain death, and approaches to medical and surgical management.
HDSC	531	Builds upon the foundations of the basic science and medical-surgical information required for the organ procurement coordinator.
HDSC	541	Selected topics that integrate learning and practice in human donation science.
HEAL	1500	Provides knowledge, skills and confidence of care for victims of sudden illnesses and injuries. CPR for Professional Rescuer and First Responder certification (NSC) upon successful course completion.
HEAL	1700	An introduction to health and human service careers through an examination of the health care system, health career educational requirements, job outlook, and professional settings in which they operate.
HEAL	1800	Study of the origin and structure of medical words, their prefixes, suffixes, special endings and singular to plural forms. Medical terms relating to the body and to clinical procedures will be explored.
HEAL	2000	Designed to acquaint students with basic information, history, philosophy and competencies unique to health educators in both the school and community setting. The Competencies for Entry-Level Health Educators will be introduced in this course and a portfolio documenting achievement in each competency will be started.
HEAL	2400	An analysis of accident causation and disasters occurring in the home, workplace and community, and the presentation of a framework for developing accident counter-measures.



HEAL	2500	Information is presented on the prevention and control of health problems including heart disease, cancer, infectious diseases, mental health, nutrition, human sexuality and other pertinent personal health issues.
HEAL	2600	An examination of the principles of mental health, mental illnesses, mental health professionals and mental health facilities.
HEAL	2700	Introduces students to the structure, organization and methods of public health including an emphasis on protecting and improving the health of populations via research, needs assessment, program planning, program implementation, and program evaluation.
HEAL	2750	This course provides students with a basic understanding of epidemiologic methods and study design and of the place of epidemiology in preventive and clinical medicine, disease investigation, program evaluation and public policy.
HEAL	2800	Students learn basic nutrition concepts. Personal nutritional practices are analyzed and evaluated to plan improvements. Encourages making informed decisions about nutrition by critically analyzing nutrition information which abounds in popular media.
HEAL	2900	In this course, health education major students will discuss the information learned in health content courses and teaching.
HEAL	2940	Supervised field experience with community health agency. Students work under direct supervision of the agency's staff and a University supervisor.
HEAL	3000	This is an introductory course focused on applying public health principles in developing as well as developed countries designed to fulfill a global studies distribution requirement.
HEAL	3100	This course will focuses on developmentally integrated learning experiences in basic health, safety and nutrition, health appraisal procedures, and utilization of community resources.
HEAL	3200	An examination of responsible and fraudulent practices in the health field. Evaluation of selected health services, products, fads and types of quackery.
HEAL	3300	Focuses on the impact of drug abuse and misuse on the individual and society. Explores physiological, psychological and rehabilitative aspects of drug misuse and abuse. Prevention strategies are discussed.
HEAL	3400	Provides students with an introduction to comprehensive school health education programs and to the health information and skills necessary to teach health education.
HEAL	3500	An overview of the environmental effects of factors such as population growth, pollution, energy use, agriculture practices and waste disposal on the environment. Consideration will be given to solutions.
HEAL	3600	An examination of the etiology, pathogenesis, prevention and control of acute and chronic diseases. Current techniques of prevention, control and detection are examined.



HEAL	3700	The course is designed to provide an introduction to the scientific study of human sexuality. The topic is approached from a variety of perspectives, including the historical, psychological, sociological, biological, ethical and legal.
HEAL	3800	The course is designed to analyze the relationship between death and health with emphasis upon the biological, psychological, bioethical and legal aspects of death in contemporary society.
HEAL	4100	Examines the major theories and models of health behavior and explores how those theories/models can be used to promote health and wellness in individuals, groups and populations.
HEAL	4200	Introduces students to resource materials and methods appropriate for community health education. Students will use various mediums of instruction in direct application to community health programs.
HEAL	4300	A course emphasizing theory, methods, materials and curriculum in health instruction. Required prior to student teaching.
HEAL	4350	This field experience allows school health education majors the opportunity to observe and practice teaching health education in a secondary school setting.
HEAL	4400	Designed to provide education majors with the knowledge and skills to help identify, understand and prevent preadolescent and adolescent health problems which directly impact school and future success.
HEAL	4500	The course is designed to consider personal health topics of special interest and applicability to women. The focus is upon the role of self-understanding and self-help in promotion of health and well-being.
HEAL	4560	Acquaints students with physical changes and socio-psychological problems that occur with aging. Focus is on personal adjustment important in maintaining health throughout the aging process.
HEAL	4600	Acquaints students with the organization, administration and evaluation of the eight components of a coordinated school health program.
HEAL	4700	Introduces basic human nutritional needs. Examines the role of diet and health and disease throughout the lifestyle, including weight control and fitness issues. Personal nutritional practices are analyzed and evaluated.
HEAL	4750	Examines the issues of obesity and eating disorders. Consideration of effects on the individual as well as the public health implications. Explores causes, health and emotional impact, and treatment approaches.
HEAL	4800	An examination of research and statistical techniques commonly employed in the health field. Topics will include research design, ethics of research, hypothesis testing and critiques of published research in health journals.
HEAL	4900	Seminars are developed around selected topics of interest and allow in-depth consideration of the subject. They provide the student with advanced study in the area.



HEAL	4920	This course will focus on reflection and feedback on student teaching, portfolio development, interviewing and resume writing.
HEAL	4930	Planned field experience in public school health education classroom under the direction of a university supervisor. Observation of an experienced teacher followed by full responsibility by the student teacher.
HEAL	4940	Planned supervised field experience with a health related agency. Students will work under direct supervision of staff personnel of the specific agency and a university supervisor.
HEAL	4950	A workshop developed around topics of interest and concern for preservice teachers and other educational personnel.
HEAL	4990	Directed individual study. Specialty title, seminar sheet and permission of instructor are required.
HEAL	5200	Designed to provide information, skills and materials that are needed to teach elementary health education.
HEAL	5400	Examination of the roles and standards of school nursing, legal and ethical issues faced by school nurses, and techniques commonly employed by school nurses.
HEAL	5500	The course is designed to consider personal health topics of special interest and applicability to women. The focus is upon the role of self-understanding and self-help in promotion of health and well-being.
HEAL	5750	Examines the issues of obesity and eating disorders. Consideration of effects on the individual as well as the public health implications. Explores causes, health and emotional impact, and treatment approaches.
HEAL	5930	A seminar to consider health problems and provide advanced study in health education. A graduate student may register for this seminar two or more times with permission of the adviser.
HEAL	5940	A field internship designed to supplement classroom experience by providing direct insights into the operation of a comprehensive school health education program in public schools.
HEAL	5950	Topical workshops developed around areas of interest and concern to health professionals. Credit cannot be applied towards a degree program.
HEAL	6000	This course will examine the historical and philosophical foundations underlying the health education profession. Occupational and ethical issues specific to the field of health education will be explored.
HEAL	6100	This course is designed to provide an overview of the issues surrounding teaching at the college level.
HEAL	6200	Introduces students to resource materials and methods appropriate for public health education. Students will use various mediums of instruction in direct application to public health programs.
HEAL	6250	Examination of human nutritional needs. Emphasized the role of diet in health and disease throughout the lifecycle and includes current nutrition issues. Population nutritional practices are analyzed and evaluated.



HEAL	6280	Designed to help students identify, analyze, and apply concepts, theories and methodologies related to health communication in various settings and at various levels of influence. Emphasis will be placed on learning how to design, communicate and evaluate effective health promotion messages.
HEAL	6300	Focuses on techniques to bring about change in a community's health status through assessment, public advocacy, coalition building, decision making, planning, policy development and political influence. Application will be emphasized.
HEAL	6360	An examination of applied survey research techniques essential in conducting health-related surveys. Topics will include standard health survey instruments, sample selection, quality instruments, response rates and data presentation for publication.
HEAL	6420	Examines basic nutritional needs as applied to physical activity and athletic performance. Focuses on the application of current research in sports nutrition to determine the nutritional needs of athletes.
HEAL	6460	An examination of current issues and research associated with health promotion in the workplace. This course will focus on the implementation and evaluation of health promotion programs appropriate to the workplace.
HEAL	6500	Acquaints students with problems and issues in school health education and with today's youth. The coordinated school health program is examined as a possible solution to many of these problems.
HEAL	6530	Focuses on impact of drug abuse and misuse on the individual and society. Explores physiological, psychological, societal and rehabilitative aspects of substance abuse. Prevention strategies are addressed.
HEAL	6540	The course examines the historical, physiological, psychological, sociological and ethical aspects of human sexuality in health and illness. Extensive emphasis is placed on reviewing the pertinent periodical literature.
HEAL	6550	Epidemiology of selected chronic diseases and non-infectious conditions: cancer, cardiovascular diseases, musculoskeletal diseases and other chronic diseases. Emphasis on classification, rates associations, etiology, prevention and control. Pertinent literature critically reviewed.
HEAL	6590	An examination of major health problems and health care delivery needs of the older adult.
HEAL	6600	Examines the role of behaviors on health status and how to influence and understand behavior through use of cognitive models and change theory. Applications through projects are emphasized.
HEAL	6640	Examination of various contemporary issues in public health. Included are social, economic, political and community problems in the provision of health services, health manpower and payment for health care.



HEAL	6700	An examination of the process utilized in determining the distribution of disease and in analyzing factors related to disease occurrence. The course focuses on measurements used in the surveillance and investigation of diseases.
HEAL	6720	This course will be an examination of the demographic trends of racial/ethnic minorities and social, political and economic factors affecting the physical and mental well-being of minorities.
HEAL	6750	Fundamental statistical concepts related to the practice of public health. Topics include: descriptive statistics; probability; sampling theory; hypothesis testing; life tables; and applied statistical methods, including basic non-parametric analyses. Use of the computer in statistical analyses.
HEAL	6800	An exploration of types of program evaluation, evaluation models, data collection, types of data, data quality, evaluation reports, standard data collection instruments and ethical issues in health program evaluation.
HEAL	6820	This course covers advanced concepts in epidemiologic methods with an emphasis on statistical considerations of both observational and experimental designs.
HEAL	6880	This course is designed to integrate research methods with the writing of a five-chapter thesis or dissertation, including: selecting a topic, literature reviews; research hypotheses; selecting participants; data analysis; instrument development; institutional review boards; references; conclusions, discussion, and recommendations.
HEAL	6900	Consideration is given to funding sources, proposal guidelines, procedures for support, budgetary requirements and evaluation procedures. Students examine different types of funded projects, develop a research prospectus and grant proposal, and explore the art of politics and grantsmanship.
HEAL	6920	Open to graduate students who elect the completion of a master's project in fulfilling the research elective of the master's program. Students may register for the credits in more than one semester.
HEAL	6930	A seminar to consider problems and provide advanced study in several fields of education and other disciplines related to health education. Open only to advanced graduate students.
HEAL	6940	A field internship designed to supplement classroom experience by providing direct insight into the operation of a public health agency through participant-observer experience.
HEAL	6960	Open to graduate students who elect the completion of a master's thesis in fulfilling the research elective of the master's program. Students may register for the credits in more than one semester.
HEAL	6990	The student will participate in independent readings, laboratory research, field experience and other activities not suited for class instruction. May be repeated for course credit.



HEAL	7500	This course is designed to consider personal health topics of special interest and applicability to reproductive health. The focus is on the etiology, pathology and prevention sex-specific health problems.
HEAL	7930	A seminar to consider health problems and provide advanced study in health education. A graduate student may register for this seminar two or more times with permission of the adviser.
HEAL	7940	A field internship designed to supplement classroom experience by providing direct insights into the operation of a comprehensive school health education program in public schools.
HEAL	7950	Topical workshops developed around areas of interest and concern to health professionals. Credit cannot be applied towards a degree program.
HEAL	8000	This course will examine the historical and philosophical foundations underlying the health education profession. Occupational and ethical issues specific to the field of health education will be explored.
HEAL	8100	This course is designed to provide an overview of the issues surrounding teaching at the college level.
HEAL	8200	Introduces students to resource materials and methods appropriate for public health education. Students will use various mediums of instruction in direct application to public health programs.
HEAL	8250	Examination of human nutritional needs. Emphasized the role of diet in health and disease throughout the lifecycle and includes current nutrition issues. Personal nutritional practices are analyzed and evaluated.
HEAL	8280	Designed to help students identify, analyze, and apply concepts, theories and methodologies related to health communication in various settings and at various levels of influence. Emphasis will be placed on learning how to design, communicate and evaluate effective health promotion messages.
HEAL	8300	Focuses on techniques to bring about change in a community's health status through assessment, public advocacy, coalition building, decision making, planning, policy development and political influence. Application will be emphasized.
HEAL	8360	An examination of applied survey research techniques essential in conducting health-related surveys. Topics will include standard health survey instruments, sample selection, quality instruments, response rates and data presentation for publication.
HEAL	8420	Examines basic nutritional needs as applied to physical activity and athletic performance. Focuses on the application of current research in sports nutrition to determine the nutritional needs of athletes.
HEAL	8460	An examination of current issues and research associated with health promotion in the workplace. This course will focus on the implementation and evaluation of health promotion programs appropriate to the workplace.
HEAL	8500	Acquaints students with problems and issues in school health education and with today's youth. The coordinated school health program is examined as a possible solution to many of these problems.



HEAL	8520	Explore the interdisciplinary and entrepreneurial approaches that lead to effective community nutrition programs. Investigates the impact of these programs to alleviate national and international nutritional problems.
HEAL	8530	Focuses on impact of drug abuse and misuse on the individual and society. Explores physiological, psychological, societal and rehabilitative aspects of substance abuse. Prevention strategies are addressed.
HEAL	8540	The course examines the historical, physiological, psychological, sociological and ethical aspects of human sexuality in health and illness. Extensive emphasis is placed on reviewing the pertinent periodical literature.
HEAL	8550	Epidemiology of selected chronic diseases and non-infectious conditions: cancer, cardiovascular diseases, musculoskeletal diseases and other chronic diseases. Emphasis on classification, rates associations, etiology, prevention and control. Pertinent literature critically reviewed.
HEAL	8590	An examination of major health problems and health care delivery needs of the older adult.
HEAL	8600	Examines the role of behaviors on health status and how to influence and understand behavior through use of cognitive models and change theory. Applications through projects are emphasized.
HEAL	8640	Examination of various contemporary issues in public health. Included are social, economic, political and community problems in the provision of health services, health manpower and payment for health care.
HEAL	8700	An examination of the process utilized in determining the distribution of disease and in analyzing factors related to disease occurrence. The course focuses on measurements used in the surveillance and investigation of diseases.
HEAL	8720	This course will be an examination of the demographic trends of racial/ethnic minorities and social, political and economic factors affecting the physical and mental well-being of minorities.
HEAL	8750	Fundamental statistical concepts related to the practice of public health. Topics include: descriptive statistics; probability; sampling theory; hypothesis testing; life tables; and applied statistical methods, including basic non-parametric analyses. Use of the computer in statistical analyses.
HEAL	8800	An exploration of types of program evaluation, evaluation models, data collection, types of data, data quality, evaluation reports, standard data collection instruments and ethical issues in health program evaluation.
HEAL	8820	This course covers advanced concepts in epidemiologic methods with an emphasis on statistical considerations of both observational and experimental designs.



HEAL	8880	This course is designed to integrate research methods with the writing of a five-chapter thesis or dissertation, including: selecting a topic, literature reviews; research hypotheses; selecting participants; data analysis; instrument development; institutional review boards; references; conclusions, discussion, and recommendations.
HEAL	8900	Consideration is given to funding sources, proposal guidelines, procedures for support, budgetary requirements and evaluation procedures. Students examine different types of funded projects, develop a research prospectus and grant proposal, and explore the art of politics and grantsmanship.
HEAL	8930	A seminar to consider problems and provide advanced study in several fields of education and other disciplines related to health education. Open only to advanced graduate students.
HEAL	8940	A field internship designed to supplement classroom experience by providing direct insight into the operation of a public health agency through participant-observer experience.
HEAL	8960	Graduate students may register for credit in more than one semester. Dissertation credit toward the degree program may not exceed 16 hours.
HEAL	8990	The student will participate in independent readings, laboratory research, field experience and other activities not suited for class instruction. May be repeated for course credit.
HED	5920	This course explores the expectations and challenges of graduate education. We will look at the role of the graduate student, faculty, adviser, and other university offices that support your journey.
HED	5930	This seminar formatted course will provide the opportunity to explore problems and issues from the perspectives of the various fields of education and of other disciplines related to higher education.
HED	5950	Each workshop is developed on a topic of interest to faculty members and administrators of higher education institutions. Practical applications of the workshop topic will be emphasized.
HED	5980	This seminar formatted course will provide advanced study in special topics of interest to faculty and administrators in higher education.
HED	6010	Introduction to the historical development of American higher education from colonial times to the 20th century. Emphasis on the major historical events that contributed to the diversity of higher education.
HED	6210	A study of the history, distinguishing characteristics (mission, functions, organization, curriculum, finances) and current issues facing community colleges, including marginalization of students and institutions, and transfer and articulation policy.
HED	6250	Technical, occupational and career education account for over 40 percent of community college enrollments. This course examines the development, mission, functions and assessment of technical education, including community needs assessment.



HED	6270	Course facilitates application of theory to practice of teaching in higher education. Students explore diverse pedagogical approaches, professional faculty roles effective learning and teaching.
HED	6410	Introduction to patterns of curriculum development and organization in post-secondary education. Addresses issues governing curriculum planning, including social, economic, political, historical and philosophical contexts influencing curriculum formation and operation.
HED	6440	This course will examine the meaning and purposes of general education in the United States. Students will become acquainted with the design, analysis and evaluation of general education curricula.
HED	6510	This course explores the character and nature of student populations in contemporary American colleges and universities and considers the impact of campus environments and experiences on development, interaction and learning.
HED	6520	A brief overview of functional areas and philosophies is followed by a comprehensive examination of student affair's organization and management from the perspective of the Chief Student Affairs Officer.
HED	6530	Students will critically examine traditional and contemporary theories of college student development, identify methods of assessing that development, and explore ways to apply the theories to everyday practice.
HED	6610	This course explores access issues that result from the changing educational needs of society and analyzes the application of democratic ideals of American education to current educational policies affecting access.
HED	6640	Course focuses on internal administrative organization and governance that supports the academic enterprise. Purposes and development of mission and functions, centralization and decentralization, accreditation, appraisal, accountability, and assessment are discussed.
HED	6660	An examination of institutional culture and the interplay of student, faculty and administrative subcultures. Critical perspectives are used to analyze and understand cultural inquiry, conflict and collaboration in post secondary institutions.
HED	6700	This course discusses issues related to the expenditure of funds for higher education within institutions and systems. Issues addressed include capital funding, endowment management and budget preparation.
HED	6710	This course discusses issues related to the revenue sources of higher education and discussion of the social worth of public and private sector investment in higher education. Issues include the connection of educational outcomes to educational budget making and how sources of funds drive educational policymaking.
HED	6730	Law, its history, philosophy and practical application to an effect on the creation and administration of public and private higher education is examined in the context of court decisions.



HED	6750	Engages students in development of model strategic plans applicable to academic and nonacademic programs. Students learn how "big strategic decisions are made right," by focusing on strategic mission, analysis, goals, objectives, implementation and evaluation. Policies and practices regarding how institutions create internal climates for data-driven decision-making are discussed.
HED	6770	Historical concepts and basis for evaluation of college and university programs, emphasizing criteria and procedure and how evaluation and outcomes assessment through regional accrediting bodies, state and federal agencies contribute to public confidence in higher education.
HED	6790	This course acquaints students with key concepts regarding how to effectively manage human resources within large, medium-sized, small, public and private institutions of higher education. Topics covered will include collective bargaining in higher education.
HED	6810	This course will study the history of women's college education in the United States with special emphases on the influence of cultural and social events that shape this history.
HED	6820	Overview of the field of development and introduction to the knowledge, research and theory emerging in the field. Focus on practical skill enhancement as it applies to building development programs.
HED	6830	This course details the role, place and function of the four year independent colleges, focusing on their development, organization, funding and evaluation.
HED	6840	Course assists student in interpreting the highly diversified field of adult continuing education from the point of view of the student's current or anticipated involvement. Intended for teachers of adults.
HED	6850	Focus on critical issues facing administrators in post-secondary education in the United States. Issues discussed change yearly. Students will read widely and prepare a research paper or a project.
HED	6870	How do institutions of higher education impact their local economies? This course examines various roles and methods by which institutions of higher education add to economic development.
HED	6920	Open to graduate students who elect the completion of a research project in fulfilling the research requirements of the master's program.
HED	6940	This course provides students with the opportunity to develop specialized skills working in an area of college student personnel administration. Students will work under the supervision of an experienced administrator.
HED	6960	Open to graduate students who elect the completion of a research thesis in fulfilling the research requirements of the master's program.
HED	6980	This course aims to strengthen students' academic and professional skills and to apply them in different student affairs contexts. As the culminating requirement, students develop an electronic academic learning portfolio.



HED	6990	Provides student the opportunity to work independently on professional problem under direction of Higher Education Program faculty member. Student meets individually with instructor rather than through formal class meetings.
HED	7930	This seminar formatted course will provide the opportunity to explore problems and issues from the perspectives of the various fields of education and of other disciplines related to higher education.
HED	7950	Each workshop is developed on a topic of interest to faculty members and administrators of higher education institutions. Practical applications of the workshop topic will be emphasized.
HED	7980	This seminar formatted course will provide advanced study in special topics of interest to faculty and administrators in higher education.
HED	8010	Introduction to the historical development of American higher education from colonial times to the 20th century. Emphasis on the major historical events that contributed to the diversity of higher education.
HED	8020	Historical methods applied to research in higher education discussed. Course focuses on in-depth readings of primary source material on liberal arts colleges, universities and community colleges. Research paper required.
HED	8030	Designed for those interested in federal and state policy as related to higher education. Students will investigate specific federal and state legislation and regulatory issues.
HED	8210	A study of the history, distinguishing characteristics (mission, functions, organization, curriculum, finances), and current issues facing community colleges, including marginalization of students and institutions, and transfer and articulation policy.
HED	8250	Technical, occupational and career education account for over 40 percent of community college enrollments. This course examines the development, mission, functions and assessment of technical education, including community needs assessment.
HED	8270	Course facilitates application of theory to practice of teaching in higher education. Students explore diverse pedagogical approaches, professional faculty roles effective learning and teaching.
HED	8410	Introduction to patterns of curriculum development and organization in post-secondary education. Addresses issues governing curriculum planning, including social, economic, political, historical and philosophical contexts influencing curriculum formation and operation.
HED	8440	This course will examine the meaning and purposes of general education in the United States. Students will become acquainted with the design, analysis and evaluation of general education curricula.
HED	8510	This course explores the character and nature of student populations in contemporary American colleges and universities and considers the impact of campus environments and experiences on development, interaction and learning.



HED	8520	A brief overview of functional areas and philosophies is followed by a comprehensive examination of student affair's organization and management from the perspective of the Chief Student Affairs Officer.
HED	8530	Students will critically examine traditional and contemporary theories of college student development, identify methods of assessing that development, and explore ways to apply the theories to everyday practice.
HED	8570	Introduces students to the research literature in higher education; historical, qualitative and sociological research approaches are discussed. Introduces students to many of the major scholarly figures and modern research controversies within the field of higher education.
HED	8580	Focuses on historical and philosophical aspects of leadership theory, as well as on personalized models for the students' future leadership roles in higher education. Other emphases include the importance of vision and values in the leadership process and development of analytical and communication abilities.
HED	8610	This course explores access issues that result from the changing educational needs of society and analyzes the application of democratic ideals of American education to current educational policies affecting access.
HED	8630	Course focuses on faculty issues in higher education, and addresses academic and student freedom, developing effective promotion and tenure policies appropriate to different types of institutions, and faculty development programs.
HED	8640	Course focuses on internal administrative organization and governance that supports the academic enterprise. Purposes and development of mission and functions, centralization and decentralization, accreditation, appraisal, accountability, and assessment are discussed.
HED	8660	An examination of institutional culture and the interplay of student, faculty and administrative subcultures. Critical perspectives are used to analyze and understand cultural inquiry, conflict and collaboration in post secondary institutions.
HED	8700	This course discusses issues related to the expenditure of funds for higher education within institutions and systems. Issues addressed include capital funding, endowment management and budget preparation.
HED	8710	This course discusses issues related to the revenue sources of higher education and discussion of the social worth of public and private sector investment in higher education. Issues include the connection of educational outcomes to educational budget making and how sources of funds drive educational policymaking.
HED	8730	Law, its history, philosophy and practical application to an effect on the creation and administration of public and private higher education is examined in the context of court decisions.



HED	8750	Engages students in development of model strategic plans applicable to academic and nonacademic programs. Students learn how "big strategic decisions are made right," by focusing on strategic mission, analysis, goals, objectives, implementation and evaluation. Policies and practices regarding how institutions create internal climates for data-driven decision-making are discussed.
HED	8770	Historical concepts and basis for evaluation of college and university programs, emphasizing criteria and procedure and how evaluation and outcomes assessment through regional accrediting bodies, state and federal agencies contribute to public confidence in higher education.
HED	8790	This course acquaints students with key concepts regarding how to effectively manage human resources within large, medium-sized, small, public and private institutions of higher education. Topics covered will include collective bargaining in higher education.
HED	8810	This course will study the history of women's college education in the United States with special emphases on the influence of cultural and social events that shape this history.
HED	8820	Overview of the field of development and introduction to the knowledge, research, and theory emerging in the field. Focus on practical skill enhancement as it applies to building development programs.
HED	8830	This course details the role, place and function of the four year independent colleges, focusing on their development, organization, funding and evaluation.
HED	8840	Course assists student in interpreting the highly diversified field of adult continuing education from the point of view of the student's current or anticipated involvement. Intended for teachers of adults.
HED	8850	Focus on critical issues facing administrators in post-secondary education in the United States. Issues discussed change yearly. Students will read widely and prepare a research paper or a project.
HED	8870	How do institutions of higher education impact their local economies? This course examines various roles and methods by which institutions of higher education add to economic development.
HED	8920	An in-depth review of key issues related to campus leadership is discussed in seminar form. Students may work with professor on cutting-edge research project.
HED	8930	This course examines research findings and research methodology in Higher Education as they are pertinent to the development of dissertation proposals. Dissertation proposal development is encouraged.
HED	8940	Designed specifically for doctoral students in the higher education program who are interested in an actual supervised experience in teaching or administration.



HED	8960	Original and specific research problem of a scholarly nature, requiring the application of advanced research skills and techniques to study. Students must take a minimum of 10 semester dissertation hours and may count a maximum of 12 hours towards the degree.
HED	8990	Provides student the opportunity to work independently on professional problem under direction of Higher Education Program faculty member. Student meets individually with instructor rather than through formal class meetings.
HHS	1000	Acquaints the new student with the services, policies, procedures and layout of the university, college and department. Establishes relationships between new students, full-time professors and peer mentors during this time of adjustment. Must be taken first semester of enrollment.
HHS	2980	Selected subjects in the field of Health and/or Human Service of special interest to the class and the professor - lower division.
HHS	4980	Selected subjects in the field of Health and/or Human Service of special interest to the class and the professor - upper division.
HIM	1110	This course introduces medical word building, prefixes, suffixes and special endings. The medical terms relating to body structure are presented. The following systems are explored in detail: musculoskeletal, respiratory, cardiovascular, genitourinary and blood and lymph systems.
HIM	1220	Course addresses service and quality in ambulatory medical office policies and standards, personnel, patient satisfaction and financial management. Course focuses on office management, problem solving and effectiveness of office systems.
HIM	2200	Course covers documentation in an ambulatory medical office and focuses on accurate billing for payment of services, as well as compliance to federal regulations and electronic submission of claims.
HIM	2210	Expanded medical linguistics utilized in coding, classification systems and ancillary services, especially surgery, medical imaging, anesthesiology, medical tests and laboratory procedures. Linguistics of pharmacology, pathophysiology and infectious/parasitic diseases are analyzed.
HIM	2940	Guided professional practice experience in an ambulatory setting, such as a physician's office, hospital, clinic, etc.
HIM	3200	Introduction to roles of professionals in meeting standards of regulatory agencies and voluntary organizations in healthcare delivery systems. Data collection, quality, access, retention, technology and impact on healthcare financing.
HIM	3210	Principles of coding diseases, conditions and procedures with the International Classification of Disease System. Practice in the assignment of codes using both computerized and manual methods.
HIM	3220	Principles of coding with the HCPCS classification system. Practice in the assignment of codes using both computerized and manual methods.



HIM	3230	Inpatient and ambulatory health care data requirements will be identified and analyzed, including collection, analysis and implementation. Form design and screen design will be developed and reviewed.
HIM	3240	Theory and principles related to facilities, organizations and agencies in healthcare. Focus on HIM strategic planning, departmental responsibilities, marketing, training and development, privacy and security, compliance, and research and epidemiology.
HIM	3940	Generalized health information administrative duties in regards to staffing, managing, record release, storage and retrieval, coding, abstracting, utilization management, quality improvement, computer applications in health information practice.
HIM	4200	DRGs, APCs, RBRVs and reimbursement methods used by federal, state and private insurance. Compliance issues and case mix reviewed. Processes explored for providing and improving healthcare cost containment and quality.
HIM	4210	Various procedures specific to health information practice will be addressed including medical information, calculation and interpretation of health care statistics, tumor registry and health care records.
HIM	4220	This course provides an integrated approach to management of diverse projects encountered in acute care and ambulatory healthcare facilities. Software is utilized to simulate actual project management planning and development.
HIM	4240	Topics of interest in health information management stressing solution/resolution of issues related to healthcare delivery, data management, statistics, biomedical research, information technology systems, quality and organizational management, and healthcare delivery. Junior Standing required.
HIM	4260	Medico legal practice and professional ethics in healthcare. Overview of the legal system, identification of medico legal topics, and related ethical concerns. Hardcopy and electronic health record legal issues examined in detail.
HIM	4910	Course consists of demonstrating proficiencies and competencies in HIM core course through project assignments.
HIM	4940	Specialized administrative assignment within health information management in a facility, agency or organization. Students submit a major project for the site and members of the related HIM community of practice.
HIM	4EL	
HIST	1010	A survey of western Europe, including its ancient Jewish, Greco-Roman and Christian roots; the Middle Ages, Renaissance and Reformation.
HIST	1020	A survey of European history from the 17th century to the present with emphasis on the major political, economic, social and cultural trends.
HIST	1050	A survey of the ancient world from the stone age to around 1500. Cultural and political topics are treated so as to compare the major civilizations.



HIST	1060	A survey of world history from 1500 to the present. Cultural and political topics are treated so as to draw comparisons between the most significant modern societies.
HIST	1070	This thematic survey of the 20th century from a historical and global perspective emphasizes the origins of the world in which we live and discusses some of our alternative futures.
HIST	1080	Multidisciplinary introduction to traditional East Asia (origins-1800) with emphasis on the historical development, political traditions, socio-economic patterns, religious and philosophical values, and cultural accomplishments of China and Japan.
HIST	1090	Multidisciplinary introduction to the history, civilization, political organization, international relations, social and economic patterns, and cultural trends of China and Japan since 1800.
HIST	1100	A thematic survey from pre-Columbian times to the present. Covers Native American cultures, European colonial policies and institutions, independence movements, the emergence of new nations and twentieth-century problems.
HIST	1110	General cultural and historical survey of Africa south of the Sahara from earliest times to the 20th century. Includes topics on art, literature, philosophy, religion and society.
HIST	1120	General cultural and historical survey of the Middle East and Islam from 600 to the 20th century. Includes topics in historical movements, literature, religion, and social and intellectual history.
HIST	1130	(Not for major credit) An introduction to the nature, concepts and skills of the discipline of history designed to improve historical awareness and the ability to think historically. Occasionally offered as a writing intensive course.
HIST	1200	This thematic survey introduces students to historical theory, methods, and the primary sub-fields of American history from colonial conquest to the present day.
HIST	2000	Research techniques, writing of term papers and book reviews. Introduction to historiography. Offered as a writing intensive course.
HIST	2010	The development of the United States from its Native American and immigrant roots through the Civil War.
HIST	2020	Survey of American history since the Civil War, with special attention to political, social, economic and cultural developments.
HIST	2030	The careers of selected Americans in politics, business, science, religion and literature.
HIST	2040	Survey of the Sumerian, Babylonian, Hittite, Assyrian, Egyptian, Palestinian and Persian worlds.
HIST	2050	Survey of the Greek and Hellenistic world.
HIST	2060	Survey of the Roman Republic and Empire.
HIST	2070	Institutions, culture and religion from earliest times through the Biblical Period and the fall of the Temple in the 1st century.



HIST	2090	Background to the contemporary Jewish community. Ghetto, emancipation, Zionism, Holocaust and third Jewish commonwealth in Israel.
HIST	2170	An introductory course on British history from the Roman conquest to 1714. Emphasis on Anglo-Saxon and Norman invasions, the rise of Parliament, common law, and Puritan Revolution.
HIST	2180	An introductory course on British history from the Hanoverian dynasty to the present. Emphasis on English maritime power, the industrial revolution and two world wars.
HIST	2190	From the 17th to the 20th century, the mutual influences in literature and history of colony and colonizer are examined.
HIST	2250	World War I from origins to conclusion and its effect on the course of the 20th century. Political and diplomatic background, conduct, termination, technology, and the war's effect on society and the 20th century.
HIST	2260	Analysis of contemporary and retrospective documentary film treatments of major aspects of World War II, with emphasis on their historical accuracy and authenticity.
HIST	2280	Early history of Toledo and the Maumee River Valley, including Indian settlement, imperial rivalries, Maumee Valley towns, economic growth, immigrant arrivals and the creation of neighborhoods.
HIST	2290	The growth of Toledo in the 20th century, including suburbanization, the city's leadership in the national Progressive Movement, Depression and New Deal, organized labor, individual suburbs, and recent problems.
HIST	2340	An introduction to Indian-White relations from pre-Columbian times to present. Emphasizes tribes of the United States, Mexico and Canada.
HIST	2450	Canadian history from before European contact to Confederation. Considers European-Native contact, Canada as an extension of Europe and the beginnings of Canadian identities.
HIST	2460	Canadian history since Confederation. Considers expansion westward, constitutional development, continuing British vs. French, and European vs. Native tensions. Canada and the U.S., modern society, economy, politics.
HIST	2640	Russia from the 9th century to 1700, including Kievan and Moscovite Russia.
HIST	2650	Russia from 1700 to the present, including Imperial and Soviet Russia.
HIST	2700	A study of the factors behind Japan's entry into World War II with the United States and the Allied Powers and an in-depth treatment of Japan at war.
HIST	2710	This course examines the development of Japan since the war. It focuses on the political, economic, social and cultural changes since 1945 and relates these factors to Japan's international relations.
HIST	2720	An examination of Japanese urban social and cultural history. Treats the foundations of Edo, transition to Tokyo, the modern rise, the great earthquake, the war, the Olympics and the present.



HIST	2730	This course examines the process by which Mao Zedong and the Chinese Communist Party came to power. It treats the political, economic and social forces behind the Chinese revolution (1900-49).
HIST	2740	The background, character and impact of the Vietnam War from both the American and Vietnamese perspectives.
HIST	2980	Topics selected by various instructors. May be repeated when the topic varies.
HIST	3100	The history of Western Europe from its beginnings to the eve of the First Crusade.
HIST	3110	Europe from the First Crusade to the late 13th century.
HIST	3130	Tudor England from 1485 to the end of the reign of Elizabeth I, emphasizing political, economic and social developments.
HIST	3140	Stuart England from 1603 to the end of the reign of Anne, emphasizing political, economic and social developments.
HIST	3160	Settlement since the Civil War; mining rushes and Indian wars; violence and outlaws; farming and cattle ranching. Twentieth-century politics; ethnicity; and economics. Growth of California and the Sunbelt states.
HIST	3190	An intensive examination of the slave trade, factory system, radicalism, Parliamentary Reform, insurrection, by means of reading primary sources such as Tom Paine.
HIST	3200	Latin American history to 1825. Covers pre-Columbian Indian civilizations; Spanish and Portuguese conquests, colonial policies and institutions; colonial life and independence movements.
HIST	3210	Major economic, political and social developments from independence to the present. In spite of the region's tremendous diversity, there is a shared "Latin American" experience.
HIST	3220	An in-depth study of Argentina and Chile since independence.
HIST	3250	An examination of the historical experiences of African-Americans in the United States from 1619 to 1865.
HIST	3260	An examination of the historical experiences of African-Americans in the United States since 1865.
HIST	3270	Urbanization and the city in world history. The growth, planning and problems of American cities from colonial times until the mid-19th century.
HIST	3280	The growth of the 19th-century city and the emergence of the 20th-century American metropolis. Urban problems of the 20th century.
HIST	3290	From colonial times to the present.
HIST	3310	American ethnic diversity from the colonial era to recent decades. A study of individuals and groups. Topics include American identity and Americanization, migration, legislation, nativism.
HIST	3320	Native Americans in Eastern North America from prehistoric times through Jacksonian Indian Removal. Emphasis on intercultural interactions.



HIST	3330	Native Americans of the Far West from prehistoric times through recent years. Emphasis on European contact and governmental policies.
HIST	3350	An examination of intercultural conflict and accommodation in frontier communities in Eastern North America to 1776.
HIST	3360	Development and influence of major ideas from the colonial period to 1865. Topics include Puritanism, the Enlightenment, Democracy and Transcendentalism.
HIST	3370	Major developments in American thought from 1865, including Social Darwinism, pragmatism, ideological conflict, modern science, education.
HIST	3380	The growth of American business enterprise and its relationship to culture, politics, technological developments and economic change.
HIST	3400	American social and cultural patterns, institutions and forces from the colonial period to the mid-19th century.
HIST	3410	American social and cultural patterns, institutions and forces from the mid-19th century to the present.
HIST	3420	The development of the strategy, tactics, organization, operation and policies of the armed forces of the U.S.; the interaction with technological factors, foreign policy goals, international problems and American society.
HIST	3430	Intensive examination of the history of land, sea, air and intelligence factors. Emphasizes the historical development of the strategy and tactics of wars, peacetime planning, technological developments and military-societal relationships.
HIST	3440	Origins and development of radical social movements and their ideologies from the American Revolution to the New Left of the 1960s. Abolitionism, Feminism, Communitarians, Marxism, Anarchism, Populism, Communism and the Peace Movement are among the topics to be studied.
HIST	3480	Development of working class communities, cultures, organizations and ideology from colonial era to the present. Topics include industrialization, unionization, labor law, gender and race constructions.
HIST	3500	The foreign policies and foreign relations of the great powers from 1648 to the Congress of Vienna, 1815.
HIST	3510	The foreign policies and foreign relations of the great powers from the Congress of Vienna until the present.
HIST	3520	Development of modern German history from the late Middle Ages to the end of World War I with emphasis on the emergence of German nationalism and a united German state in the 18th-19th centuries.
HIST	3530	Germany's development from the end of World War I to the present with emphasis on the rise of Nazism, World War II, and the division and new unification of Germany.
HIST	3540	A survey of Middle East history from the emergence of Islam and the formation of Islamic states until the establishment of the Ottoman and Persian empires in the 15th-16th centuries.



HIST	3550	History of the Middle East from the collapse of the Medieval Muslim States and the rise of the Ottoman Empire in the 16th century through the period of European intervention to the development of independent Middle Eastern states in the 20th century.
HIST	3560	A survey of early modern French history from c. 1600-1789.
HIST	3570	A survey of modern French history since 1789.
HIST	3600	This course presents American history from early settlement to the present by examining the contributions of women, in interaction with men, to the immensely complex fabric of American life.
HIST	3630	Africa south of the Sahara from antiquity to 1800. Topics include the peopling of the continent, growth of centralized political institutions, stateless societies, Islamic penetration, African slave trade.
HIST	3640	Africa south of the Sahara from 1800 to the present. Subjects include 19th century, colonial and independent Africa. Specific topics: the rise of South Africa, imperialism, African resistance and nationalism and independent African political, cultural and economic systems.
HIST	3770	The foreign policy and international relations of the U.S. from the founding of the republic to the early 20th century.
HIST	3780	The foreign policy and international relations of the U.S. from the late 19th century to the present.
HIST	3870	Independent research on specific historical topics.
HIST	3880	Independent research on specific historical topics.
HIST	3980	Topics selected by various instructors. May be repeated when the topic varies.
HIST	4000	Research or historiography course offered in a seminar setting. Topics and interdisciplinary aspects at the discretion of individual faculty and will change from year to year.
HIST	4010	Selected topics on the political and social institutions of Greece in the classical and Hellenistic periods.
HIST	4020	Selected topics on the political and social institutions of Rome during the Republic and Empire.
HIST	4030	The waning of the Middle Ages and the development of the Renaissance in Western Europe with emphasis on Italy.
HIST	4040	Society, culture and politics in early modern Europe with emphasis on culture north of the Alps, the Reformation and the nation-state.
HIST	4060	The growth and decline of the absolute monarchies in Europe and the development of a world market economy, c.1550-1715.
HIST	4070	The intellectual revolution of the year's c. 1715-1789 and the challenge to the absolute monarchies of Europe.
HIST	4080	The age of the French Revolution and Napoleon, c.1785-1848.
HIST	4090	Internal and international development of the major European states from the mid-19th century to World War I with emphasis on nationalism, industrialization, imperialism, the origins and course of war.



HIST	4100	Internal and international development of the major European states from World War I to the end of the twentieth century.
HIST	4150	Principal critics of society like Ruskin, Carlyle, Cobbett, Marx, Engels, Morris, Mill are read with a view to understanding capitalism, industrialism and England.
HIST	4170	The emergence of England as a maritime power, as an empire, and as a financial force, with emphasis upon resistances and decolonization.
HIST	4180	Selected topics of modern English society and economy will be covered, such as urbanization, family and gender relations, enclosures, work and crafts.
HIST	4200	This course analyzes the colonial experience of the United States prior to 1763. It stresses the various cultures and social groups in America and how they related with one another.
HIST	4210	A survey of the history of women in America up to 1860. Special focus on the divergent experiences of Native American, European American and African American women, including the forced and voluntary migrations of women to and across North America.
HIST	4220	The background and progress of the War for Independence.
HIST	4230	American politics and culture in the Federalist and Jeffersonian periods, 1789-1819.
HIST	4240	Jacksonian democracy in politics and as a reform movement; the sectional controversy; the Mexican-American War.
HIST	4250	Slavery and the Constitution in the sectional controversy, the political and military events of the Civil War, and the impact of the war on American society, 1848-1876.
HIST	4260	American society in the late 19th and early 20th centuries including industrialization, urbanization, immigration, agrarian and labor revolts, politics, economic expansion, overseas initiatives, Progressive reform and involvement in World War I.
HIST	4270	Social, political and economic development of the United States, 1920-1945. The Republican ascendancy, the car culture, Great Depression, New Deal and World War II.
HIST	4280	Social, economic and political development of the United States since 1945. The Cold War, McCarthyism, Eisenhower Equilibrium, the New Frontier and the Great Society, civil rights, Watergate and the Reagan Revolution.
HIST	4290	The American South from colonization to secession, with emphasis on the society, economy and culture of the antebellum period, 1820-1860.
HIST	4310	History of Native American revitalization movements as a response to European colonization and Indian dispossession.
HIST	4340	Native Americans; Spanish conquistadors and missionaries; American scientific and military exploration; mountain men and fur trade; international rivalries and Mexican War; gold rush of '49.

HIST	4410	Subject varies. Among those treated are origins of the American constitutional system, judicial review, slavery and the constitution, liberal constitutionalism.
HIST	4420	Subject varies. Among those treated are slavery, racism, Black reconstruction, modes of protest, Black nationalism, key leaders and Black migration.
HIST	4430	Stresses the African continuum among slaves within the context of variations in goals and policies of slave-owners, slave trade, slave economics, demographics, slave labor and formation of slave culture.
HIST	4450	Examines the 19th and 20th centuries: emphasizing events and movements defining political, economic, migratory, military, and cultural relations and the emergence of Latinos as largest minority group in the US.
HIST	4470	Mexican history from pre-Hispanic times to the present. Emphasis on the political, social and economic changes imposed by the Spaniards; the legacy of colonialism on the modern nation; the Mexican Revolution and the "Mexican Miracle."
HIST	4490	Witchcraft, religion and magic in western Europe from the 12th through 17th centuries, focusing on the origins of witchcraft belief, diabolical magic, the witch craze and its decline.
HIST	4590	Study of the culture, history and society of the people of eastern Africa. Each term different peoples will be considered. Areas include present day Ethiopia, Kenya and the East Africa coast.
HIST	4620	Central Europe from medieval times to the present. The Habsburg Empire, Poland, the Balkans, twentieth-century changes.
HIST	4660	Rise and fall of the Russian Empire. Politics and society from the time of Peter the Great to the 1917 Revolution.
HIST	4680	Russia from the 1917 Revolution to the present. Topics include Marxism, Communism, Stalinism, Cold War.
HIST	4720	China in transition under the impact of the West; forces leading to the revolution of 1911, the Nationalists' struggle, the emergence of the People's Republic of China and aspects of post-revolutionary China.
HIST	4740	Japan in transition under Western influence, forces leading to the Meiji Restoration, the modernization of Japan, Japan's rise as a world power, war and postwar developments.
HIST	4750	Motivation and process of European expansion to Africa and Asia from 1415-1800.
HIST	4760	The imposition of European political, cultural and economic hegemony over Africa and Asia in the 19th and 20th centuries; the resistance and reaction of indigenous non-western people to colonialism.
HIST	4790	This advanced course deals with selected aspects of the history and memory of Nazi genocide against the Jews of Europe, with special emphasis on visual and survivor sources.



HIST	4830	The definition, philosophy and evolution of public history as well as the current literature and debates within the field. Public history is the application of historical knowledge and methodology beyond academe.
HIST	4840	Course provides students with hands-on experience in the practice of public history by completing a project using specialized techniques, client-oriented research and teamwork. May be repeated for credit.
HIST	4860	Examines the field of historic preservation via a worldwide approach to its problems, methods and development. Students participate in resource survey field work. Individual projects analyze local preservation activities.
HIST	4870	Open to College Honors students, to History Honors students and to Honors students from other departments. Independent research in specific topics.
HIST	4880	Open to College Honors students, to History Honors students and to Honors students from other departments. Independent research in specific topics.
HIST	4940	Supervised practical experience in the field of public history.
HIST	4950	Emphasizes theory and practice of archival work, administrative operations and historical research in archives. The course will acquaint students with the skills necessary to function in a local history archive.
HIST	4980	Topics selected by various instructors.
HIST	4990	Research and writing on topics designed to meet individual needs.
HIST	5010	Selected topics on the political and social institutions of Greece in the classical and Hellenistic periods.
HIST	5020	Selected topics on the political and social institutions of Rome during the Republic and Empire.
HIST	5030	The waning of the Middle Ages and the development of the Renaissance in Western Europe with emphasis on Italy.
HIST	5040	Society, culture and politics in early modern Europe with emphasis on culture north of the Alps, the Reformation and the nation-state.
HIST	5060	The growth and decline of the absolute monarchies in Europe and the development of a world market economy, c. 1550-1715.
HIST	5070	The intellectual revolution of the year's c. 1715-1789 and the challenge to the absolute monarchies of Europe.
HIST	5080	The age of the French Revolution and Napoleon, c. 1785-1848.
HIST	5090	Internal and international development of the major European states from the mid-19th century to World War I with emphasis on nationalism, industrialization, imperialism, and the origins and course of war.
HIST	5100	Internal and international development of the major European states from World War I to the end of the twentieth century.
HIST	5130	Tudor England from 1485 to the end of the reign of Elizabeth I, emphasizing political, economic and social developments.
HIST	5140	Stuart England from 1603 to the end of the reign of Anne, emphasizing political, economic and social developments.



HIST	5150	Principal critics of society like Ruskin, Carlyle, Cobbett, Marx, Engels, Morris and Mill are read with a view to understanding capitalism, industrialism and England.
HIST	5170	The emergence of England as a maritime power, as an empire, and as a financial force, with emphasis upon resistances and decolonization.
HIST	5180	Selected topics of modern English society and economy will be covered, such as urbanization, family, and gender relations, enclosures, work and crafts.
HIST	5190	An intensive examination of the slave trade, factory system, radicalism, Parliamentary Reform, insurrection, by means of reading primary sources such as Tom Paine.
HIST	5200	This course analyzes the colonial experience of the United States prior to 1763. It stresses the various cultures and social groups in America and how they related with one another.
HIST	5220	The background and progress of the War for Independence.
HIST	5230	American politics and culture in the Federalist and Jeffersonian periods, 1789-1819.
HIST	5240	Jacksonian democracy in politics and as a reform movement; the sectional controversy; the Mexican-American War.
HIST	5250	Slavery and the Constitution in the sectional controversy, the political and military events of the Civil War, and the impact of the war on American society, 1848-1876.
HIST	5260	American society in the late 19th and early 20th centuries, including industrialization, urbanization, immigration, agrarian and labor revolts, politics, economic expansion, overseas initiatives, Progressive reform and involvement in World War I.
HIST	5270	Social, political and economic development of the United States, 1920-1945. The Republican ascendancy, the car culture, Great Depression, New Deal and World War II.
HIST	5280	Social, economic and political development of the United States since 1945. The Cold War, McCarthyism, Eisenhower Equilibrium, the New Frontier and the Great Society, civil rights, Watergate and the Reagan Revolution.
HIST	5290	The American South from colonization to secession, with emphasis on the society, economy and culture of the antebellum period, 1820-1860.
HIST	5300	The careers of selected Americans in politics, business, science, religion and literature.
HIST	5310	History of Native American revitalization movements as a response to European colonization and Indian dispossession.
HIST	5320	Native Americans in Eastern North America from prehistoric times through Jacksonian Indian Removal. Emphasis on intercultural interactions.
HIST	5330	Native Americans of the Far West from prehistoric times through recent years. Emphasis on European contact and governmental policies.

HIST	5340	Native Americans; Spanish conquistadors and missionaries; American scientific and military exploration; mountain men and fur trade; international rivalries and Mexican War; gold rush of '49.
HIST	5350	Settlement since the Civil War; mining rushes and Indian wars; violence and outlaws; farming and cattle ranching. Twentieth-century politics; ethnicity; and economics. Growth of California and the Sunbelt states.
HIST	5360	Development and influence of major ideas from the colonial period to 1865. Topics include Puritanism, the Enlightenment, Democracy and Transcendentalism.
HIST	5370	Major developments in American thought from 1865, including Social Darwinism, pragmatism, ideological conflict, modern science, education.
HIST	5380	The growth of American business enterprise and its relationship to culture, politics, technological developments and economic change.
HIST	5390	The foreign policy and international relations of the U.S. from the founding of the republic to the early 20th century.
HIST	5400	The foreign policy and international relations of the U.S. from the late 19th century to the present.
HIST	5410	Subject varies. Among those treated are origins of the American constitutional system, judicial review, slavery and the constitution, liberal constitutionalism.
HIST	5420	Subject varies. Among those treated are slavery, racism, Black reconstruction, modes of protest, Black nationalism, key leaders and Black migration.
HIST	5430	Stresses the African continuum among slaves within the context of variations in goals and policies of slave-owners, slave trade, slave economics, demographics, slave labor and formation of slave culture.
HIST	5460	This course presents American history from early settlement to the present by examining the contributions of women, in interaction with men, to the immensely complex fabric of American life.
HIST	5470	Mexican history from pre-Hispanic times to the present. Emphasis on the political, social and economic changes imposed by the Spaniards; the legacy of colonialism on the modern nation; the Mexican Revolution and the "Mexican Miracle."
HIST	5480	Development of working class communities, cultures, organizations and ideology from colonial era to the present. Topics include industrialization, unionization, labor law, gender and race constructions.
HIST	5490	Witchcraft, religion and magic in western Europe from the 12th through 17th centuries, focusing on the origins of witchcraft belief, diabolical magic, the witch craze and its decline.
HIST	5500	The foreign policies and foreign relations of the great powers from 1648 to the Congress of Vienna, 1815.
HIST	5510	The foreign policies and foreign relations of the great powers from the Congress of Vienna until the present.



HIST	5520	A survey of Middle East history from the emergence of Islam and the formation of Islamic states until the establishment of the Ottoman and Persian empires in the 15th-16th centuries.
HIST	5530	History of the Middle East from the collapse of the Medieval Muslim States and the rise of the Ottoman Empire in the 16th century through the period of European intervention to the development of independent Middle Eastern States in the 20th century.
HIST	5570	Africa south of the Sahara from antiquity to 1800. Topics include the peopling of the continent, growth of centralized political institutions, stateless societies, Islamic penetration, African slave trade.
HIST	5580	Africa south of the Sahara from 1800 to the present. Subjects include 19th century, colonial and independent Africa. Specific topics: the rise of South Africa, imperialism, African resistance and nationalism and independent African political, cultural and economic systems.
HIST	5620	Central Europe from medieval times to the present. The Habsburg Empire, Poland, the Balkans, twentieth-century changes.
HIST	5660	Rise and fall of the Russian Empire. Politics and society from the time of Peter the Great to the 1917 Revolution.
HIST	5680	Russia from the 1917 Revolution to the present. Topics include Marxism, Communism, Stalinism, Cold War.
HIST	5720	China in transition under the impact of the West; forces leading to the revolution of 1911, the Nationalists' struggle, the emergence of the People's Republic of China and aspects of post-revolutionary China.
HIST	5740	Japan in transition under Western influence, forces leading to the Meiji Restoration, the modernization of Japan, Japan's rise as a world power, war and postwar developments.
HIST	5750	Motivation and process of European expansion to Africa and Asia from 1415-1800.
HIST	5760	The imposition of European political, cultural and economic hegemony over Africa and Asia in the 19th and 20th centuries; the resistance and reaction of indigenous non-western people to colonialism.
HIST	5790	This advanced course deals with selected aspects of the history and memory of Nazi genocide against the Jews of Europe, with special emphasis on visual and survivor sources.
HIST	5830	The definition, philosophy and evolution of public history as well as the current literature and debates within the field. Public history is the application of historical knowledge and methodology beyond academe.
HIST	5840	Course provides students with hands-on experience in the practice of public history by completing a project using specialized techniques, client-oriented research and teamwork. May be repeated for credit.
HIST	5860	Examines the field of historic preservation via a worldwide approach to its problems, methods and development. Students participate in resource survey field work. Individual projects analyze local preservation activities.



HIST	5940	Supervised practical experience in the field of public history.
HIST	5950	Emphasizes theory and practice of archival work, administrative operations and historical research in archives. The course will acquaint students with the skills necessary to function in a local history archive.
HIST	5980	Topics selected by various instructors.
HIST	6600	The nature of historical writing. Concepts of the historical method. The history of the writing of history from the beginning to the present.
HIST	6920	Focus on readings of secondary and primary sources in preparation for original research in various fields: 01: 17th and 18th century America, 05: 19th century America, 06: American Urban, 07: American West, 08: American Intellectual, 10: Local History, 11: American Labor, 12: American Foreign Relations, 15: 20th century America, 16: Public History, 17: U.S. Bibliography to 1865, 18: U.S. Bibliography since 1865, 35: Latin America, 39: Ancient, 40: Medieval Europe, 45: Early Modern Europe, 50: Modern Europe, 55: Central Europe and Balkans, 60: England, 65: British Empire, 70: Russia, 75: Modern East Asia, 80: Africa, 90: Special Topics
HIST	6930	Focus on primary research and writing in various fields: 01: 17th and 18th century America, 05: 19th century America, 06: American Urban, 07: American West, 08: American Intellectual, 10: Local History, 11: American Labor, 12: American Foreign Relations, 15: 20th century America, 16: Public History, 17: U. S. Bibliography to 1865, 18: U. S. Bibliography since 1865, 35: Latin America, 39: Ancient, 40: Medieval Europe, 45: Early Modern Europe, 50: Modern Europe, 55: Central Europe and Balkans, 60: England, 65: British Empire, 70: Russia, 75: Modern East Asia, 80: Africa, 90: Special Topics
HIST	6950	Methods of teaching history in college. Supervised teaching of sections in World Civilizations sequence.
HIST	6960	M.A. thesis topic to be selected by the student with the approval of the thesis adviser.
HIST	6990	Readings: 01: 17th and 18th Century America, 05: 19th Century America, 06: American Urban, 07: American West, 08: American Intellectual, 10: Local History, 11: American Labor, 12: American Foreign Relations, 13: Public History, 15: 20th Century America, 16: Business, 17: Peace Movements, 18: Social, 35: Latin America, 40: Medieval Europe, 41: Renaissance and Reformation, 45: Early Modern Europe, 50: Modern Europe, 55: Central Europe and Balkans, 60: England, 65: British Empire, 70: Russia, 75: Modern East Asia, 80: Ancient Greece, 90: Ancient Rome, 92: Africa, 99: Any Title



HIST	7980	Study of secondary and primary sources in various fields: 01: Colonial and Revolutionary, 02: 19th century America, 03: 20th century America, 04: American South, 05: American West, 06: American Intellectual, 07: American Foreign Relations, 08: American Constitutional, 09: American Labor, 10: American Urban, 11: American Social, 12: American Urban Progressive Reform, 13: Public History, 16: American Business, 17: Peace Movements, 18: Ethnic, 19: Ancient, 20: Medieval Europe, 21: Renaissance and Reformation, 22: Europe, 1648-1815, 23: Europe, 1815-present, 24: Russia, 25: Great Britain, 26: Traditional East Asia to 1800, 27: Modern East Asia, 1800 to present, 28: Latin America, 29: Middle East, 30: Africa, 99: Any Topic
HIST	8600	The nature of historical writing. Concepts of the historical method. The history of the writing of history from the beginning to the present: 01: America 02: Asia 03: Europe 04: Latin America 05: Africa 06: Special Topics
HIST	8920	Focus on readings of secondary and primary sources in preparation for original research in various fields: 01: 17th and 18th century America, 05: 19th century America, 06: American Urban, 07: American West, 08: American Intellectual, 10: Local History, 11: American Labor, 12: American Foreign Relations, 15: 20th century America, 16: Public History, 17: U.S. Bibliography to 1865, 18: U.S. Bibliography since 1865, 35: Latin America, 39: Ancient, 40: Medieval Europe, 45: Early Modern Europe, 50: Modern Europe, 55: Central Europe and Balkans, 60: England, 65: British Empire, 70: Russia, 75: Modern East Asia, 80: Africa, 90: Special Topics
HIST	8930	Focus on primary research and writing in various fields: 01: 17th and 18th century America, 05: 19th century America, 06: American Urban, 07: American West, 08: American Intellectual, 10: Local History, 11: American Labor, 12: American Foreign Relations, 15: 20th century America, 16: Public History, 17: U. S. Bibliography to 1865, 18: U. S. Bibliography since 1865, 35: Latin America, 39: Ancient, 40: Medieval Europe, 45: Early Modern Europe, 50: Modern Europe, 55: Central Europe and Balkans, 60: England, 65: British Empire, 70: Russia, 75: Modern East Asia, 80: Africa, 90: Special Topics
HIST	8950	Methods of teaching history in college. Supervised teaching of sections in World Civilizations sequence.
HIST	8960	Ph.D. dissertation topic to be selected by the student with the approval of the dissertation adviser.

HIST	8990	Readings: 01: 17th and 18th Century America, 05: 19th Century America, 06: American Urban, 07: American West, 08: American Intellectual, 10: Local History, 11: American Labor, 12: American Foreign Relations, 13: Public History, 15: 20th Century America, 16: Business, 17: Peace Movements, 18: Social, 35: Latin America, 40: Medieval Europe, 41: Renaissance and Reformation, 45: Early Modern Europe, 50: Modern Europe, 55: Central Europe and Balkans, 60: England, 65: British Empire, 70: Russia, 75: Modern East Asia, 80: Ancient Greece, 90: Ancient Rome, 92: Africa, 99: Any Title
HON	1010	This reading, writing and discussion course examines Great Books and formative ideas, primarily from the Western tradition. Readings Conference 1010 focuses on selected works from ancient times through the Middle Ages.
HON	1020	This reading, writing and discussion course examines Great Books and formative ideas, primarily from the Western tradition. Readings Conference 1020 focuses on selected works from the Renaissance through the 20th Century.
HON	2010	This course examines the creative arts of Western Civilization.
HON	2020	This reading, writing and discussion course examines selected literatures of the North American experience: for example, texts by African American, Arab American, Asian American, Hispanic or Native American authors.
HON	2030	This reading, writing and discussion course examines selected non-European literatures.
HON	2990	Supervised independent study.
HON	4950	These interdisciplinary seminars are organized around a variety of subjects and intellectual concerns.
HON	4960	These interdisciplinary seminars are organized around a variety of subjects and intellectual concerns.
HON	4990	Supervised independent study.
HSHS	6000	An interdisciplinary course covering basic statistics and related research design with specific applications in various health sciences and human service professions.
HSHS	8000	An interdisciplinary course covering basic statistics and related research design with specific applications in various health sciences and human service professions.
HUM	1010	An introduction to the civilization of the Greeks and Romans in which history, literature, mythology, art and philosophy are interrelated and interpreted.
HUM	1200	This interdisciplinary course examines cultures and community difference and group identity through reading and discussing major texts from various world traditions, mainly Western civilization from antiquity to the present.



HUM	2010	Study of major works of world literature, philosophy and the arts from ancient times to c. 1600. Inter-relationships among history, ideas and the arts are explored in lectures and discussions.
HUM	2020	Study of major works of world-literature, philosophy and the arts from c. 1600 to the present day. Inter-relationships among history, ideas and the arts will be explored in lectures and discussions.
HUM	2220	Drawing connections between literature and philosophy, this course examines issues of self-representation, human values in literature, canon formation and the cultural contexts of literature.
HUM	2980	This course is devoted to any topic or topics in the humanities that the instructor sees fit. The instructor and topic will alternate from semester to semester according to student and departmental interest in certain topics.
HUM	3000	This course examines narratives and theories of literacy which illustrate differing definitions, constructions and practices, including those which have excluded specific cultural groups according to gender, race and class.
HUM	3010	This course explores a range of private, public and professional memory and how these contribute to a sense of historical literacy and to the structures of the larger American experience.
HUM	3020	An examination of what education has meant and can mean in our present context. Topics will include the nature of culture, how it is evaluated and what the cultivation of critical reasoning involves.
HUM	3100	A survey of Greek and Roman mythology in classical literature, sculpture and art.
HUM	3200	Study of the origin and development of words in current use in a variety of fields for those with little or no previous language study in Latin or Greek.
HUM	3250	A study in the origin and development of classical tragedy and comedy with extensive readings in English of the major dramatists from Aeschylus to Seneca.
HUM	4950	This seminar provides senior humanities majors with an opportunity to pursue creative/research projects and to discuss them with their adviser and their peers.
HUM	4960	This seminar provides senior humanities majors with the opportunity to pursue creative/research projects and to discuss them with their adviser and their peers.
HURM	3220	Introduction to the field of human resource management. It is designed for students planning careers in human resources or those who simply wish to supplement their skills in personnel matters commonly of concern to all managers.
HURM	3630	Course is designed to develop negotiation and conflict management skills. Students will learn to apply these skills in distributive and integrative negotiation situations using cases, role-plays and exercises.



HURM	4640	Includes planning and administering mandatory and voluntary benefit programs, cost containment strategies and benefit communication programs. Development and administration of Employee Assistance Programs and employee wellness programs are also covered.
HURM	4650	Design and administration of compensation systems, including job evaluation, skill-based pay, salary surveys, pay level decisions, pay structures, executive and special employee group compensation programs, and budget and administrative issues.
HURM	4660	Covers aspects of human resource planning, including Affirmative Action and succession planning, developing legally defensible selection and recruitment methods, and career development.
HURM	4710	Theory, research, and practice related to the design and implementation of employee training programs and formal performance evaluation systems. Includes development of specific training programs.
HURM	6700	A survey of the functions and current trends in human resources management. Special emphasis on research methods, tools and techniques for in-depth understanding of problems and challenges faced by medium-sized firms.
HURM	6710	This course introduces the objectives, activities and practices involved in employment and labor law. It is designed for those pursuing careers in human resources or managers wishing to understand their responsibilities in this area.
HURM	6720	This course equips students to make more effective decisions in employee relations. Course emphasis is on active analysis of employee-employer relationships in terms of procedures, costs, and ramifications to both organizations and people.
HURM	6730	This course is designed to provide practical working knowledge of the processes of setting expectations, monitoring performance, coaching and developing employees, and assessing and rewarding good performance in rapidly changing organizations.
HURM	6740	This course focuses on the integration of human resource strategies with the strategies of the firm. Students will learn how to assess and measure human resource processes, programs and outcomes.
HURM	6750	This course is designed to provide students with current viewpoints, challenges, practices and theories in human resource management. Conducted in a seminar format, the course will emphasize different aspects of HR management each time it is offered.
HURM	6760	Provides an in-depth analysis of the methods used in designing, administering, revising, and evaluating recruitment, selection, and retention programs that comply with government regulation as well as add value to the organization.



HURM	6800	Course covers issues and techniques related to human resource planning, identifying and predicting HRM problems, and demonstrating the relationship between effective HRM practices and the bottom-line of the organization.
HURM	8700	Introduces the objectives, activities, and practices involved in human resource management. Designed for both those pursuing careers in human resources or managers who wish to supplement their skills in this area. (Prerequisite: None)
HURM	8710	Introduces the objectives, activities, and practices involved in employment and labor law. Designed for those pursuing careers in human resources or managers wishing to understand their responsibilities in this area.
HURM	8720	The course equips students to make more effective decisions in employee relations. Course emphasis is on active analysis of employee-employer relationships in terms of procedures, costs, and ramifications to both organizations and people. (Prerequisite: none)
HURM	8730	Course is designed to provide practical working knowledge of the processes of setting expectations, monitoring performance, coaching and developing employees, and assessing and rewarding good performance in rapidly changing organizations.
HURM	8740	Focuses on the integration of human resource strategies with the strategies of the firm. Students will learn how to assess and measure human resource processes, programs, and outcomes.
HURM	8750	Course is designed to provide students with current viewpoints, challenges, practices, and theories in human resource management. Conducted in a seminar format, the course will emphasize different aspects of HR management each time it is offered.
HURM	8760	Provides an in-depth analysis of the methods used in designing, administering, revising, and evaluating recruitment, selection and retention programs that comply with government regulation as well as add value to the organization.
IBUS	3150	Course focuses on understanding cultures and managing cultural differences for competitive advantage.
IBUS	3600	An overview of management in different geographic regions of the world. Case studies will be used to compare and contrast national models of management.
IBUS	3940	A course in which the student receives practical business experience working in an organization involved in International Business.
IBUS	4100	Program includes travel abroad, study and written report of an industry, company, or issues of interest, cultural immersion, and visits to manufacturing, service and government organizations.
IBUS	4180	This course will examine the business environment in North America and compare business practices and trade relationships between Canada, Mexico and the United States.



IBUS	4360	Students will learn to integrate international business functions, develop strategies that respond to environmental changes, and understand the challenges faced by small, mid-sized and multinational firms operating in a global environment.
IBUS	4490	A study of how management systems in various world regions evolve in response to the emerging global context. Focus will be on analyzing the determinants of similarities and contrasts in management systems.
IBUS	4940	A course in which the student receives practical International Business experience working in a global organization either within the U.S. or overseas.
IBUS	4980	Analysis of current issues in International Business.
IBUS	4990	An individually supervised study in International Business. Students must submit a proposal to be approved by a department faculty member prior to enrolling in the course.
IBUS	6100	Program includes travel abroad, study and written report of an industry, company, or issues of interest, cultural immersion, and visits to manufacturing, service and government organizations.
IBUS	6360	Analysis of the multinational firm, emphasizing the differences with domestic enterprises, with respect to strategic planning and capital allocation, marketing, production, supply, personnel and contract negotiation.
IBUS	6490	Compares the management philosophies, systems and methods of U.S. firms with those of firms from other countries, particularly the management systems of Japanese, German and other nationality firms that are competitors of U.S. firms.
IBUS	6980	Current issues/developments in international business are discussed.
IBUS	6990	Independent study in international business. A proposal for the independent study must be approved by faculty member and department chair.
IBUS	8360	Analysis of the multinational firm, emphasizing the differences with domestic enterprises, with respect to strategic planning and capital allocation, marketing, production, supply, personnel and contract negotiation. Ph.D. students are assigned additional readings from the academic literature.
IBUS	8490	Compares the management philosophies, systems and methods of U.S. firms with those of firms from other countries, particularly the management system of Japanese, German and other nationality firms that are competitors of U.S. firms. Ph.D. students are assigned additional readings from the academic literature.
IBUS	8790	A seminar in selected topics in International Business. PhD. students are assigned readings from the International Business academic literature. They will complete several research papers focusing on specific topics that advance the field and that are suitable for submission to an academic journal or conference.



IDS	1000	This course will provide a framework for and supplement to the activities and objectives of the UT Arts Living and learning Community. It is required for participation in the Arts Living-Learning Community.
IDS	2020	Multilevel designations which permit the offering of interdisciplinary courses. Participation from at least two departments is required.
IDS	3010	Multilevel designations which permit the offering of interdisciplinary courses. Participation from at least two departments is required.
IDS	3020	Multilevel designations which permit the offering of interdisciplinary courses. Participation from at least two departments is required.
IDS	4010	Multilevel designations which permit the offering of interdisciplinary courses. Participation from at least two departments is required.
IDS	4020	Multilevel designations which permit the offering of interdisciplinary courses. Participation from at least two departments is required.
IITP	601	The course will introduce fundamental knowledge of the immune system and its defense mechanisms and the nature and role of microbial pathogens in human and animal diseases.
IITP	602	Student led discussion of recent literature supporting key concepts in the human immune response. Discussions will focus on how current research impacts our understanding of specific responses.
IITP	603	This course includes attendance at biweekly seminars given by invited speakers and, on an alternating biweekly basis, the presentation of papers related to the seminar topics. May be repeated for credit.
IITP	801	The course will introduce fundamental knowledge of the immune system and its defense mechanisms and the nature and role of microbial pathogens in human and animal diseases.
IITP	802	Student led discussion of recent literature supporting key concepts in the human immune response. Discussions will focus on how current research impacts our understanding of specific responses.
IITP	803	This course includes attendance at biweekly seminars given by invited speakers and, on an alternating biweekly basis, the presentation of papers related to the seminar topics. May be repeated for credit.
INDI	504	Through community service, this course will expose graduate healthcare professional students to contemporary issues in community health care. The students will work under the direct supervision of a qualified preceptor. May be repeated.
INDI	505	Practical applications of theory in basic and clinical medical sciences. Practicum experience will be under the guidance of a faculty preceptor. May be repeated for credit.
INDI	509	
INDI	510	An interdisciplinary course that focuses on the holistic model integrating scientific knowledge and complementary modalities into clinical practice.
INDI	515	This course provides basic knowledge of anatomy and physiology.



INDI	520	This course includes an introduction to cell structure, function and pathological changes, information about molecular structure of proteins, carbohydrates and lipids, basic human genetics.
INDI	532	Introduction to statistical methods with emphasis on problems in the biomedical sciences. Included are descriptive statistics, probability theory, statistical inference, experimental design and simple statistical tests.
INDI	555	Introductory and foundational course designed to cover selected topics in human anatomy, embryology, physiology and pathophysiology.
INDI	600	Focuses on descriptive and beginning inferential statistics, including normal and log normal distributions, hypothesis testing, confidence intervals, correlation, regression, ANOVA, and selected non-parametric procedures; with emphasis on the conceptualization of the procedures. Computational skills are presented to have a basic understanding of each procedure. Computer analysis of data will be introduced. Uses of multiple regression and MANOVA will be briefly discussed.
INDI	601	The objectives of the course are to study nervous system development, organization and structure and of nervous system-related diseases.
INDI	602	A series of one-hour lectures dealing with the ethics, regulations, and issues facing a modern, biomedical research scientist.
INDI	605	Basic ethics course for medical and graduate students with an interest in primarily clinical issues.
INDI	608	Course is designed to introduce the student to problem-based learning facilitation for science education/instruction. May be repeated for credit.
INDI	609	Topics covered will include spectroscopy, thermodynamics, magnetic resonance, sedimentation, diffusion protein sequence determination analysis of protein secondary structure and nucleic acid structure.
INDI	611	This course will provide an introduction to human genetics with an emphasis on medical aspects including common genetic disorders, cytogenetic, molecular genetics, cancer genetics, prenatal diagnosis, and genetic counseling.
INDI	614	Immunological, biomedical, testing, transmission, prevention, psychosocial and legal issues of HIV/AIDS.
INDI	616	Laboratory exercises will be conducted in the research laboratory of the instructor. The course will consist of training in the methods used to purify, to characterize and to determine the activity of enzymes.
INDI	617	This course considers the biological, cognitive and emotional aspects of human behavior. It focuses on normal and abnormal behavior throughout the life cycle and includes an introduction to psychopathology.
INDI	621	Focus on advanced statistics, including: multiple regression, multi-factor analysis of variance and covariance, repeated measures, MANOVA, logistic regression, discriminant function analysis, and survival analysis. Computer data analysis is emphasized.



INDI	627	A discussion of: cancer epidemiology; the role of chemicals, viruses, and radiation in cancer induction; and mechanism(s) of conversion of normal cells to cancer cells including the activation of cellular proto-oncogenes, autocrine secretion of growth factors, and changes in signal transduction.
INDI	629	
INDI	651	
INDI	660	Hands-on experience with desktop computer applications in biomedical research including: an introduction to computers; Macintosh and Windows operating systems; word processing, spreadsheets; illustration, scientific, and presentation graphics; and searching the Internet and online databases. Projects include creating a slide and poster presentation. Limited enrollment. May be repeated for credit.
INDI	665	This course is designed for leaders within democratic society. Functional, transactional, and transformative leadership are examined. Students work independently and together, online and in person, to learn about individual and group behavior in the creation of a democratic and enlightened environment.
INDI	673	Intensive study in field of interest, including theoretical and experimental work. May be repeated for credit.
INDI	679	A lecture/laboratory course in the standard theories and techniques in histology and light microscopy. The emphasis is on preparation of samples, including histocytochemistry, immunocytochemistry and special staining for photo microscopy. Brightfield, fluorescence and confocal microscopy.
INDI	684	An introduction to the molecular basis of cell function. Topics include structure of proteins and nucleic acids, genetic analysis, gene regulation, cell structure and organization, and intercellular communication.
INDI	686	A lecture/laboratory course in the standard theories and techniques employed in biological transmission and scanning electron microscopy.
INDI	698	Option to develop an in-depth scholarly project to fulfill the research requirements of the MSBS Degree Program. May be repeated for credit.
INDI	699	Research in biomedical sciences or interdisciplinary investigation of significant problems at the master level, leading to the preparation of a scientific project for presentation as a thesis. May be repeated for credit.
INDI	775	Cell and Molecular Biology (Block 1)
INDI	777	Integrative Pathophysiology (Block 4)
INDI	778	This longitudinal course includes a range of instructional strategies and experiences designed to provide medical students with fundamental knowledge and skills for clinical decision making.
INDI	780	Organ Systems (Block 7)
INDI	781	Integrative Pathophysiology (Block 8)
INDI	783	Immunity and Infection (Block 6)
INDI	786	Fundamentals of Clinical Practice (Block 5)



INDI	792	Fundamentals of Clinical Practice (Block 9)
INDI	802	A series of one-hour lectures dealing with the ethics, regulations, and issues facing a modern, biomedical research scientist.
INDI	809	Topics covered will include spectroscopy, thermodynamics, magnetic resonance, sedimentation, diffusion protein sequence determination analysis of protein secondary structure and nucleic acid structure.
INDI	811	This course will provide an introduction to human genetics with an emphasis on medical aspects including common genetic disorders, cytogenetics, molecular genetics, cancer genetics, prenatal diagnosis, and genetic counseling.
INDI	814	Immunological, biomedical, testing, transmission, prevention, psychosocial and legal issues of HIV/AIDS.
INDI	816	Laboratory exercises will be conducted in the research laboratory of the instructor. The course will consist of training in the methods used to purify, to characterize and to determine the activity of enzymes.
INDI	817	This course considers the biological, cognitive and emotional aspects of human behavior. It focuses on normal and abnormal behavior throughout the life cycle and includes an introduction to psychopathology.
INDI	821	Focus on advanced statistics, including: multiple regression, multi-factor analysis of variance and covariance, repeated measures, MANOVA, logistic regression, discriminant function analysis, and survival analysis. Computer data analysis is emphasized.
INDI	827	A discussion of: cancer epidemiology; the role of chemicals, viruses, and radiation in cancer induction; and mechanism(s) of conversion of normal cells to cancer cells including the activation of cellular proto-oncogenes, autocrine secretion of growth factors, and changes in signal transduction.
INDI	860	Hands-on experience with desktop computer applications in biomedical research including: an introduction to computers; Macintosh and Windows operating systems; word processing, spreadsheets; illustration, scientific, and presentation graphics; and searching the Internet and online databases. Projects include creating a slide and poster presentation. Limited enrollment. May be repeated for credit.
INDI	873	Intensive study in field of interest, including theoretical and experimental work. May be repeated for credit.
INDI	879	A lecture/laboratory course in the standard theories and techniques in histology and light microscopy. The emphasis is on preparation of samples, including histocytochemistry, immunocytochemistry and special staining for photo microscopy. Brightfield, fluorescence and confocal microscopy.
INDI	884	An introduction to the molecular basis of cell function. Topics include structure of proteins and nucleic acids, genetic analysis, gene regulation, cell structure and organization, and intercellular communication.



INDI	885	This course is designed for leaders within democratic society. Functional, transactional, and transformative leadership are examined. Students work independently and together, online and in person, to learn about individual and group behavior in the creation of a democratic and enlightened environment.
INDI	886	A lecture/laboratory course in the standard theories and techniques employed in biological transmission and scanning electron microscopy.
INDI	999	Disciplinary or interdisciplinary investigation of significant problems at the doctoral level under the guidance of a member of the Graduate Faculty, leading to the preparation of a scientific project for presentation as a dissertation. May be repeated for credit.
INFS	3150	Major topics include problem solving, event driven programming, control structures, data types, data structures, objects, properties, events and methods. Subroutines, functions, file processing, menu and application development will also be covered.
INFS	3160	Building on programming skills developed in INFS3150 this course emphasizes database connectivity, data retrieval, and business application development. The course will also survey an object oriented language like C++, Java.
INFS	3240	Building data warehouses and using data mining techniques, the course focuses on extracting business intelligence and knowledge discovery from existing data sources to support decision-making in functional areas of business.
INFS	3250	This course is designed to acquaint students with the application of integrated software to business decisions, report writing and presentations. Student will gain hands-on experience with popular business software packages.
INFS	3370	An introduction to data communications in business. Topics include local-area and wide-area networks, including the Internet; hardware and media; network topologies; client-server networks; and network operating system software.
INFS	3380	An introduction to business application program development on the web using contemporary technologies with emphasis on client-side applications. Implications of information technology projects on organizations will be discussed.
INFS	3770	The design and implementation of database management systems are studied. Develop significant skills in form based input, report writing and data modeling. Students will work in teams developing database applications.
INFS	3780	Introduction to ERP, Roles of SCM and CRM in Business Environment, Major Business Processes relating to functional areas of Business in an integrated software environment. Extensive hands-on exercises using ERP software.



INFS	3980	Selected current topics in Information Systems practice, trends and technology.
INFS	4300	Address web architecture, web server administration and security issues; analyze, design, develop, and implement extensive database oriented business processes using server-side and client-side processing.
INFS	4320	Issues of planning control, outsourcing management, and the organizational impact of computer systems will be studied. Challenges and opportunities in outsourcing will also be the focus of the course.
INFS	4510	Analysis, design and implementation of business information systems will be studied using Case tools and ERP systems. Will also emphasize management of organizational change brought about by information technology projects.
INFS	4620	In-depth exposure to database concepts including relational and Object Data Models, normalization, logical design, stored functions, procedures, triggers, forms and reports will be explored using a business database package.
INFS	4810	Designed for database administrators. Covers Physical Database Design, Indexing, performance monitoring and evaluation, partitioning databases, distributed and parallel processing. Exposure will be sufficient for certification exams.
INFS	4940	A prearranged work-study program where students specializing in computer systems, operations management or decision sciences obtain on-the-job experience while learning and applying the basic concepts and techniques of their respective areas.
INFS	4990	Individual student study of a topic of interest to both the faculty member and student. Students are responsible for finding a faculty member to sponsor readings and research.
INFS	5400	Intensive exposure to technologies and concepts of business oriented information systems. Computer programming in a contemporary programming language. Applications development through programming projects.
INFS	6460	This course is designed for end-users of computers to understand and appreciate the role of information technology and end-user's role in the management of this technology in organizations.
INFS	6470	Discussion topics will be: Fundamentals of Information Technology, decision support systems, knowledge based/expert systems, data communication, database management and their applications in manufacturing. Will include implementation issues of Information Technology in manufacturing.
INFS	6560	Concepts, tools, and techniques for information systems analysis, design and development will be discussed. Contemporary methodologies for systems development including CASE tools, prototyping and RAD project work will be included.



INFS	6570	This course is designed for those who aspire to become managers of Information Technology (IT). Various aspects of IT Management will be discussed with real world examples/cases. PhD. Students enrolled in 8570 will be assigned additional Readings and required to complete a research paper.
INFS	6610	This course will analyze the concepts and methods used in the management of organizational data resources. Covers data modeling, database design, administration and architecture. Hands-on applications of database development are provided.
INFS	6750	Individual study of topics of common interest to both student and faculty member.
INFS	6810	Applications of business data communication, basic electronic communications concepts, public networks, computer networks, the Internet, network management, regulatory environment.
INFS	6930	This seminar will focus on current topics in the fields of Information Systems and Operations Management.
INFS	8460	This course is designed for end-users of computers to understand and appreciate the role of information technology and end-user's role in the management of this technology in organizations.
INFS	8470	Discussion topics will be: Fundamentals of Information Technology, decision support systems, knowledge based/expert systems, data communication, database management and their applications in manufacturing. Will include implementation issues of Information Technology in manufacturing.
INFS	8480	This course examines theoretical frameworks and recent empirical research of information and manufacturing technology. Emphasis will be on developing an integrative perspective of both technologies.
INFS	8570	This course is designed for those who aspire to become managers of Information Technology (IT). Various aspects of IT Management will be discussed with real world examples/cases. PhD. Students enrolled in 8570 will be assigned additional Readings and required to complete a research paper.
INFS	8930	The course will address issues in planning for, implementing and managing or just working in, outsourcing projects. PhD. students enrolled in 8930 will be assigned additional readings and required to complete a research paper.
INFS	8990	The seminar will investigate managerial issues in the field of information systems and technology management.
JAPN	1080	Study of Japanese culture and society with emphasis on business and economics. Taught in English. (Not for major credit).
JAPN	1090	An introduction to principal social, artistic and literary aspects of modern Japanese culture. Taught in English. (Not for major credit.)



JAPN	1110	An introduction to Japanese language and culture through aural comprehension, speaking, reading and writing. Laboratory practice required. (not for major credit)
JAPN	1120	An introduction to Japanese language and culture through listening, speaking, reading and writing. Laboratory practice required. (not for major credit)
JAPN	2140	Further practice of the four language skills with grammar review and readings of a literary-cultural nature. Laboratory practice required. (not for major credit)
JAPN	2150	Further practice of the four language skills with grammar review and readings of a literary-cultural nature. Laboratory practice required. (not for major credit)
JAPN	2190	The course permits beginning students of Japanese to spend time in a country where Japanese is spoken. Credit awarded in accordance with established departmental procedures.
JAPN	3010	Work on advanced aural comprehension, speaking, reading and writing skills through intensive work with authentic texts dealing with contemporary issues relating to Japan. Laboratory practice required.
JAPN	3020	Further work on advanced aural comprehension, speaking, reading and writing skills through intensive work with authentic texts dealing with contemporary issues relating to Japan. Laboratory practice required. A writing-intensive course.
JAPN	3170	An introduction to the language and practices of Japanese business and commerce.
JAPN	3410	A study of different aspects of Japanese culture and civilization such as fine arts, history, science and philosophy.
JAPN	3420	A study of different aspects of Japanese culture and civilization such as fine arts, history, science and philosophy.
JAPN	4010	A review of Japanese stylistic structures through the analysis of texts and written and oral exercises in Japanese.
JAPN	4020	Further review of Japanese stylistic structures through the analysis of texts and written and oral exercises in Japanese. The course includes an introduction to Japanese calligraphy. A writing-intensive course.
JAPN	4050	Practice in speaking idiomatic Japanese.
JAPN	4060	Continued practice in speaking idiomatic Japanese.
JAPN	4070	Practice in translation of texts from Japanese into English and English into Japanese. Subject matter area will include commerce, natural, physical and social sciences, and the humanities.
JAPN	4190	The course permits the student minoring in Japanese to spend time in a country where Japanese is spoken. Credit awarded in accordance with established departmental procedures.
JAPN	4980	Study of a selected topic in Japanese language, literature, or culture. May be repeated for credit when topic varies.



JAPN	4990	Independent research on special topics. May be repeated once for additional credit.
KINE	1080	The scientific basis and the health benefits of exercise and wellness activities are presented in lecture. Students undertake individualized exercise programs designed to improve physical fitness.
KINE	1110	Introduction to the profession of athletic training, practice settings, members of the sports medicine team; environmental issues; common athletic injuries; and the academic program at UT.
KINE	1650	Injury prevention; inflammation and tissue repair, physical conditioning; injury recognition; emergency procedures; protective equipment; ethical and legal considerations, and therapeutic modalities relating to athletic training.
KINE	1660	Intended for those intending to be athletic training concentration majors. Taping, wrapping, and bracing techniques to support various areas of the human body.
KINE	1700	An introduction to the professions involving exercise science; sports science, rehabilitation therapy and physical education. Emphasis is on basic concepts of physiological, biomechanical and psychological function in human movement. Programmatic and career opportunities are discussed.
KINE	2460	Laboratory exercises in histology, dissection, identification, and physiology of the axial and appendicular skeletal system, the skeletal muscle system, the central and peripheral nervous system, tissues, the eye, and cell transport.
KINE	2470	Laboratory exercises in endocrine, cardiovascular, respiratory, digestive, lymphatic, urinary, and reproductive anatomy, histology, physiology, including computer assisted experiments.
KINE	2510	An integrated study of both regional anatomy and musculoskeletal, cardiovascular, lymphatic, respiratory, neurologic, digestive, renal, endocrine and reproductive systems. Required for students in exercise science and allied health professional programs.
KINE	2520	Laboratory exercises in musculoskeletal, neurological, cardiovascular and respiratory anatomy.
KINE	2530	An integrated study of physiology with emphasis on musculoskeletal, cardiovascular, lymphatic, respiratory, neurologic, digestive, renal, endocrine and reproductive systems. Required for students in exercise science and allied health professional program.
KINE	2540	Laboratory exercises in musculoskeletal, neurological, cardiovascular and respiratory physiology.
KINE	2560	Structure and function of the human body. Study of cells, tissues, special senses, and the skeletal, muscle, and nervous systems. Natural science core course.



KINE	2570	Structure and function of human endocrine, blood, cardiovascular, lymphatic, respiratory, digestive, urinary and electrolyte, and reproductive systems.
KINE	2580	Topics include the cellular perspective and fluid environment, genetic disorders, and pathophysiology of organ systems, concentrating on cardiovascular, respiratory, renal-urinary, endocrine, gastrointestinal and nervous.
KINE	2590	Structure and function of bacteria and viruses; antigen-antibody reactions, immunology, serology, growth and inhibition of microorganisms. Pathologic responses to infection; pathogenesis and disease, principal infectious diseases of man.
KINE	2610	Study of the pathology, etiology and physiology of lower extremity injuries common in athletics as well as life-threatening head and neck injuries. Signs, symptoms and specific tests will be discussed.
KINE	2620	Study of the pathology, etiology and physiology of Upper extremity injuries common in athletics as well as non-life-threatening head and neck injuries. Signs, symptoms and specific tests for the upper extremity and trunk will be discussed.
KINE	2710	Laboratory experience to review and test the clinical skills taught during the first year of the athletic training curriculum and clinical skill development experiences provided in the athletic training room with intercollegiate athletic teams.
KINE	2720	Laboratory experience to review and test the clinical skills taught during the lower extremity evaluation course in the athletic training curriculum and clinical skill development experiences provided in the athletic training room with intercollegiate athletic teams.
KINE	2960	Lecture, discussion and laboratory based course concerning growth and development characteristics spanning birth through elderly life. Theory and practical applications of motor skill acquisition will be stressed.
KINE	3200	An elective course that applies musculoskeletal anatomy to human movement, function, injury evaluation and rehabilitation through in cadaver observation and dissection.
KINE	3510	This course is designed to introduce the student to the scope of practice for kinesiotherapy. Emphasis will be placed on standards of practice for the registered kinesiotherapist. Practicum hours included.
KINE	3520	This course will provide information related to the physiological responses of the human organism to exercise and exercise training. Emphasis will also be placed on the role exercise plays in health and disease prevention.
KINE	3530	This course is the laboratory component of the applied exercise physiology course. Emphasis will be placed on the concepts learned in lecture. This will occur through hands-on activities and experiments involving various forms of exercise testing and the use of standardized equipment.



KINE	3610	Knowledge and skills that entry-level athletic trainers must possess to recognize, treat and refer, when appropriate, the general medical conditions and disabilities of people involved in physical activity.
KINE	3630	Physiological, mechanical and bio-electrical principles and techniques of application for electrical, thermal, high frequency radiation and traction modalities used in the treatment of athletic injuries.
KINE	3640	Techniques of application for electrical, thermal, high frequency radiation and mechanical modalities used in the treatment of injuries to physically active individuals.
KINE	3660	A systematic approach to exercise program development, techniques, indications and contraindications of exercise, and exercise progression as related to athletic injuries, prevention, reconditioning and return to play guidelines.
KINE	3670	Application of rehabilitation techniques for injuries to physically active individuals.
KINE	3710	Laboratory experience to review and test the clinical skills taught during the upper extremity evaluation course in the athletic training curriculum and clinical skill development experiences provided in the athletic training room with intercollegiate athletic teams.
KINE	3720	Laboratory experience to review and test the clinical skills taught during the therapeutic modalities course in the athletic training curriculum and clinical skill development experiences provided in the athletic training room with intercollegiate athletic teams.
KINE	3730	This course is designed to provide students with the knowledge and skills used in the development and implementation of fitness programming for school and community environments.
KINE	3820	Survey of athletic training dealing with the care and prevention, evaluation and treatment, of athletic injuries. Emphasis on orthopedic evaluation and physician involvement. Preventive taping techniques.
KINE	3900	Psychomotor skill development and assessment of NATA required student athletic trainer competencies in the athletic training room.
KINE	4540	This course focuses on the application of biomechanics concepts to the acquisition and refinement of fundamental movement patterns, basic functional skills and sport activities. Such topics as locomotion, balance and the biomechanical basis of injury are examined through lecture and lab activities.
KINE	4550	This course is the laboratory component of the applied biomechanics course. Emphasis will be placed on the application of the concepts learned in lecture to rehabilitation and sport situations. This will occur through hands-on activities and experiments involving contemporary forms of biomechanical instrumentation.



KINE	4560	This course covers theoretical and practical knowledge for the assessment of exercise metabolism, cardiorespiratory function, body composition, thermoregulation, and skeletal muscle function. Hands-on data collection will be emphasized.
KINE	4570	Kinesiotherapy principles underlying exercise prescription for those with physical disabilities. Emphasis will be placed on manual and active exercise and physical assessment of the musculoskeletal system.
KINE	4580	The focus of this course is on gaining hands-on experience by assessment of a range of motion, strength, joint stabilization and functional movement of the musculoskeletal system. Students will emphasize manual exercise programming.
KINE	4620	A lecture, discussion and laboratory course designed to prepare students to work with patients on land and in the water. Emphasis will be placed on the rehabilitation and geriatric populations.
KINE	4640	Study of neurological control of normal movement and the implications of various medical pathologies for rehabilitation. Emphasis on inflammatory processes, metabolic and vascular disturbances, traumatic injuries, nutritional deficiencies, neoplasms, degenerative conditions and congenital disorders.
KINE	4650	Administration of athletic training programs including athletic training room management, budgeting, staffing, insurance, medical records, emergency care planning, pre participation physical examinations, athletic training room design, legal issues and public relations.
KINE	4680	Study of the relationship of sensory input and motor activities, motor learning and other aspects of movement behavior through an integration of physiological and psychological principles.
KINE	4710	Laboratory experience to review and test the clinical skills taught during the rehabilitation of sports injuries course in the athletic training curriculum and clinical skill development experiences provided in the athletic training room with intercollegiate athletic teams.
KINE	4720	Emphasis on clinical experience in athletic training off-campus. Also includes a laboratory experience to review clinical skills.
KINE	4850	The design and conduct of exercise testing and fitness programs for healthy subjects and those with pathologies will be the subject matter of the course.
KINE	4860	The practical techniques for administering tests and developing fitness programs for healthy subjects and those with pathologies will be the subject matter of the course.
KINE	4870	Examination of the cellular and molecular responses to changes in physical activity. Emphasis on exercise and disease; skeletal muscle growth and repair; and exercise metabolism.
KINE	4900	Classroom and laboratory analysis of current research in varied topic areas.



KINE	4910	Senior level students in exercise science will, with the assistance of their adviser, develop, plan and conduct a research project on a current problem in exercise science.
KINE	4920	Faculty and student directed readings of original research in Exercise Biology. Readings will focus on how changes in physical activity influence the biology of skeletal muscle.
KINE	4940	Clinical experience in locations both inside and outside the university setting. Placement depends on area of study.
KINE	4990	Directed individual study. Specialty title, seminar sheet and permission of instructor required.
KINE	4EL	
KINE	5010	Theory and practice in development and administration of comprehensive fitness programs with special emphasis on the use of exercise as a health maintenance strategy.
KINE	5110	Application of measurement and statistical inference to human performance testing and research. Includes descriptive and inferential statistics, principles of test construction and introduction to authentic assessment in public schools.
KINE	5250	Faculty and student directed readings of original research in Exercise Biology. Readings will focus on how changes in physical activity influence the biology of skeletal muscle.
KINE	5560	This course covers theoretical and practical knowledge for the assessment of exercise metabolism, cardiorespiratory function, body composition, thermoregulation, and skeletal muscle function. Hands-on data collection will be emphasized.
KINE	5950	Topical workshops developed around areas of interest and concern to those involved in academic programs and careers that relate to exercise science. May not be included in a graduate plan of study without prior approval of the student's adviser.
KINE	6100	This course is designed to provide an understanding of the mechanisms of the physiological responses to exercise. Emphasis will be placed on adaptations to exercise training and the role of exercise in health and disease.
KINE	6130	This course provides a basic overview of the principles of biomechanics as they apply to human movement. In-depth discussion and lab activities focus on the application of these principles to such topics as muscle function, locomotion, balance, mechanisms of injury and ergonomics.
KINE	6200	Provides students with experience in the research and clinical use of videography, force and pressure plates, electromyography and other systems in applied biomechanics. Emphasis on hands-on lab experience and topics related to data collection and signal processing.

KINE	6230	Principles and issues involved in the design and conduct of research in exercise science: critical evaluation, research design, development of a research proposal, grant acquisition, and compliance with institutional and federal guidelines on the use of humans and animals.
KINE	6300	This course focuses on an examination of the characteristics of normal locomotion and the effects on locomotion of common pathologies and disabilities. The role of biomechanics in evaluating locomotion, and the appropriate techniques for accomplishing this will be discussed, with respect to sport, surgical and rehabilitative applications.
KINE	6400	This focus of this course is on the principles involved in the generation and control of muscle contraction, and the electromyographical techniques used to evaluate muscle function. Emphasis is placed on gaining hands-on experience with contemporary EMG technology and analysis techniques.
KINE	6420	The responses and adaptations of the cardiovascular and pulmonary systems to exercise in healthy individuals.
KINE	6440	This course will provide the student with an advanced understanding of various concepts of cellular metabolism in response to exercise. Emphasis will be placed on biochemical, molecular and endocrinological mechanisms regulating human metabolism.
KINE	6500	Focus on the mechanical and sensory-motor factors involved in the control of balance and posture. Emphasis on the theories, the influence of pathology and techniques for the assessment of balance.
KINE	6520	Kinesiological principles underlying the assessment and treatment of individuals with normal and pathological conditions. Emphasis will be placed on clinical applications of mechanical principles, motor control and muscle activity to improve performance and prevent further injury.
KINE	6530	Advanced study of prevention, evaluation and care of athletic injuries with an emphasis on orthopedic and neurological problems and guidelines for return to competition.
KINE	6540	This course covers theoretical and practical knowledge for the assessment of exercise metabolism, cardiorespiratory function, body composition, thermoregulation and skeletal muscle function. Hands-on data collection will be emphasized.
KINE	6550	The course provides students with theoretical and practical knowledge for assessing cellular and molecular responses to exercise and inactivity. Emphasis will be placed on laboratory safety, reagent preparation, cell culture techniques, and tissue analysis.
KINE	6560	This course is designed to provide students with advanced instruction of the cellular and molecular adaptations in skeletal muscle following changes in physical activity.
KINE	6590	Psychological, mechanical and bioelectrical principles for modifying the inflammatory response in athletic injuries. Various rehabilitation techniques to return an athlete to competition and the relationship with modalities.



KINE	6600	This course addresses current issues that affect the profession of Athletic Training. Topics cover issues that influence clinical practice as well as political issues related to the profession.
KINE	6660	An investigation into the science and theories of therapeutic rehabilitation and its impact of clinical practice using current literature and databases from areas of evidence based medicine.
KINE	6670	An in-depth investigation into the basic structure and mechanisms of injury of various musculoskeletal tissues applied to the recognition and prevention of specific orthopedic injuries and conditions.
KINE	6680	Students will be introduced to advanced techniques that impact clinical practice in Athletic Training, including manual therapy, advanced orthopedic evaluations, and advanced management and planning related to emergency medicine.
KINE	6710	Administration of athletic training programs including legal issues, athletic training room management, budgeting, staffing, insurance, medical records, emergency care planning, pre participation physical examinations, athletic training room design and public relations.
KINE	6930	Seminar course on a selected topic in exercise physiology. Course will typically involve a review of current research and will include laboratory experiences/assignments.
KINE	6940	A field internship designed to supplement classroom experience by providing participation in the area of exercise science through participant-observer experience.
KINE	6960	Independence research in Exercise Science completed as part of the requirements for the Master of Science in Exercise Science degree.
KINE	6990	Faculty supervised independent reading, laboratory research, field experience and other activities not suited for class instruction.
KINE	7010	Theory and practice in development and administration of comprehensive fitness programs with special emphasis on the use of exercise as a health maintenance strategy.
KINE	7110	Application of measurement and statistical inference to human performance testing and research. Includes descriptive and inferential statistics, principles of test construction and introduction to authentic assessment in public schools.
KINE	7250	Faculty and student directed readings of original research in Exercise Biology. Readings will focus on how changes in physical activity influence the biology of skeletal muscle.
KINE	7950	Topical workshops developed around areas of interest and concern to those involved in academic programs and careers that relate to exercise science. May not be included in a graduate plan of study without prior approval of the student's adviser.



KINE	8100	This course is designed to provide understanding mechanisms of the physiological responses to exercise. Emphasis will be placed on adaptations to exercise training and the role of exercise in health and disease.
KINE	8130	This course provides a basic overview of the principles of biomechanics as they apply to human movement. In-depth discussion and lab activities focus on the application of these principles to such topics as muscle function, locomotion, balance, mechanisms of injury and ergonomics.
KINE	8200	Provides students with experience in the research and clinical use of videography, force and pressure plates, electromyography and other systems in applied biomechanics. Emphasis on hands-on lab experience and topics related to data collection and signal processing.
KINE	8230	Principles and issues involved in the design and conduct of research in exercise science: critical evaluation, research design, development of a research proposal, grant acquisition, and compliance with institutional and federal guidelines on the use of humans and animals.
KINE	8300	This course focuses on an examination of the characteristics of normal locomotion and the effects on locomotion of common pathologies and disabilities. The role of biomechanics in evaluating locomotion, and the appropriate techniques for accomplishing this will be discussed, with respect to sport, surgical, and rehabilitative applications.
KINE	8400	This focus of this course is on the principles involved in the generation and control of muscle contraction, and the electromyographical techniques used to evaluate muscle function. Emphasis is placed on gaining hands-on experience with contemporary EMG technology and analysis techniques.
KINE	8420	The responses and adaptations of the cardiovascular and pulmonary systems to exercise in healthy individuals.
KINE	8440	This course will provide the student with an advanced understanding of various concepts of cellular metabolism in response to exercise. Emphasis will be placed on biochemical, molecular and endocrinological mechanisms regulating human metabolism.
KINE	8500	Focus on the mechanical and sensory-motor factors involved in the control of balance and posture. Emphasis on the theories, the influence of pathology, and techniques for the assessment of balance.
KINE	8520	Kinesiological principles underlying the assessment and treatment of individuals with normal and pathological conditions. Emphasis will be placed on clinical applications of mechanical principles, motor control and muscle activity to improve performance and prevent further injury.
KINE	8540	This course covers theoretical and practical knowledge for the assessment of exercise metabolism, cardiorespiratory function, body composition, thermoregulation and skeletal muscle function. Hands-on data collection will be emphasized.



KINE	8550	The course provides students with theoretical and practical knowledge for assessing cellular and molecular responses to exercise and inactivity. Emphasis will be placed on laboratory safety, reagent preparation, cell culture techniques, and tissue analysis.
KINE	8560	This course is designed to provide students with advanced instruction of the cellular and molecular adaptations in skeletal muscle following changes in physical activity.
KINE	8600	This course addresses current issues that affect the profession of Athletic Training. Topics cover issues that influence clinical practice as well as political issues related to the profession.
KINE	8660	An investigation into the science and theories of therapeutic rehabilitation and its impact on clinical practice using current literature and databases from the areas of evidence based medicine.
KINE	8670	An in-depth investigation into the basic structure and mechanisms of injury of various musculoskeletal tissues applied to the recognition and prevention of specific orthopedic injuries and conditions.
KINE	8930	Seminar course on a selected topic in exercise physiology. Course will typically involve a review of current research and will include laboratory experiences/assignments.
KINE	8940	A field internship designed to supplement classroom experience by providing participation in the area of exercise science through participant-observer experience.
KINE	8960	Directed research towards completion of the doctoral degree. Students may register for credit in more than one semester. Total dissertation credit toward the degree may not exceed 16 hours.
KINE	8990	Faculty supervised independent reading, laboratory research, field experience and other activities not suited for class instruction.
LAT	1110	Study of the fundamentals of Latin vocabulary, grammar and syntax. Translation of elementary readings. (not for major credit)
LAT	1120	Continued study of fundamental Latin vocabulary, grammar and syntax. Translation of elementary readings. (not for major credit)
LAT	2140	Brief review of vocabulary, grammar and syntax. Readings in Latin prose by such authors as Sallust, Livy and Cicero. (not for major credit)
LAT	2150	Intermediate level Latin poetry of the Republic and Augustan periods. (not for major credit)
LAT	5210	Elements of grammar and vocabulary appropriate to preparing graduate students to read effectively in Latin.
LAT	5220	Elements of pronunciation, structure and vocabulary most appropriate to preparing graduate students to read effectively in Latin.



LAWA	6000	An introduction to legal and ethical principles governing lawyers, the legal profession and the practice of law. The course considers the principal ways in which lawyers are regulated through bar admission, professional codes, lawyer disciplinary actions and civil liability. The course explores the lawyer-client relationship and the scope and limits of duties to the client, the legal system and third parties.
LAWA	6120	Constitutional Law II will cover issues of individual rights protected by the Equal Protection Clause of the Fourteenth Amendment. It will also cover First Amendment protections against governmental restrictions of speech and the press, with some coverage of First Amendment protections of religion.
LAWA	6310	The rules and policies governing a trial court's fact-finding process, as exemplified by the Federal Rules of Evidence. Topics cover the full range of evidentiary issues at trial, including the content of admissible proof, the matter of presenting it and the respective roles of the judge and jury.
LAWA	9000	An introduction to legal and ethical principles governing lawyers, the legal profession and the practice of law. The course considers the principal ways in which lawyers are regulated through bar admission, professional codes, lawyer disciplinary actions and civil liability. The course explores the lawyer-client relationship and the scope and limits of duties to the client, the legal system and third parties.
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LAWA	9400	Independent study course involving intensive legal research and drafting under faculty supervision.
LAWC	6010	Arbitration permeates domestic dispute resolution and is the principal means of international commercial dispute resolution. To prepare students as advocates and/or arbitrators in the domestic and international arena, this course conveys a thorough understanding of the law and practice of arbitration. Students will learn the law of arbitration, participate in a mock international commercial arbitration, and be exposed to the emerging subject of online arbitration.



LAWC	9010	Arbitration permeates domestic dispute resolution and is the principal means of international commercial dispute resolution. To prepare students as advocates and/or arbitrators in the domestic and international arena, this course conveys a thorough understanding of the law and practice of arbitration. Students will learn the law of arbitration, participate in a mock international commercial arbitration, and be exposed to the emerging subject of online arbitration.
LAWD	6010	The rules controlling the jurisdiction of courts and forum selection for civil litigation in state and federal systems are covered.
LAWD	6020	The rules controlling conduct and management of civil litigation in federal and state courts from the complaint to final judgment as well as issues involving the effect of judgments on subsequent litigation are covered.
LAWD	6110	Constitutional Law I will cover structural issues focusing on the Supreme Court's interpretation of the nature and distribution of power within the federal government, the relationship between the federal government and the states in regulating commerce, and the meaning and scope of the due process and equal protection clauses of the fourteenth amendment. Constitutional Law II will cover Equal Protection and First Amendment.
LAWD	6210	A survey of the law of contracts including the creation, modification and termination of contract rights and obligations, the roles of reliance and restitution, capacity, conditions, third party rights and duties, and the effect of changed circumstances or mistake. Performance and breach of contractual obligations and remedies for breach are also examined in detail. The course includes a survey of the law relating to sales of goods under Article 2 of the Uniform Commercial Code.
LAWD	6220	A continued survey of the law of contracts including the creation, modification and termination of contract rights and obligations, the roles of reliance and restitution, capacity, conditions, third party rights and duties, and the effect of changed circumstances or mistake. Performance and breach of contractual obligations and remedies for breach are also examined in detail. The course includes a survey of the law relating to sales of goods under Article 2 of the Uniform Commercial Code.
LAWD	6300	Substantive criminal law, focusing on general principles of liability and defenses, the definitional elements of certain crimes, particularly homicide, and principles of accessorial liability.
LAWD	6410	An introduction to the law of personal property and comprehensive coverage of the law of real property as it relates to estates and interests in land, landlord-tenant relationships, real estate transactions, private agreements respecting the use of land and public controls upon property use.



LAWD	6420	Continued study of the law of personal property and comprehensive coverage of the law of real property as it relates to estates and interests in land, landlord-tenant relationships, real estate transactions, private agreements respecting the use of land and public controls upon property use.
LAWD	6510	Torts explore civil claims for a variety of intentional harms and offenses to people and property, negligent harms and theories of strict liability (including products liability). The course studies both traditional principles and modern concepts.
LAWD	6750	A foundation course providing intensive instruction in three major areas: using research resources and techniques of research; developing skills of legal analysis; presenting legal analysis in predictive and persuasive formats, both written and oral. Instruction is through class meetings, small group meetings and individual conferences.
LAWD	6760	A continuation of Legal Research, Writing and Appellate Advocacy I, this course provides intensive instruction in three major areas: using research resources and techniques of research; developing skills of legal analysis; presenting legal analysis in predictive and persuasive formats, both written and oral. Instruction is through class meetings, small group meetings and individual conferences.
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LAWD	9760	A continuation of Legal Research, Writing and Appellate Advocacy I, this course provides intensive instruction in three major areas: using research resources and techniques of research; developing skills of legal analysis; presenting legal analysis in predictive and persuasive formats, both written and oral. Instruction is through class meetings, small group meetings and individual conferences.
LAWG	6010	Business Associations focuses on the legal entities commonly used to operate business enterprises, with an emphasis on closely held businesses. The course explores the major issues involved in formation and operation of agency relationships, corporations and limited liability companies. These include creation of business entities; financing for the small business; sharing in earnings; the roles of corporate officers, directors and shareholders; roles of LLC managers and members; doctrines of limited liability; fiduciary duties; and special statutory treatment of closely held corporations.



LAWG	6030	The law and operation of administrative agencies, including agency adjudication, rulemaking and other forms of policy implementation. The course covers agencies, place in the constitutional structure, legislative and executive controls on agency action, and judicial review of agency fact-finding, statutory interpretation, and exercise of discretion. The course examines state agencies as well as federal agencies and the federal Administrative Procedure Act.
LAWG	6110	A study of payment systems. Initial emphasis is upon commercial paper (Article 3 of the Uniform Commercial Code) and bank deposits and collections (Article 4 of the Uniform Commercial Code), followed by credit cards (Truth in Lending, Consumer Credit Protection, and Fair Credit Billing Acts), commercial funds transfer (Article 4A of the Uniform Commercial Code) and consumer electronic funds transfer (Electronic Funds Transfers Act).
LAWG	6210	A study of the constitutional and statutory limitations on the conduct of criminal investigations and related matters. Includes a discussion of the Fourth Amendment prohibition against unreasonable searches and seizures, the Fifth Amendment privilege against self-incrimination and the Sixth Amendment right to counsel.
LAWG	6500	After a brief consideration of the federal income taxation system, this course examines the conceptual problems in defining "income." A detailed treatment of the more significant personal and business deductions, exemptions and credits follows. Statutory methodology and policy considerations (including the "tax expenditure" concept) are developed integrally with substantive topics. In addition, the course considers the tax treatment of gains and losses from the disposition of property, including the capital gains preference and deferral of taxation. Tax shelters and attempts by Congress and the Internal Revenue Service to limit their utilization may be explored as well.
LAWG	6610	The creation, enforcement, perfection and priority of security interests in personal property under Article Nine of the Uniform Commercial Code and the federal Bankruptcy Code.
LAWG	6710	The study of decedents' estates and trust law. Intestate succession, the law of wills, estate administration, formation and administration of trusts and future interests are studied. Common law approaches are contrasted with Ohio and Uniform Probate Code practices.



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LAWI	6000	This course introduces students to the major legal systems of the world. The first third of the course provides an overview of the major families of law encountered in various nations of the world today: common law (as exemplified by California and England); civil law (France and German); religious law (Egypt); traditional/tribal law (Botswana); and the extra-legal approach seen in various Asian countries (China). The rest of the course examines how each of these systems handles the same types of common legal situation: inheritance and succession, criminal behavior and contracts.
LAWI	6010	An introduction for students without prior accounting experience to the terms and concepts necessary to an understanding of the financial affairs of a client and to the variety of legal contexts in which the lawyer is likely to encounter accounting problems. Students will learn to perform basic financial analysis.
LAWI	6020	This course will examine critical information technologies that provide a basis for electronic commerce. Topics include problems surrounding electronic commerce such as security, privacy, content selection and rating, intellectual property rights, authentication, encryption, acceptable use policies, UETA, UCITA and E-Sign.
LAWI	6040	Civil and Political Rights focuses on a broad array of legal issues and rights in this area of law. Beginning with a history of the area, the course includes topics such as voting rights, religion, education, discrimination, police misconduct and prisoners' rights. Current issues are discussed using news articles and videos.
LAWI	6050	This course surveys admiralty jurisdiction, rights and liabilities of commercial and pleasure boat owners, rights of injured maritime workers and passengers, collision, salvage, maritime liens, cargo claims, and limitation of liability.
LAWI	6060	A detailed study of sales of goods under Article 2 of the Uniform Commercial Code and a survey of both Article 2A of the Uniform Commercial Code (leases of goods) and the U.N. Convention on Contracts for the International Sale of Goods. Topics include contract formation and interpretation, warranties, express and implied terms, risk of loss, performance obligations and breach, and remedies for breach. Consideration may also be given to other state and federal laws affecting sales and leases of goods.



LAWI	6070	This course will cover the role of competition in a modern market economy, federal antitrust law, regulation and policies. Topics covered include horizontal restraints (price fixing, conspiracy, data dissemination, concerted refusals to deal, etc.); monopolization, attempts to monopolize, and oligopoly; problems concerning the relationship of antitrust to patent law; vertical restraints (restricted distribution, tying arrangements, exclusive dealing, etc); mergers (horizontal, vertical and conglomerate); selected Robinson-Patman Act problems, remedies and enforcement.
LAWI	6080	This course covers issues of gender and the law with a primary focus on how the law addresses sex discrimination. Students will discuss constitutional and statutory protections against sex discrimination from a doctrinal and theoretical perspective. Subjects covered in this class include employment discrimination, family law, public benefits, domestic violence and sexual orientation and the law.
LAWI	6100	This course focuses on the legal processes of the international community. The creation of law among nation states, the law-making activities of international organizations, the enforcement (and non-enforcement) of international law in both national and international forums, the limits of national jurisdiction, the responsibility of states for the injuries to the persons or property of aliens and the rules governing international agreements are surveyed. Particular attention is given to the law of treaties and the role of lawyers in foreign policy decision making.
LAWI	6120	A survey of the roots of American law, procedures, and such doctrines as real property, descents, contracts and corporations in the history of the English Common Law.
LAWI	6130	An examination of the federal income tax treatment of business enterprises (including corporations, partnerships and limited liability companies) and their owners. The course considers the tax consequences of entity-owner transactions (formation and property contributions, distributions, redemptions and liquidations) as well as entity-level transactions (business operations, mergers, acquisitions and other business combinations).
LAWI	6140	The course considers problems and transactions of business enterprises in a practical fashion. Projects requiring planning, drafting and negotiating, principally on behalf of smaller and closely held businesses, are an integral part of the course. Contractual arrangements typically examined include buy-sell agreements, close corporation/shareholder agreements and limited liability company operating agreements.
LAWI	6150	This course addresses the evolving relationship between medicine, law and ethics. The course focuses on individual topics including the definition of death, decision-making about death and dying, physician-assisted suicide, access to health care, research involving human subjects and genetic engineering.



LAWI	6160	The legal problems related to private financing and development of land. Emphasis is on the structuring of real estate transactions, tax considerations and problems of developers, lenders and other participants.
LAWI	6170	The problems encountered when a transaction or occurrence has a significant relationship to two or more states or countries. The jurisdiction of courts, the effect to be given to out-of-state judgments and the rules of decision in multi-state cases are studied. Both traditional rules and theories and modern developments are analyzed.
LAWI	6180	The class explores in detail legal and practical issues arising in connection with various media: newspaper, television and radio stations, cable television and other video providers, and the Internet, including Internet-service providers, web-hosting companies, and web-publishing. We will identify, analyze, and critique the legal doctrines, constitutional, statutory, and common-law, that apply to these media, either individually or collectively. We also study how those doctrines have evolved and will continue to change, as the means of mass communication evolve and converge.
LAWI	6200	Jurisprudence is the philosophy of law. The two primary goals of this class are 1) to give students a basic background and understanding of important legal thinkers and theory and 2) to stimulate critical thinking through assigned readings and rollicking in-class discussions about concepts of law from Plato to present day. We will philosophically analyze concepts of precedence, interpretation, rights, civil disobedience, semantics, and virtues such as justice, desert and compassion.
LAWI	6210	A substantive examination of the Copyright Act. This course will cover the fundamentals of copyright law and practice and the challenges to the existing copyright regime by new technologies.
LAWI	6230	An advanced exploration of the legal and financial problems encountered in financing corporations, with emphasis on the corporate capital structure, including the rights of holders of various equity and debt securities; the valuation of businesses, as well as corporate equity and debt securities; and mergers and acquisitions, including tender offers.
LAWI	6240	This course applies economic reasoning to legal problems. Topics include a modern economic analysis of contract, tort, property and other areas of law depending on student interest and available time. This course does not require an economics background.
LAWI	6260	Primarily focuses on cases that have helped shape the law and history of race in the U.S., from early 19th century cases concerning slave law to recent United States Supreme Court decisions. The topics will include slavery, citizenship, segregation, voting, marriage, education, housing and criminal justice. The material and the discussion will move beyond the legal decisions to explore the culture that helped to produce and shape the decisions.



LAWI	6270	Explores creditors' rights under state law including judgment liens, execution liens, fraudulent conveyances, set off, assignments to benefit creditors and statutory liens. Debtor defenses under state and federal law including constitutional protections, exemptions and counterclaims are evaluated. Following this overview of general creditor execution, the majority of the course is devoted to resolution of claims in federal bankruptcy law.
LAWI	6280	A study of the criminal processes from arrest through sentencing and appeal. Topics covered include bail, preliminary hearing, grand jury, plea bargaining and guilty pleas, discovery, fair trial-free press, jury trial, sentencing and double jeopardy.
LAWI	6290	This course will explore issues related to the regulation of cyberspace. It is not a course in computer law, copyright, trademark, patent, or other forms of intellectual property law, except as intellectual property law is sui generis in cyberspace. Instead, it is an effort to understand the peculiar problems of Internet regulation. Subject areas will vary as the field develops, but will include such areas as tort liability, freedom of expression, crime and security, privacy, intellectual property rights and protection, regulation, jurisdiction and standards of ethics and propriety. A technical or scientific background is not required.
LAWI	6300	This course focuses on the main federal statutes prohibiting employment discrimination and the policies underlying these laws, with the majority of time spent on Title VII of the Civil Rights Act of 1964, the Age Discrimination in Employment Act and the Americans With Disabilities Act. Additional topics and subtopics include sexual harassment, discrimination based on sexual orientation, defenses and reasonable accommodation of religion.
LAWI	6310	This course focuses on the major state and federal employment laws affecting individual employees, excluding laws on unions and employment discrimination. Coverage includes the legal regulation of the hiring and firing process, testing and privacy issues, wage and hour laws, occupational health and safety, workers' compensation, unemployment insurance, covenants not to compete, and related topics.
LAWI	6320	The environmental law practicum allows students to choose their own semester-long, environmental law work project. Students are encouraged to find projects that allow them to participate directly in a legal or policy matter pending before an administrative agency. The class has two parts. The first part involves identifying and developing the project concept, and preparing a formal written document for submission to the appropriate agencies. The second part involves explaining their projects to other members of the class and brainstorming ideas for effective participation. Several substantive classes on the art of commenting and on the laws and rules relevant to the various student projects will also be held throughout the semester.



LAWI	6330	This course introduces students to U.S. environmental law by examining common law environmental standards, major federal statutes and the policy goals underlying such statutes. Statutes to be examined include the Clean Air Act, the Clean Water Act, the Clean Air Act; the Comprehensive Environmental Response, Compensation and Liability Act; and the Resource Conservation and Recovery Act. By comparing and contrasting different environmental statutes, students will obtain an understanding of the current environmental framework as well as alternative approaches that may be employed to protect the environment.
LAWI	6340	This course introduces students to print and digital information resources for researching patent, copyright, trademark and trade secret law.
LAWI	6350	This course focuses on the practical aspects of will and trust drafting. Emphasis is placed on the application of estate planning and wealth preservation techniques to commonly encountered estate planning problems.
LAWI	6360	A study of the federal estate and gift tax structure and its impact on the transfer of property and of income taxation of trusts and estates. The redistribution of wealth through taxation, whether or not stated as a goal, is also studied.
LAWI	6370	The interaction of law and the family and the consequences of state intervention in family relationships. Some of the subjects surveyed are the marriage relationship, de facto marriage, adoption, the termination of marital status, economic consequences of divorce, child custody after divorce and the role of the lawyer as counselor.
LAWI	6380	An intensive examination of the jurisdiction of federal courts, the role of the federal courts within the federal government, and within our federalist system. Topics surveyed include the law applied by federal courts in civil actions, the original and removal jurisdiction of federal courts, the relationship of the federal courts to state courts, congressional power over federal courts, the enforceability of federal law against states, and states' sovereign immunity.
LAWI	6390	This course will provide an introduction to natural resource law, including public lands issues (forestry, mining, grazing, recreation and preservation), cultural resources (historic and sacred sites), wildlife, water rights and energy resources. Policies governing resource use and protection will be explored by looking at case law, federal statutes and regulations, news articles, scholarly works and book excerpts. Students will have an opportunity to engage in "hands-on" application of the law by developing case strategy and motions related to an administrative agency's decision.



LAWI	6400	(The American Legal Profession) This seminar/course (students may elect either to write a paper or to take an examination) follows the professions development from the American Revolution through the 1920's and the emergence of university-based professional education, the advent of new client constituencies including corporations, labor organizations, and anti-slavery and other social action groups, the development of standards of professional ethnics and racial minorities. The teaching approach emphasizes comparisons with current practice, critical use of original source materials and development of research and writing skills.
LAWI	6410	This course emphasizes aspects of real estate law, such as real estate brokers, lawyers' professional responsibility, land contract remedies, time of performance, tender, assignment, contract contingencies, equitable conversion, escrows and closings. In addition, this course explores various aspects of real estate development, including obtaining entitlements for development, controlling subdivisions, paying for infrastructure, zoning, vested rights and project management.
LAWI	6420	This course, taught by a medical doctor with a J.D., addresses the issues involved in providing legal services and counsel for a medical practice. Included among the issues are selection of the practice entity, selecting the legal structure for the practice as a business and the elements and options for the operating/partnership agreement, including provisions for dissolution and the question of terminating a partner/member's involvement in the practice.
LAWI	6430	This course explores the legislative process, statutory construction and the role of statutes as a source of public policy. Students will systematically examine principles and techniques used by courts and agencies to interpret statutes.
LAWI	6440	A study of United States citizenship and the admission and removal of noncitizens, including the bases for legal immigration, temporary presence, and the refugee and asylum system.
LAWI	6450	This course reviews: the main international intellectual property instruments (such as TRIPS, Paris Convention, Patent Cooperation Treat, European Patent Convention; Madrid Agreement, Berne and Rome conventions, WIPO treaties), and European main legislative texts (mainly regulations and directives) and main case law on patent, trademark and copyright. We also review the principal differences between the common law based system of copyright and the civil law system based on "droit dauteur" (author's rights), with a special focus on electronic and Internet issues.



LAWI	6460	A study of property, liability and life insurance, and the insurer-insured relationship from a legal vantage point. Numerous concepts are examined during the course, including insurable interest, concealment and misrepresentation, the duty of good faith and fair dealing, scope of coverage, policy interpretation, change of beneficiary, duty to defend, bad faith refusal to settle, measures of recovery, multiple interests coverage, subrogation and other insurance clauses. Several insurance policies are examined in detail.
LAWI	6470	Focuses on managing an IP portfolio to maximize a client's return on investment in IP assets. Emphasizes the identification, valuation, and management of IP assets both as a source of revenue and as a part of a larger offensive or defensive litigation strategy. Topics also include identification of IP assets, management, and licensing in the context of tax and antitrust law.
LAWI	6480	This course introduces students to the issues, problems and legal norms applicable to International Business Transactions. The course will examine various problems that occur in international business as a means of discerning that pitfalls for the unwary, as well as the matters that must be considered to protect one's client. The course will begin with an examination of the issues arising in a basic international sale and will progress through increasingly complex types of business interaction, including distributorships, franchising, licensing, joint ventures and incorporating abroad. Throughout the course, there will be an emphasis on the U.S., foreign and international laws and standards that may affect the transaction.
LAWI	6490	An examination of the relationship among children, the family and the state in the lives of delinquent, neglected, and abused children. The course includes consideration of the history and theory of the juvenile court system and the role of the attorney in representing juveniles.
LAWI	6500	Jewish law is a dynamic, vibrant legal system that includes many of the specialties of modern law. It developed through over three millennia from the days of the Hebrew Bible and has areas that are still operative. It passed through every historic era and matured in various jurisdictions. It has had a profound influence on European and Anglo-American legal systems. The course will focus on the political background and legal response in each historic period, the character of the literary and legal sources and examples of characteristic features of the substantive law.
LAWI	6510	This course focuses on the law governing and policy issues surrounding the major facets of union-management relations in the private sector under the National Labor Relations Act (NLRA). These include union organizing, collective bargaining, contract enforcement, picketing and the economic weapons of both sides, including strikes. The course also covers the procedural mechanisms by which rights under the NLRA are enforced and remedies for NLRA violations.



LAWI	6530	Practical Consumer Law including student loan law, credit card and debt collection law, Fair Credit Reporting Act, Lemon Law, Predatory Lending, etc.
LAWI	6540	Explore the legal and technical issues related to the regulation of air contaminant emissions. Navigate the Clean Air Act and the regulations adopted to implement the Act. Learn to recognize air contaminant sources, estimate emissions, and prepare permit applications. Discuss enforcement and compliance issues.
LAWI	6560	Negotiating, structuring, performing, and closing the real estate transaction, remedies, methods of title assurance, the condominium and other forms of ownership. Course includes exercises in drafting, negotiating and closing a contract for the sale of land.
LAWI	6580	This course covers both the conservation and preservation-oriented environmental land use regulations that have emerged in the recent years as well as the more traditional, developmentally-oriented controls that have been with us for some time. The environmental land use component of the course covers the regulation of: wetlands, coastal zones, floodplains, farmland, open space, critical areas, and groundwater. The developmental land use regulations component includes: zoning, flexible land use controls, subdivision controls, growth controls, aesthetic regulations, historic preservation, and transfer of developmental rights.
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LAWI	6700	A hands-on course focusing on both regulatory requirements and attorney skills relating to representation of investors before the Patent and Trademark Office. The course will follow a patent attorney's relationship with an inventor and the written PTO, responses, appeals and finally patent grant. There are no prerequisites.
LAWI	6710	A survey of the legal protection of inventions. This course covers the requirements for obtaining and enforcing a patent and the rights of a patentee with respect to licensing, assignment and patent misuse.
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LAWI	6740	This course covers various models of public sector labor relations laws, including but not limited to the Ohio public sector labor statute. It focuses on the differing degrees to which public sector unions in different jurisdictions can bargain, resolve bargaining impasses (through strikes or mediation and arbitration), and enforce contracts with employers. This course also stresses issues unique to the public sector, including constitutional rules, civil service statutes and the rights of individual public employees.
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LAWI	6780	The course in Remedies is about the bottom line. It is about what a court can do for a litigant who has been wronged or is about to be wronged. The two most common remedies are judgments for money and injunctions against defendants to prevent them from wronging plaintiffs or to require them to undo wrongs. The course takes up questions such as the measure of relief, the relationship between legal and equitable remedies, declaratory remedies, benefit to the defendant as the measure of relief in restitution, punitive remedies, enforcing judgments, equitable defenses, immunities and federal interference with state law enforcement.
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LAWI	6940	A survey of the federal criminal law relating to crimes committed by corporations and non-traditional criminals. Topics include corporate criminal liability, wire and mail fraud, RICO, money laundering, false claims and false statements, tax crimes, environmental crimes, perjury and obstruction of justice.
LAWI	9000	This course introduces students to the major legal systems of the world. The first third of the course provides an overview of the major families of law encountered in various nations of the world today: common law (as exemplified by California and England); civil law (France and German); religious law (Egypt); traditional/tribal law (Botswana); and the extra-legal approach seen in various Asian countries (China). The rest of the course examines how each of these systems handles the same types of common legal situation: inheritance and succession, criminal behavior and contracts.
LAWI	9010	An introduction for students without prior accounting experience to the terms and concepts necessary to an understanding of the financial affairs of a client and to the variety of legal contexts in which the lawyer is likely to encounter accounting problems. Students will learn to perform basic financial analysis.
LAWI	9020	This course will examine critical information technologies that provide a basis for electronic commerce. Topics include problems surrounding electronic commerce such as security, privacy, content selection and rating, intellectual property rights, authentication, encryption, acceptable use policies, UETA, UCITA and E-Sign.



LAWI	9040	Civil and Political Rights focuses on a broad array of legal issues and rights in this area of law. Beginning with a history of the area, the course includes topics such as voting rights, religion, education, discrimination, police misconduct and prisoners' rights. Current issues are discussed using news articles and videos.
LAWI	9050	This course surveys admiralty jurisdiction, rights and liabilities of commercial and pleasure boat owners, rights of injured maritime workers and passengers, collision, salvage, maritime liens, cargo claims, and limitation of liability.
LAWI	9060	A detailed study of sales of goods under Article 2 of the Uniform Commercial Code and a survey of both Article 2A of the Uniform Commercial Code (leases of goods) and the U.N. Convention on Contracts for the International Sale of Goods. Topics include contract formation and interpretation, warranties, express and implied terms, risk of loss, performance obligations and breach, and remedies for breach. Consideration may also be given to other state and federal laws affecting sales and leases of goods.
LAWI	9070	This course will cover the role of competition in a modern market economy, federal antitrust law, regulation and policies. Topics covered include horizontal restraints (price fixing, conspiracy, data dissemination, concerted refusals to deal, etc.); monopolization, attempts to monopolize, and oligopoly; problems concerning the relationship of antitrust to patent law; vertical restraints (restricted distribution, tying arrangements, exclusive dealing, etc); mergers (horizontal, vertical and conglomerate); selected Robinson-Patman Act problems, remedies and enforcement.
LAWI	9080	This course covers issues of gender and the law with a primary focus on how the law addresses sex discrimination. Students will discuss constitutional and statutory protections against sex discrimination from a doctrinal and theoretical perspective. Subjects covered in this class include employment discrimination, family law, public benefits, domestic violence and sexual orientation and the law.
LAWI	9100	This course focuses on the legal processes of the international community. The creation of law among nation states, the law-making activities of international organizations, the enforcement (and non-enforcement) of international law in both national and international forums, the limits of national jurisdiction, the responsibility of states for the injuries to the persons or property of aliens and the rules governing international agreements are surveyed. Particular attention is given to the law of treaties and the role of lawyers in foreign policy decision making.
LAWI	9120	A survey of the roots of American law, procedures, and such doctrines as real property, descents, contracts and corporations in the history of the English Common Law.



LAWI	9130	An examination of the federal income tax treatment of business enterprises (including corporations, partnerships and limited liability companies) and their owners. The course considers the tax consequences of entity-owner transactions (formation and property contributions, distributions, redemptions and liquidations) as well as entity-level transactions (business operations, mergers, acquisitions and other business combinations).
LAWI	9140	The course considers problems and transactions of business enterprises in a practical fashion. Projects requiring planning, drafting and negotiating, principally on behalf of smaller and closely held businesses, are an integral part of the course. Contractual arrangements typically examined include buy-sell agreements, close corporation/shareholder agreements and limited liability company operating agreements.
LAWI	9150	This course addresses the evolving relationship between medicine, law and ethics. The course focuses on individual topics including the definition of death, decision-making about death and dying, physician-assisted suicide, access to health care, research involving human subjects and genetic engineering.
LAWI	9160	The legal problems related to private financing and development of land. Emphasis is on the structuring of real estate transactions, tax considerations and problems of developers, lenders and other participants.
LAWI	9170	The problems encountered when a transaction or occurrence has a significant relationship to two or more states or countries. The jurisdiction of courts, the effect to be given to out-of-state judgments and the rules of decision in multi-state cases are studied. Both traditional rules and theories and modern developments are analyzed.
LAWI	9180	The class explores in detail legal and practical issues arising in connection with various media: newspaper, television and radio stations, cable television and other video providers, and the Internet, including Internet-service providers, web-hosting companies, and web-publishing. We will identify, analyze, and critique the legal doctrines, constitutional, statutory, and common-law, that apply to these media, either individually or collectively. We also study how those doctrines have evolved and will continue to change, as the means of mass communication evolve and converge.
LAWI	9200	Jurisprudence is the philosophy of law. The two primary goals of this class are 1) to give students a basic background and understanding of important legal thinkers and theory and 2) to stimulate critical thinking through assigned readings and rollicking in-class discussions about concepts of law from Plato to present day. We will philosophically analyze concepts of precedence, interpretation, rights, civil disobedience, semantics, and virtues such as justice, desert and compassion.
LAWI	9210	A substantive examination of the Copyright Act. This course will cover the fundamentals of copyright law and practice and the challenges to the existing copyright regime by new technologies.



LAWI	9230	An advanced exploration of the legal and financial problems encountered in financing corporations, with emphasis on the corporate capital structure, including the rights of holders of various equity and debt securities; the valuation of businesses, as well as corporate equity and debt securities; and mergers and acquisitions, including tender offers.
LAWI	9240	This course applies economic reasoning to legal problems. Topics include a modern economic analysis of contract, tort, property and other areas of law depending on student interest and available time. This course does not require an economics background.
LAWI	9260	Primarily focuses on cases that have helped shape the law and history of race in the U.S., from early 19th century cases concerning slave law to recent United States Supreme Court decisions. The topics will include slavery, citizenship, segregation, voting, marriage, education, housing and criminal justice. The material and the discussion will move beyond the legal decisions to explore the culture that helped to produce and shape the decisions.
LAWI	9270	Explores creditors' rights under state law including judgment liens, execution liens, fraudulent conveyances, set off, assignments to benefit creditors and statutory liens. Debtor defenses under state and federal law including constitutional protections, exemptions and counterclaims are evaluated. Following this overview of general creditor execution, the majority of the course is devoted to resolution of claims in federal bankruptcy law.
LAWI	9280	A study of the criminal processes from arrest through sentencing and appeal. Topics covered include bail, preliminary hearing, grand jury, plea bargaining and guilty pleas, discovery, fair trial-free press, jury trial, sentencing and double jeopardy.
LAWI	9290	This course will explore issues related to the regulation of cyberspace. It is not a course in computer law, copyright, trademark, patent, or other forms of intellectual property law, except as intellectual property law is sui generis in cyberspace. Instead, it is an effort to understand the peculiar problems of Internet regulation. Subject areas will vary as the field develops, but will include such areas as tort liability, freedom of expression, crime and security, privacy, intellectual property rights and protection, regulation, jurisdiction and standards of ethics and propriety. A technical or scientific background is not required.
LAWI	9300	This course focuses on the main federal statutes prohibiting employment discrimination and the policies underlying these laws, with the majority of time spent on Title VII of the Civil Rights Act of 1964, the Age Discrimination in Employment Act and the Americans With Disabilities Act. Additional topics and subtopics include sexual harassment, discrimination based on sexual orientation, defenses and reasonable accommodation of religion.



LAWI	9310	This course focuses on the major state and federal employment laws affecting individual employees, excluding laws on unions and employment discrimination. Coverage includes the legal regulation of the hiring and firing process, testing and privacy issues, wage and hour laws, occupational health and safety, workers' compensation, unemployment insurance, covenants not to compete, and related topics.
LAWI	9320	The environmental law practicum allows students to choose their own semester-long, environmental law work project. Students are encouraged to find projects that allow them to participate directly in a legal or policy matter pending before an administrative agency. The class has two parts. The first part involves identifying and developing the project concept, and preparing a formal written document for submission to the appropriate agencies. The second part involves explaining their projects to other members of the class and brainstorming ideas for effective participation. Several substantive classes on the art of commenting and on the laws and rules relevant to the various student projects will also be held throughout the semester.
LAWI	9330	This course introduces students to U.S. environmental law by examining common law environmental standards, major federal statutes and the policy goals underlying such statutes. Statutes to be examined include the Clean Air Act, the Clean Water Act, the Clean Air Act; the Comprehensive Environmental Response, Compensation and Liability Act; and the Resource Conservation and Recovery Act. By comparing and contrasting different environmental statutes, students will obtain an understanding of the current environmental framework as well as alternative approaches that may be employed to protect the environment.
LAWI	9340	This course introduces students to print and digital information resources for researching patent, copyright, trademark and trade secret law.
LAWI	9350	This course focuses on the practical aspects of will and trust drafting. Emphasis is placed on the application of estate planning and wealth preservation techniques to commonly encountered estate planning problems.
LAWI	9360	A study of the federal estate and gift tax structure and its impact on the transfer of property and of income taxation of trusts and estates. The redistribution of wealth through taxation, whether or not stated as a goal, is also studied.
LAWI	9370	The interaction of law and the family and the consequences of state intervention in family relationships. Some of the subjects surveyed are the marriage relationship, de facto marriage, adoption, the termination of marital status, economic consequences of divorce, child custody after divorce and the role of the lawyer as counselor.



LAWI	9380	An intensive examination of the jurisdiction of federal courts, the role of the federal courts within the federal government, and within our federalist system. Topics surveyed include the law applied by federal courts in civil actions, the original and removal jurisdiction of federal courts, the relationship of the federal courts to state courts, congressional power over federal courts, the enforceability of federal law against states, and states' sovereign immunity.
LAWI	9390	This course will provide an introduction to natural resource law, including public lands issues (forestry, mining, grazing, recreation and preservation), cultural resources (historic and sacred sites), wildlife, water rights and energy resources. Policies governing resource use and protection will be explored by looking at case law, federal statutes and regulations, news articles, scholarly works and book excerpts. Students will have an opportunity to engage in "hands-on" application of the law by developing case strategy and motions related to an administrative agency's decision.
LAWI	9400	(The American Legal Profession) This seminar/course (students may elect either to write a paper or to take an examination) follows the professions development from the American Revolution through the 1920's and the emergence of university-based professional education, the advent of new client constituencies including corporations, labor organizations, and anti-slavery and other social action groups, the development of standards of professional ethics and racial minorities. The teaching approach emphasizes comparisons with current practice, critical use of original source materials and development of research and writing skills.
LAWI	9410	This course emphasizes aspects of real estate law, such as real estate brokers, lawyers' professional responsibility, land contract remedies, time of performance, tender, assignment, contract contingencies, equitable conversion, escrows and closings. In addition, this course explores various aspects of real estate development, including obtaining entitlements for development, controlling subdivisions, paying for infrastructure, zoning, vested rights and project management.
LAWI	9420	This course, taught by a medical doctor with a J.D., addresses the issues involved in providing legal services and counsel for a medical practice. Included among the issues are selection of the practice entity, selecting the legal structure for the practice as a business and the elements and options for the operating/partnership agreement, including provisions for dissolution and the question of terminating a partner/member's involvement in the practice.
LAWI	9430	This course explores the legislative process, statutory construction and the role of statutes as a source of public policy. Students will systematically examine principles and techniques used by courts and agencies to interpret statutes.



LAWI	9440	A study of United States citizenship and the admission and removal of noncitizens, including the bases for legal immigration, temporary presence, and the refugee and asylum system.
LAWI	9450	This course reviews: the main international intellectual property instruments (such as TRIPS, Paris Convention, Patent Cooperation Treat, European Patent Convention; Madrid Agreement, Berne and Rome conventions, WIPO treaties), and European main legislative texts (mainly regulations and directives) and main case law on patent, trademark and copyright. We also review the principal differences between the common law based system of copyright and the civil law system based on "droit dauteur" (author's rights), with a special focus on electronic and Internet issues.
LAWI	9460	A study of property, liability and life insurance, and the insurer-insured relationship from a legal vantage point. Numerous concepts are examined during the course, including insurable interest, concealment and misrepresentation, the duty of good faith and fair dealing, scope of coverage, policy interpretation, change of beneficiary, duty to defend, bad faith refusal to settle, measures of recovery, multiple interests coverage, subrogation and other insurance clauses. Several insurance policies are examined in detail.
LAWI	9470	Focuses on managing an IP portfolio to maximize a client's return on investment in IP assets. Emphasizes the identification, valuation, and management of IP assets both as a source of revenue and as a part of a larger offensive or defensive litigation strategy. Topics also include identification of IP assets, management, and licensing in the context of tax and antitrust law.
LAWI	9480	This course introduces students to the issues, problems and legal norms applicable to International Business Transactions. The course will examine various problems that occur in international business as a means of discerning that pitfalls for the unwary, as well as the matters that must be considered to protect one's client. The course will begin with an examination of the issues arising in a basic international sale and will progress through increasingly complex types of business interaction, including distributorships, franchising, licensing, joint ventures and incorporating abroad. Throughout the course, there will be an emphasis on the U.S., foreign and international laws and standards that may affect the transaction.
LAWI	9490	An examination of the relationship among children, the family and the state in the lives of delinquent, neglected, and abused children. The course includes consideration of the history and theory of the juvenile court system and the role of the attorney in representing juveniles.



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LAWL	6110	Course is graded on a Satisfactory/Unsatisfactory basis. Course requires the successful completion of a publishable manuscript as determined by the editor-in-chief and faculty adviser of the Law Review. With the approval of the faculty member assigned to the manuscript, it also counts as 2 writing units which include a research component toward the student's Upper Level Writing Requirement.
LAWL	6120	Only students who have successfully completed Law Review I and who are serving as editors of the Law Review will be permitted to register for Law Review II. Enrollment is selective.
LAWL	6150	Students participate in interscholastic Moot Court and Trial Advocacy competitions, each of which deals with a particular area of law, such as: international law, family law, corporate law, sports law, tax, intellectual property, criminal law and constitutional law. Those participating on moot court teams will prepare a brief for and present an appellate argument at a competition at another school. Students on the trial advocacy team will conduct trial against counsel from other schools; including making opening and closing statements, introducing evidence and examining and cross-examining witnesses.



LAWL	6160	Students participate in interscholastic Moot Court and Trial Advocacy competitions, each of which deals with a particular area of law, such as: international law, family law, corporate law, sports law, tax, intellectual property, criminal law and constitutional law. Those participating on moot court teams will prepare a brief for and present an appellate argument at a competition at another school. Students on the trial advocacy team will conduct trial against counsel from other schools; including making opening and closing statements, introducing evidence and examining and cross-examining witnesses.
LAWL	6180	Students participate in interscholastic trial advocacy competitions; conduct trials against counsel from other schools including making opening and closing statements, introducing evidence, and examining and cross-examining witnesses.
LAWL	6190	Students participate in interscholastic trial advocacy competitions; conduct trials against counsel from other schools including making opening and closing statements, introducing evidence, and examining and cross-examining witnesses.
LAWL	9110	Course is graded on a Satisfactory/Unsatisfactory basis. Course requires the successful completion of a publishable manuscript as determined by the editor-in-chief and faculty adviser of the Law Review. With the approval of the faculty member assigned to the manuscript, it also counts as 2 writing units which include a research component toward the student's Upper Level Writing Requirement.
LAWL	9120	Only students who have successfully completed Law Review I and who are serving as editors of the Law Review will be permitted to register for Law Review II. Enrollment is selective.
LAWL	9150	Students participate in interscholastic Moot Court and Trial Advocacy competitions, each of which deals with a particular area of law, such as: international law, family law, corporate law, sports law, tax, intellectual property, criminal law and constitutional law. Those participating on moot court teams will prepare a brief for and present an appellate argument at a competition at another school. Students on the trial advocacy team will conduct trial against counsel from other schools; including making opening and closing statements, introducing evidence and examining and cross-examining witnesses.
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LAWL	9180	Students participate in interscholastic trial advocacy competitions; conduct trials against counsel from other schools including making opening and closing statements, introducing evidence, and examining and cross-examining witnesses.
LAWL	9190	Students participate in interscholastic trial advocacy competitions; conduct trials against counsel from other schools including making opening and closing statements, introducing evidence, and examining and cross-examining witnesses.
LAWM	5000	U.S. legal system at trial and appellate levels in state and federal courts. Case and statutory sources of law; legal reasoning; introduction to contracts, torts, property, criminal and constitutional law.
LAWN	6000	Simulated exercises and trials, including such matters as pretrial motions, jury selection, opening statement, presentation of evidence, cross-examination, witness impeachment, closing argument and jury instructions. Emphasis is given to developing and proving a theory of the case.
LAWN	6010	This course explores the theory and practice of arbitration from the standpoint of both the arbitrator and the attorney-advocate with specific emphasis on arbitration advocacy. The course includes arbitration simulations that require preparation of arbitration awards with opinions and pre-arbitration hearing briefs.
LAWN	6020	An in-depth view of legal bibliography in both print and electronic formats. Detailed attention given to encyclopedias, treatises, and various general and topical indexes, digests, and citators as well as web based compilations of legal materials.
LAWN	6030	An introduction to management of a law practice. This course will develop concepts related to four areas: Business Management, Practice Management, Client Management and Life Management. In the area of Business Management, students will be exposed to business start-up considerations, including choice of entity, financing, bookkeeping and trust accounting. In the area of Practice Management, the students will cover administrative and substantive systems, including conflicts of interest, docket management, form files and employee management. In Client Management, the students will be exposed to issues related to client acceptance, declination, disengagement, client satisfaction and malpractice to name a few.
LAWN	6040	This course explores the theory and practice of mediation from the standpoint of both the mediator and the attorney-advocate. The course includes several mediation simulations that require preparation of post-mediation evaluations. Other topics include mediator roles and functions, agenda setting, issue identification, communication skills, power balancing, the caucus, ethical issues and the place of mediation in the larger context of Alternative Dispute Resolution.



LAWN	6050	This course focuses on developing an analytical framework for preparing, conducting and evaluating negotiations. A variety of negotiation strategies and tactics are explored including cooperative, problem-solving and competitive, positional approaches. Students conduct approximately ten negotiations that explore a variety of deal-making and dispute resolution fact situations.
LAWN	6060	Practical aspects of lawyering with an emphasis on trial skills and on the theories of strategies and tactics of litigation. Students interview clients, analyze their problems and recommend solutions. In this practical course, students also learn how to establish a law practice.
LAWN	6070	One-half of the course concentrates on learning the rules of discovery and developing practical skill in drafting interrogatories, requests for production, requests for admission and requests for physical examination. The other half focuses on the practical aspects of preparing for, taking and defending depositions.
LAWN	6080	This course teaches students to "talk to the judge" in legal writing by using plain, persuasive language. Topics include the rules and practice of many types of motions from the usually mundane motion for extension of time to motions in limine and for summary judgment. A large portion of the course will be spent writing and editing a persuasive motion for summary judgment.
LAWN	6090	This survey course starts with a comparison of various adjudicatory and non-adjudicatory methods of dispute resolution and then proceeds to an in-depth study of negotiation, mediation and arbitration as well as various hybrid dispute resolution processes such as the mini-trial, the summary jury trial, early neutral evaluation, mediation-arbitration and ombudsmen. Attention is also given to client interviewing and counseling.
LAWN	6100	This course will provide structures to organize the complex features of negotiation into manageable categories. This course is based on a three-pronged approach: 1) Communicating the theoretical insights, conceptual basics, and strategic approaches of the negotiation process. 2) Giving students opportunities to apply these concepts and strategies to new situations so as to deepen their understanding of negotiation. 3) Providing students opportunities to apply the concepts and strategies in actual negotiation situations.
LAWN	6150	This advanced course builds upon Negotiation and Settlement; it develops the theories, strategies, and conceptual models of negotiation and gives students opportunities to apply these theories, strategies, and conceptual models to actual negotiation problems.
LAWN	6160	This course concentrates on the practical application of the rules of discovery and motions. Students will develop practical skills in drafting associated with pretrial practice.



LAWN	6190	Most lawyers in both litigation and transactional practice spend substantial amounts of their time interviewing and counseling clients. The goals of this course are to develop understanding of theories and techniques of client interviewing and counseling and to assist students to develop skills in performance of interviewing and counseling. Readings and class discussion impart knowledge of theory and techniques. Mere understanding, however, is insufficient to develop performance competence. To develop competence in performance of these skills, students participate in simulations based on case files that will be distributed. Simulations will be recorded on videotape and will be evaluated by the performer, classmates and the instructor.
LAWN	6310	The Prosecutor Clinic trains law students in basic prosecutorial skills and values. Students serve externships in local prosecutor offices trying cases, plea-bargaining and interviewing witnesses. The clinic may be taken for either six or four credit hours.
LAWN	6330	The Advanced Prosecutor Clinic trains students in advanced skills of prosecution. Students undertake more challenging tasks than those typically undertaken in the basic clinic. For example, students may conduct jury trials, make appellate arguments, or draft clinical training manuals.
LAWN	6410	In the Dispute Resolution Clinic, second and third year students have the unique opportunity to learn mediation skills and apply those skills mediating in the Lucas County Juvenile Court and Toledo Municipal Court. This fieldwork experience provides hands-on training in the area of alternative dispute resolution. Skills such as listening, communication and negotiation are stressed in both the fieldwork and weekly classroom component. Students are taught theoretical techniques and are exposed to a variety of topics and speakers in the Alternative Dispute Resolution field. This clinical program is designed to teach practical skills and give the students an opportunity to interact in the legal community in a new and emerging area of law.
LAWN	6420	The Advanced Dispute Resolution Clinic emphasizes development of skills beyond those achieved in the basic clinic. The course provides students with the opportunity to become involved in mediations in a number of courts throughout Lucas County and Northwest Ohio.
LAWN	6610	The Public Service Externship Clinic is a field placement program in which students are placed in structured legal settings with public service attorneys and programs. There is a required classroom component in which issues relating to learning from experience are explored. The program is available year round with out-of-town placements available in the summer term.



LAWN	6910	The clinic focuses on development of legal skills such as interviewing, counseling, negotiation, drafting, trial and appellate work and the application of those skills to the problems of individuals. Typical practice includes probate, domestic relations, administrative law, landlord and tenant, consumer and civil rights cases. Students in the clinic are given responsibility for work on all aspects of the case, under the close supervision of clinic faculty. Classroom meetings focus on substantive, procedural and ethical aspects of the cases handled by the clinic. Admission is by the permission of the co-directors.
LAWN	6930	The advanced clinic emphasizes development of skills beyond those achieved in the basic clinic in the context of complex litigation or other more involved representation.
LAWN	6940	Students enrolled in the domestic violence clinic provide direct legal representation to persons who experience domestic abuse. Readings, classroom lectures, videos, and guest speakers complement live-client legal practice. Eight hours of casework and 4 hours in class required each week.
LAWN	6950	The advanced clinic development of skills beyond those achieved in the basic clinic in the context of complex domestic violence prosecution.
LAWN	9000	Simulated exercises and trials, including such matters as pretrial motions, jury selection, opening statement, presentation of evidence, cross-examination, witness impeachment, closing argument and jury instructions. Emphasis is given to developing and proving a theory of the case.
LAWN	9010	This course explores the theory and practice of arbitration from the standpoint of both the arbitrator and the attorney-advocate with specific emphasis on arbitration advocacy. The course includes arbitration simulations that require preparation of arbitration awards with opinions and pre-arbitration hearing briefs.
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LAWN	9040	This course explores the theory and practice of mediation from the standpoint of both the mediator and the attorney-advocate. The course includes several mediation simulations that require preparation of post-mediation evaluations. Other topics include mediator roles and functions, agenda setting, issue identification, communication skills, power balancing, the caucus, ethical issues and the place of mediation in the larger context of Alternative Dispute Resolution.
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LAWN	9100	This course will provide structures to organize the complex features of negotiation into manageable categories. This course is based on a three-pronged approach: 1) Communicating the theoretical insights, conceptual basics, and strategic approaches of the negotiation process. 2) Giving students opportunities to apply these concepts and strategies to new situations so as to deepen their understanding of negotiation. 3) Providing students opportunities to apply the concepts and strategies in actual negotiation situations.



LAWN	9150	This advanced course builds upon Negotiation and Settlement; it develops the theories, strategies, and conceptual models of negotiation and gives students opportunities to apply these theories, strategies, and conceptual models to actual negotiation problems.
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LAWN	9190	Most lawyers in both litigation and transactional practice spend substantial amounts of their time interviewing and counseling clients. The goals of this course are to develop understanding of theories and techniques of client interviewing and counseling and to assist students to develop skills in performance of interviewing and counseling. Readings and class discussion impart knowledge of theory and techniques. Mere understanding, however, is insufficient to develop performance competence. To develop competence in performance of these skills, students participate in simulations based on case files that will be distributed. Simulations will be recorded on videotape and will be evaluated by the performer, classmates and the instructor.
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LAWN	9420	The Advanced Dispute Resolution Clinic emphasizes development of skills beyond those achieved in the basic clinic. The course provides students with the opportunity to become involved in mediations in a number of courts throughout Lucas County and Northwest Ohio.



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LAWN	9910	The clinic focuses on development of legal skills such as interviewing, counseling, negotiation, drafting, trial and appellate work and the application of those skills to the problems of individuals. Typical practice includes probate, domestic relations, administrative law, landlord and tenant, consumer and civil rights cases. Students in the clinic are given responsibility for work on all aspects of the case, under the close supervision of clinic faculty. Classroom meetings focus on substantive, procedural and ethical aspects of the cases handled by the clinic. Admission is by the permission of the co-directors.
LAWN	9930	The advanced clinic emphasizes development of skills beyond those achieved in the basic clinic in the context of complex litigation or other more involved representation.
LAWN	9940	Students enrolled in the domestic violence clinic provide direct legal representation to persons who experience domestic abuse. Readings, classroom lectures, videos, and guest speakers complement live-client legal practice. Eight hours of casework and 4 hours in class required each week.
LAWN	9950	The advanced clinic development of skills beyond those achieved in the basic clinic in the context of complex domestic violence prosecution.
LAWP	6000	Seminars are offered in a wide variety of subject areas. In addition to class work, seminars require a substantial research project.
LAWP	6010	A student who has completed 32 semester hours in the College of Law and who has a cumulative grade point average of 3.0 or higher may apply to undertake honors research. The student must submit a topic and detailed research proposal four weeks prior to enrollment to a faculty member who agrees to take primary responsibility to supervise the student's work. Two other faculty members are appointed by the Dean to serve on the student's advisory committee. The research and writing take place over two semesters and culminate in a written thesis intended for publication. The student must orally defend his or her thesis before the advisory committee and interested members of the University community.



LAWP	6020	A student who has completed 32 semester hours in the College of Law and who has a cumulative grade point average of 3.0 or higher may apply to undertake honors research. The student must submit a topic and detailed research proposal four weeks prior to enrollment to a faculty member who agrees to take primary responsibility to supervise the student's work. Two other faculty members are appointed by the Dean to serve on the student's advisory committee. The research and writing take place over two semesters and culminate in a written thesis intended for publication. The student must orally defend his or her thesis before the advisory committee and interested members of the University community.
LAWP	6030	The course focuses on teaching advanced advocacy skills for practice before the appellate courts. It covers advanced persuasive writing, the rules of appellate court procedure, as well as advanced research and oral argument techniques.
LAWP	6040	This is a practicum course that develops the theory and practice of cognitive legal writing, i.e., legal writing that is well-organized, precise, effective and persuasive. This approach to legal writing is applicable to briefs, memoranda, opinion letters and letters to clients.
LAWP	6050	A student who has completed at least 32 semester hours in the College of Law and who has a grade point average of 2.0 or higher may undertake and complete individual research and writing for credit under an Independent Research Program. To enroll in the program, a student must submit a written proposal to the faculty member agreeing to take primary responsibility for that student. If the faculty member and the Dean approve the proposal, the student may then enroll for two hours of credit for one semester. The supervising faculty member decides how many Upper Level Writing Requirement units and what grade will be awarded to the project.
LAWP	6060	This course focuses on writing skills necessary for the legal practitioner, including client letters, complaints, answers, interrogatories and motions. It is aimed at those students interested in learning the nuts and bolts of practice and how to prepare essential litigation documents.
LAWP	6210	This is a practicum course that develops the theory and practice of cognitive legal writing, i.e. legal writing that is well-organized, precise, effective, persuasive, and reader-centered. This approach to legal writing is applicable to law review notes and comments as well as briefs, memoranda, opinion letters, and letters to clients.
LAWP	6400	The course's primary goals are to improve student drafting skills in general and to provide practical experience in will and trust drafting. Students design drafting solutions to a series of particular exercises. A final, comprehensive drafting project is required.
LAWP	6460	This is a practicum course that develops the theory and practice of preparing clear, consistent, well-organized and readable legal instruments (e.g., contracts, leases, regulations and statutory provisions).



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LAWP	9460	This is a practicum course that develops the theory and practice of preparing clear, consistent, well-organized and readable legal instruments (e.g., contracts, leases, regulations and statutory provisions).
LAWT	1EL	A study of selected problems of complexity in litigation, in relation to subject matter, parties, forums, and pre-trial and trial procedures.
LAWT	2EL	
LAWT	3EL	
LAWT	4EL	
LAWT	6070	
LAWT	6090	This course surveys a variety of substantive areas with particular reference to how those impact elderly persons: legal ethics, property management, guardianship of the person, health care and housing. Research and practical writing projects are often part of this course.
LAWT	6120	This course will begin with an examination of the history of and legal foundations for the European Union. It will then explore the relationship between individual sovereign states and the EU. Finally, the course will look at various particular bodies of EU law such as free movement of capital, goods and labor; freedom of establishment; harmonization of laws; antitrust and competition policy; currency unification; environmental protection; intellectual property protection; rights to privacy; and women's rights.
LAWT	6130	Course explores how legal doctrine, social and economic policy, and constitutional principles are reflected in the media and entertainment industries. Includes antitrust and telecommunications law, defamation, legal restraints on sex and violence, copyright, contracts, and labor law.
LAWT	6150	Examines the legal structures that regulate the organization, delivery and financing of health care. Topics include Medicare and Medicaid, Antitrust and the structure of health care enterprises. Discussion includes the public policy objectives and effects of current regulatory schemes, as well as enacted and proposed reforms at state and federal levels.



LAWT	6250	This interdisciplinary course integrates topics and speakers from different disciplines to examine problems facing the Great Lakes Region, such as water pollution, use and development, Brownfield's remediation, wetlands and biodiversity. Students may work in teams with graduate students, and may draw upon their own research and the speakers' expertise to devise proposals on relevant topics.
LAWT	6260	This course will cover the different problems presented by government regulation versus the private market model focusing on managed care (risk allocation, standard of care, consumer information), insurance (basic models of insurance and underwriting), health care licensing, and related ERISA issues as they affect the delivery of health care services.
LAWT	6270	The Legislative Drafting course focuses on legislative drafting techniques and surveys legal drafting, limitations on legislation, statutory interpretation, legislative procedure and professional responsibility. Students will draft a bill for an actual client and write a scholarly paper in support of the bill.
LAWT	6280	This course explains the legal issues that surround death, dying, and decision-making. It examines topics such as bioethical decision-making, informed consent, capacity to make medical decisions, definitions of death, organ donation, the right to die, advanced directives, and assisted suicide. This course must elect at the same time as Bioethics Practicum.
LAWT	6290	This clinical course requires students to design and conduct a community workshop that explains the Ohio law of advanced directives. The clinical faculty will evaluate each student's professional competence, legal analysis, critical thinking, preparation and participation, productivity, resourcefulness, and collaboration. This course must be elected at the same time as Death, Dying, and Decision-making.
LAWT	6350	Mental Health Law deals with the rights of persons with mental disabilities. Topics considered are: civil commitment, right to treatment, right to refuse treatment, Americans with Disabilities Act, competence to stand trial, the doctrine of "not guilty by reason of insanity," and dangerous offender statutes.
LAWT	6360	This course, taught by a medical doctor with a JD, addresses practical litigation issues involved in health care law. It focuses on the use and interpretation by the lawyer of the medical record. Regardless of the nature of the action brought, negligence, malpractice, toxic tort, worker's compensation or medical fraud and abuse claims, the medical record is a foundation document in the preparation of the case for both plaintiff and defendant. The attorney must understand both the medical content and meaning of the record, including anatomy and pathophysiology, as well as the documentation of the duty and delivery of care in the record to effectively sustain an argument.



LAWT	6370	This advanced torts course covers quality control in health care, medical malpractice, informed consent, medical confidentiality and institutional liability for medical injury. It includes causes of action against individual and institutional health care providers as well as third party payors, including insurers and managed care organizations. Tort reform issues are also addressed.
LAWT	6380	This course will initially examine the legal concepts of "Native American" individual and tribe. The study of unique (and not so unique) aspects of the treatment of Native American individuals and tribes under the U.S. Constitution; treaties; and national, tribal and state law will form the heart of the course. Attention will be given to issues relating to tribal government and tribal courts, criminal and civil jurisdiction over Indians and non-Indians, environmental regulation on reservation lands, commercial trade in Indian art, casino gaming, the American Indian Religious Freedom Act and the Native American Graves Protection and Repatriation Act.
LAWT	6400	This course will begin with an overview of free trade in North America. Then it will turn to an in-depth examination of different areas of commerce affected by the North American Free Trade Agreement (NAFTA): the movement of goods, the cross border provision of services, the treatment of foreign investments, the protection of intellectual property and dispute settlement procedures. Next, it will consider the labor and environmental side agreements. Finally, it will explore how the NAFTA may be expanded in the future.
LAWT	6550	Courses covering special topics and current events.
LAWT	6600	
LAWT	6630	
LAWT	6790	This course will combine in-depth study of the most important and current issues in criminal procedure with direct experience in oral and written advocacy. In the post 9/11 world, criminal procedure is in a state of change not seen in the last thirty years. We will therefore focus on issues that have arisen in the War on Terrorism: the USA PATRIOT Act, detentions of individuals as "enemy combatants," the use of immigration violations and material witness warrants as pretexts for terrorism investigation, profiling of potential terrorists, and the gathering of evidence under Foreign Intelligence Surveillance Act warrants. Students will brief and argue two Fourth, Fifth or Sixth Amendment problems. Both writing and oral arguments will be extensively critiqued.



LAWT	6800	This course introduces students to issues, problems and legal norms applicable to environmental concerns in the international arena. The course begins with an examination of the various sources of international law and the applicability and affect that international legal norms have on domestic law (an introduction to basic international law). Next the course will consider the unique nature of environmental problems in the international context. The course will then explore the various norms, treaties and other sources of international law that exist to protect the environment in the context of various problems.
LAWT	6900	A review of the law of scientific evidence and the underlying science employed in detecting and solving crimes and in the reconstruction of accidents. Topics include, accident and injury reconstruction, DNA matching, the identification and toxicology of drugs and alcohol, fingerprint identification, dental matching, the reconstruction of computer files, basics of forensic accounting and hair, fiber and similar matching techniques.
LAWT	6910	This course addresses legal and policy aspects of state and federal death penalty practice. Both prosecutor and defense strategies will be explored. Students will take a final exam or write a paper in lieu of the exam.
LAWT	6990	A study of selected problems of complexity in litigation, in relation to subject matter, parties, forums, and pre-trial and trial procedures.
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LAWT	9130	Course explores how legal doctrine, social and economic policy, and constitutional principles are reflected in the media and entertainment industries. Includes antitrust and telecommunications law, defamation, legal restraints on sex and violence, copyright, contracts, and labor law.
LAWT	9150	Examines the legal structures that regulate the organization, delivery and financing of health care. Topics include Medicare and Medicaid, Antitrust and the structure of health care enterprises. Discussion includes the public policy objectives and effects of current regulatory schemes, as well as enacted and proposed reforms at state and federal levels.



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LAWT	9360	This course, taught by a medical doctor with a JD, addresses practical litigation issues involved in health care law. It focuses on the use and interpretation by the lawyer of the medical record. Regardless of the nature of the action brought, negligence, malpractice, toxic tort, worker's compensation or medical fraud and abuse claims, the medical record is a foundation document in the preparation of the case for both plaintiff and defendant. The attorney must understand both the medical content and meaning of the record, including anatomy and pathophysiology, as well as the documentation of the duty and delivery of care in the record to effectively sustain an argument.



LAWT	9370	This advanced torts course covers quality control in health care, medical malpractice, informed consent, medical confidentiality and institutional liability for medical injury. It includes causes of action against individual and institutional health care providers as well as third party payors, including insurers and managed care organizations. Tort reform issues are also addressed.
LAWT	9380	This course will initially examine the legal concepts of "Native American" individual and tribe. The study of unique (and not so unique) aspects of the treatment of Native American individuals and tribes under the U.S. Constitution; treaties; and national, tribal and state law will form the heart of the course. Attention will be given to issues relating to tribal government and tribal courts, criminal and civil jurisdiction over Indians and non-Indians, environmental regulation on reservation lands, commercial trade in Indian art, casino gaming, the American Indian Religious Freedom Act and the Native American Graves Protection and Repatriation Act.
LAWT	9400	This course will begin with an overview of free trade in North America. Then it will turn to an in-depth examination of different areas of commerce affected by the North American Free Trade Agreement (NAFTA): the movement of goods, the cross border provision of services, the treatment of foreign investments, the protection of intellectual property and dispute settlement procedures. Next, it will consider the labor and environmental side agreements. Finally, it will explore how the NAFTA may be expanded in the future.
LAWT	9550	Courses covering special topics and current events.
LAWT	9600	
LAWT	9630	
LAWT	9790	This course will combine in-depth study of the most important and current issues in criminal procedure with direct experience in oral and written advocacy. In the post 9/11 world, criminal procedure is in a state of change not seen in the last thirty years. We will therefore focus on issues that have arisen in the War on Terrorism: the USA PATRIOT Act, detentions of individuals as "enemy combatants," the use of immigration violations and material witness warrants as pretexts for terrorism investigation, profiling of potential terrorists, and the gathering of evidence under Foreign Intelligence Surveillance Act warrants. Students will brief and argue two Fourth, Fifth or Sixth Amendment problems. Both writing and oral arguments will be extensively critiqued.



LAWT	9800	This course introduces students to issues, problems and legal norms applicable to environmental concerns in the international arena. The course begins with an examination of the various sources of international law and the applicability and affect that international legal norms have on domestic law (an introduction to basic international law). Next the course will consider the unique nature of environmental problems in the international context. The course will then explore the various norms, treaties and other sources of international law that exist to protect the environment in the context of various problems.
LAWT	9900	A review of the law of scientific evidence and the underlying science employed in detecting and solving crimes and in the reconstruction of accidents. Topics include, accident and injury reconstruction, DNA matching, the identification and toxicology of drugs and alcohol, fingerprint identification, dental matching, the reconstruction of computer files, basics of forensic accounting and hair, fiber and similar matching techniques.
LAWT	9910	This course addresses legal and policy aspects of state and federal death penalty practice. Both prosecutor and defense strategies will be explored. Students will take a final exam or write a paper in lieu of the exam.
LAWT	9990	
LGL	1010	The course is designed to improve oral and written communication skills through the study of contracts, real property, torts and criminal law. The course includes the structure and operation of the state and federal court systems, as well as the status and uses of paralegals.
LGL	1150	This course covers the traditional areas of tort law, including negligence, trespass, mental distress and conversion as well as the defenses to these claims. The course is taught through the case study method.
LGL	1160	Designed to provide the student with an understanding of the function of the law library and to develop research techniques and legal analysis and writing skills through use of traditional law library materials and computerized legal research techniques such as Lexis and Anderson CD-ROM Law on Disk.
LGL	1720	This course exposes students to various management structures within and the administration of the law office and other legal environments. Critical thinking will be applied to management theories and applications.
LGL	2020	An in-depth study of the Rules of Civil Procedure, including application of rules of fact patterns. Students will draft litigation documents including complaint, answer and discovery pleadings.
LGL	2110	Study of the common forms of wills and trusts and a survey of the fundamental principles of law applicable to each; study of the organization and jurisdiction of the probate court, analysis of the administration of estates in probate court and a review of estate and inheritance taxes.



LGL	2120	The law of real property and common types of real estate transactions and conveyances, such as deeds, land installment contracts, sales contracts and leases, with emphasis on researching, drafting and recording of documents related thereto.
LGL	2130	Study of the law and practice of divorce, dissolution and all matters relating to the termination of a marriage. Students will be trained to conduct client interviews, draft pleadings and associated court forms, and calculate support under state-mandated guidelines.
LGL	2210	This course takes a look at the substantive and procedural aspects of various administrative law agencies with emphasis on providing skills to practice in administrative law.
LGL	2700	An in-depth survey of the trial process which exposes students to each step of a trial in a hands-on fashion. The course will be taught utilizing traditional lecture, reading and actual mock trial experience.
LGL	2940	Field experience in law offices. Students will be placed in various legal assisting positions by the program director. Students will meet for job-related seminar once a week and will work at their assigned law office for 180 hours during the semester.
LGL	2990	This course is used for faculty-assisted independent study in the area of legal assisting.
LGL	3010	Study of business entities: sole proprietorships, partnerships and corporations. Critical analysis of business entities, de factor and de jure entities. Students will complete articles of incorporation, bylaws and minute books.
LGL	3030	Focus on advanced legal writing. Students will be challenged to master computer assisted legal research methods.
LGL	3050	An analysis of consumer laws including landlord-tenant relationships, consumer sales practices, uniform commercial code transactions, credit card law, garnishment, fair debt collection practices act and the United States Bankruptcy Code.
LGL	3110	Through critical reasoning/collaborative learning, students will examine personal law issues and legal rights/responsibilities, enabling them to formulate analytical models readily transferable to legal issues in their present and future lives.
LGL	3120	An analysis of current legal decisions on topics such as same sex marriage, home forced entry and theology studies subsidies through analogizing/distinguishing related fact patterns and criticizing judicial exposition/logic.
LGL	3330	Focus on evidence and investigation, applying critical thinking skills to actual litigation cases. Analysis of court pleadings for appropriateness and alternative mechanisms. Study of post trial and appellate matters.
LGL	3350	Students will overview conflict theory, resolution and its history. Students will focus on skills necessary for alternative dispute resolution: negotiation, mediation, arbitration, summary jury trial and mini trial.



LGL	4030	Focus on the laws concerning creation and termination of contracts. Students will analyze contractual terms including reliance, capacity, unconscionability, conditions, assignments, third-party beneficiaries and the effect of changed circumstances.
LGL	4130	Students will work in a clinical environment, such as: Court Appointed Special Advocates, the UT Center for Mediation and Legal Rights, the Toledo Bar Association's Pro Se Family Law Program.
LGL	4230	An analysis of health care laws and legal issues, including treatment relationships, medical malpractice, the right to die, reproductive rights, bioethics, health care financing, public health, delivery systems and regulations.
LGL	4330	This service learning course teaches the facilitative approach to mediating disputes. Students break down disputed issues, role play, and observe actual mediations for the peaceful and cooperative resolution of disputes.
LGL	4940	Field experience for seniors, placement within their specialty. Students meet for 1 hour seminar and work at assigned law office for 12 hours per week.
LGL	4990	This course is used for faculty-assisted independent study in this area of studies.
LGL	6100	A comprehensive review of legal issues affecting elderly people, including estate planning, trusts, guardianships, powers of attorney, advance directives, social security, Medicare, Medicaid, grandparents' rights, and prenuptial agreements.
LGL	6200	A study of elder health law and elder legal and ethical issues affecting our aging population including home, long term and hospice care, guardianship, housing, age discrimination and elder abuse.
LGL	6980	Content may vary, covering some aspect of the law or some area of special interest to the student and instructor. Students may repeat the course for credit as topics vary.
LING	1EL	A non-technical overview of the nature of human language, including issues relating to spoken and written language, language change and language development, and other aspects of language use in a variety of contexts.
LING	2EL	
LING	3000	
LING	3150	An introduction to modern linguistic theories about the nature and structure of language. Data from English as well as other languages will be used.
LING	3160	Introduction to the study of patterns and rules which govern the production of human speech, including a review of phonetics and a study of various explanatory theories.
LING	3170	Introduction to syntax within the transformational-generative framework. Emphasis on data from a variety of languages as a basis for evaluating competing theories.



LING	3180	Theories of how morphemes combine to form structurally complex words; word formation rules; the relationship between word structures and how words sound. Recommended: LING 3160 and/or 3170.
LING	3190	Combines linguistic and societal concerns through empirical research; includes issues of language variation and related larger constructs such as speech community, communicative competence, dialect and language change.
LING	3EL	
LING	4100	Description of the changes that have taken place in the English language from the earliest days to the present.
LING	4110	A study of phonology, morphology and syntax with representative readings in verse and prose.
LING	4120	Study of the phonology, morphology and syntax of Middle English, with special attention to literary and cultural background. Representative readings in verse and prose.
LING	4130	A study of the major regional and social dialects of the United States, their origins and the methods of modern dialectology.
LING	4140	Focuses on the distinctive elements of African American Vernacular English, its historical origins, its sociocultural development and its implications for pedagogy and language policy.
LING	4150	Focus on methods of applied linguistics in the broad sense, including their use in studies of first and second language acquisition, language teaching, the teaching of reading and writing, and other related areas.
LING	4170	Focuses on theories of second/foreign language acquisition, especially, but not exclusively, as they relate to English as a Second Language.
LING	4180	An investigation of the various sorts of linguistic deficits that result from brain damage; what this and various imaging studies reveal about how language is represented in the brain.
LING	4210	Course content includes key concepts in ESL writing instruction and research; characteristics of second language writers and their texts; curricular options; and responding to and assessing ESL writing.
LING	4940	Internship with an approved program, company or agency employing research, writing editing or linguistics expertise. Student must submit proposal for approval by advisory and a departmental committee. (Repeatable for a maximum of 4 hours credit.)
LING	4980	An undergraduate course on a special topic. Consult Time Schedules for topic to be studied, prerequisite(s) and semester offered.
LING	4990	An opportunity for students to concentrate on areas of interest or weakness.
LING	4EL	
LING	5100	Study of the origins and development of the English language.
LING	5110	Study of the phonology, morphology and syntax of Old English, with special attention to literary and cultural backgrounds. Representative readings in verse and prose.



LING	5120	Study of the phonology, morphology and syntax of Middle English, with special attention to literary and cultural background. Representative readings in verse and prose.
LING	5130	A study of the major regional and social dialects of the United States, their origins and the methods of modern dialectology.
LING	5140	
LING	5150	Formal techniques required for the synchronic and diachronic study of language.
LING	5160	Fundamentals of phonological description, phonetics, phonemics, distinctive features, generative phonology, with study of formulations basic to phonological theory.
LING	5170	Formal theories of syntactic analysis, the relationship between semantics and syntax and the evaluation of current approaches.
LING	5180	The theory of word structure within the framework of generative grammar.
LING	5190	Combines linguistic and societal concerns through empirical research.
LING	5210	Course content includes key concepts in ESL writing instruction and research; characteristics of second language writers and their texts; curricular options; and responding to and assessing ESL writing.
LING	5980	A graduate course on a special topic. Consult Time Schedule for topic to be studied, prerequisite(s), and semester offered.
LING	6150	Focus on the methods of applied linguistics in the broad sense, through case studies including research on first and second language acquisition, language teaching, the teaching of reading and writing, and other related areas.
LING	6160	Computer lab work for Applied Linguistics Research and Theory I.
LING	6170	Focuses on theories of second/foreign language acquisition, especially, but not exclusively, as they relate to English as a Second Language.
LING	6180	An investigation of the areas of the brain that control language.
LING	6210	Course content includes key concepts in ESL writing instruction and research; characteristics of second language writers and their texts; curricular options; and responding to and assessing ESL writing.
LING	6990	An opportunity for students to concentrate on areas of interest or weakness.
LING	7100	Study of the origins and development of the English language.
LING	7110	Study of the phonology, morphology and syntax of Old English, with special attention to literary and cultural backgrounds. Representative readings in verse and prose.
LING	7120	Study of the phonology, morphology and syntax of Middle English, with special attention to literary and cultural background. Representative readings in verse and prose.
LING	7130	A study of the major regional and social dialects of the United States, their origins and the methods of modern dialectology.
LING	7140	



LING	7150	Formal techniques required for the synchronic and diachronic study of language.
LING	7160	Fundamentals of phonological description, phonetics, phonemics, distinctive features, generative phonology, with study of formulations basic to phonological theory.
LING	7170	Formal theories of syntactic analysis, the relationship between semantics and syntax and the evaluation of current approaches.
LING	7180	The theory of word structure within the framework of generative grammar.
LING	7190	Combines linguistic and societal concerns through empirical research.
LING	7980	A graduate course on a special topic. Consult Time Schedule for topic to be studied, prerequisite(s), and semester offered.
LING	8150	Focus on the methods of applied linguistics in the broad sense, through case studies including research on first and second language acquisition, language teaching, the teaching of reading and writing, and other related areas.
LING	8160	Computer lab work for Applied Linguistics Research and Theory I.
LING	8170	Focuses on theories of second/foreign language acquisition, especially, but not exclusively, as they relate to English as a Second Language.
LING	8180	An investigation of the areas of the brain that control language.
LING	8990	An opportunity for students to concentrate on areas of interest or weakness.
LING	WAC	
LST	1EL	
LST	1EN	
LST	1EU	
LST	2010	Examines the function and force of law in society in an interdisciplinary context. Course includes texts from philosophy, literature, psychology, sociology, history, anthropology and opinions of the court.
LST	2030	A learning-through-writing course. Systematic applications of the concept of cultural to geographic themes: culture areas, cultural landscapes, culture history, cultural ecology and cultural diversity.
LST	2500	For sophomore and junior majors in LST: discussion among faculty and students of the interdisciplinary study of law and LST program development. Topics vary, may be repeated for credit.
LST	2640	Introduction to the study of race, class and gender as factors in American satisfaction.
LST	2800	Introduction to culture patterns and processes and their relationship to human society and language.
LST	2980	Special topics in Law and Social Thought. Topics vary by instructor, may be repeated for credit.
LST	2EL	
LST	2EN	
LST	2EU	



LST	3050	Analysis of labor market outcomes and income distribution characteristics resulting from gender differences; Gender-related economic outcomes: the "feminization of poverty," persistent male-female wage differential, expanding proportion of female headed households.
LST	3070	Methodologies of Law and Economics; Legal institutions; Economic Theory of Property; Property Rights; Contract Theory; Economic Theory of Torts and Tort Law, Common Law Process; Economics of Crime and Punishment.
LST	3080	Study of crime as an economic activity; costs of crime to the community; economic approach to crime reduction.
LST	3180	Case studies and readings in libel, privacy, access and other legal issues arising from constitutional, judicial and administrative laws that affect mass communication.
LST	3500	For Junior and Senior majors in LST: discussion among faculty and students of the interdisciplinary study of law and LST program development. Topics vary, may be repeated for credit.
LST	3510	The development of the American legal system and the implications of judicial decisions affecting the institutions and powers of government, the federal system and the relationship of the individual to government.
LST	3520	The development of the American legal system and the implications of judicial decisions affecting the institutions and powers of government, the federal system and the relationship of the individual to government.
LST	3550	An overview of law, legal procedures and the legal professions.
LST	3710	Emphasizes the utilization of theoretical and empirical notions of psychological science as they apply to both civil and criminal law.
LST	3720	A study of philosophical issues raised by law such as the relation of law to morality, obligation to obey the law, paternalism, censorship and free speech.
LST	3750	A study of classic and contemporary treatments of justice, authority, the relations between individual and community, the meaning of freedom and equality, power and violence, and race and gender.
LST	3760	A philosophical study of topics such as crime, responsibility, justice and punishment. Special attention is paid to current practices in the criminal justice system.
LST	3800	This course examines sexual politics through studying canonical literature of Western political theory, feminism and postmodern theory.
LST	3810	An examination of geopolitical and geostrategic issues at the nation-state and international level.
LST	3820	Surveys trends in 20th century political and social thought, including critical theory, post-structuralist theory, feminism and anti-racist politics. Particular issues addressed include bureaucracy, mass society, state and civil violence, and identity politics.



LST	3860	Traces the development and institutionalization of gender roles and how these influence spatial decisions and the formation of perceptual landscapes.
LST	3980	Special topics relating to issues in Law and Social Thought. Topics vary by instructor, may be repeated for credit.
LST	4170	Dynamics of law and legal institutions; the relationship of sociocultural changes in substantive and procedural aspects of law to the concept of justice, and to the social control of deviance.
LST	4240	The economics of the environment and natural resources. Examination of economic instruments for solving environmental problems. Analyzed policies include direct regulation, user charges, taxes on polluting products and marketable permits.
LST	4490	Witchcraft, religion and magic in western Europe from the 12th through 17th centuries, focusing on the origins of witchcraft belief, diabolical magic, the witch craze and its decline.
LST	4530	A study of judicial policy-making and administrative implementation of decisions affecting racial issues, freedom of expressions, national security and criminal procedures.
LST	4550	Examination of contemporary approaches to the analyses of law and the judicial system with special focus on current issues facing the courts.
LST	4570	Topics may include abortion, three strikes sentencing, homosexual rights, hate speech and decriminalizing narcotics. Emphasizes liberal/conservative ideology.
LST	4580	An examination of the legal status of nation states and dependencies and the rules concerning international diplomacy, treatment of persons and peaceful settlement of disputes.
LST	4710	Crime and criminal behavior: nature, types and extent of crime, societal reactions; problems in research and theory, prevention, control and treatment.
LST	4740	Topics may include legalizing drugs, police violence, plea bargaining, death sentence and mandatory sentencing. Emphasizes liberal/conservative ideology.
LST	4750	Selected topics or philosophers in political philosophy. Course may be repeated as topics vary.
LST	4820	A cross-cultural approach to the description and aliases of magical and religious beliefs and practices in Asia, Africa, Latin America and Indigenous North America.
LST	4830	The definition, philosophy and evolution of public history as well as the current literature and debates within the field. Public history is the application of historical knowledge and methodology beyond academe.
LST	4900	Advanced seminar for the interdisciplinary study of law in society. Topics vary by instructor, may be repeated for credit. Required of LST majors.



LST	4940	Community work, internship, or field study relating to law and society. May be repeated for credit.
LST	4980	Advanced seminar in Law and Social Thought. Topics vary by instructor, may be repeated for credit. Required of LST majors.
LST	4990	The Capstone course in Law and Social Thought is an interdisciplinary, collaboratively taught seminar thematically organized around a topic in the study of law.
MARS	1010	A theoretical and practical understanding of marketing issues from both a micro and macro perspective: environmental forces, ethical and social responsibility, consumer buying behavior, target market analysis, market segmentation, branding and packaging, promotion, advertising, personal selling and pricing decisions.
MARS	1110	Emphasis is placed on the effective techniques of personal selling. These include: prospecting, qualifying customers, building product knowledge, understanding presentation techniques, overcoming customer objections, closing sales and customer follow-up. Special emphasis is placed on selling as a persuasive marketing activity.
MARS	1720	Analysis and examination of the sales management function in the consumer and industrial markets. Organizing, recruiting, selecting, hiring, staffing, training, compensating and evaluating an outside sales force.
MARS	2010	Focuses on developing integrated marketing communications plan. Includes role of advertising strategy, audience analysis, development of media plans, creative execution, coordination of sales promotion techniques and publicity tools.
MARS	2110	Primary focus is on development of marketing strategies. Students required to develop a marketing plan based on marketing opportunity of personal choice.
MARS	2120	Primary focus on development of strategies for business-to-business markets. Case approach used to study distinctions between industrial and consumer demand and general characteristics that influence industrial buying behavior.
MARS	2210	Focuses on framework for understanding key issues/differences of services marketing. Nature of services marketing presented through traditional 4 Ps supplemented by issues unique to service encounters. Brings together principles of service marketing, human resources management and operations management.
MARS	2940	Independent field experience is designed to provide a student the opportunity to observe marketing and/or sales and retail management activities first-hand in an appropriate employment setting. Students meet with the instructor at prearranged times to discuss progress and learning outcomes.
MARS	2990	Students will study a marketing/retail-related subject mutually agreed upon between the student and instructor. The format may include lecture, computer lab and/or practical experience.



MATH	0910	This course covers a review of operations with whole numbers, fractions, decimals, ratios and percents. Also covered are integer operations, variables, algebraic expressions, graphs and solving linear equations. Problem solving techniques are emphasized. No credit toward graduation. Grades do not apply to student's GPA.
MATH	0950	This course introduces the student to functions, solving systems of linear equations, graphing, polynomials, rational and quadratic functions, rational numbers and mathematics modeling. Problem solving techniques are emphasized. No credit toward graduation. Grades do not apply to student's GPA.
MATH	0970	This course covers lines, angles, similarity and congruence of polygons, areas of polygons, volumes of solids and constructions. Course is not applicable toward the undergraduate Mathematics major requirements.
MATH	0980	Review of algebra, linear and quadratic equations, graphs, exponents and radicals, exponential and log functions, simultaneous equations. No credit toward graduation. Course is not applicable toward the undergraduate major in mathematics.
MATH	0990	Course for students needing to complete only a portion of a developmental math class (MATH 0900 - 0980).
MATH	1010	Mathematics used in solving business problems related to simple and compound interest, annuities, payroll, taxes, promissory notes, consumer credit, insurance, markup and markdown, mortgage loans, discounting, financial statement ratios and break-even analysis. Course is not applicable toward the undergraduate Mathematics major requirements.
MATH	1180	A general liberal arts course for non-science students designed to acquaint students with the nature of mathematics and applications such as probability, statistics, functions and graphs. Course is not applicable toward the undergraduate Mathematics major requirements.
MATH	1200	Mathematical modeling of data using linear, quadratic, rational, and radical functions in their numerical, symbolic, graphic, and verbal forms. Problem solving methods and strategies will be emphasized. Course is not applicable toward the undergraduate mathematics major requirements. Prerequisite: Satisfactory placement test score or satisfactory ACT score. Math core course.
MATH	1210	Principles of elementary number theory, base systems, development of the rational numbers and problem solving techniques. Course is not applicable toward the undergraduate Mathematics major requirements.
MATH	1220	Development of the real numbers, probability, statistics, informal geometry, geometric figures and measurements. Course is not applicable toward the undergraduate Mathematics major requirements.
MATH	1260	Equations and their graphs, linear systems, vectors and matrices, introduction to linear optimization, exponentials and logs, elementary probability, limits, functions, introductions to differential calculus. Course is not applicable toward the undergraduate Mathematics major requirements.



MATH	1270	Continuation of differential calculus and integral calculus with business applications. Course is not applicable toward the undergraduate Mathematics major requirements.
MATH	1320	Number system; elementary theory of equations and inequalities; functions and relations; exponentials and logarithms; systems of equations and topics in analytic geometry. Course is not applicable toward the undergraduate Mathematics major requirements. No credit given for students who have credit for MATH 1340.
MATH	1330	Definitions and graphs of trigonometric functions and their inverses, solving trigonometric equations, applications and topics in analytic geometry. Course is not applicable toward the undergraduate Mathematics major requirements. No credit given for students who have credit for MATH 1340.
MATH	1340	Functions and graphs, exponential and logarithmic functions, trigonometric functions and applications, systems of equations and topics in analytic geometry. No credit for students who have credit for MATH 1320 or 1330.
MATH	1750	Definitions of trigonometric functions, solving trigonometric equations, functions, limits and derivatives, exponential and logarithmic functions, and applications. Course is not applicable toward the undergraduate Mathematics major requirements.
MATH	1760	Indefinite and definite integrals, probability, functions of several variables, least squares, differential equations. Course is not applicable toward the undergraduate Mathematics major requirements.
MATH	1780	Brief review of the computer algebra system Maple; graphing; simplifying algebraic expressions; finding solutions of equations symbolically, graphically and numerically; various typical problems from precalculus and beginning calculus.
MATH	1830	Limits of sequences and functions, derivatives, Mean Value Theorem, curve sketching, definite and indefinite integral, Fundamental Theorem of Calculus. Of interest to students requiring a conceptual understanding of calculus. Not for major credit.
MATH	1840	Techniques of integration, polar coordinates and calculus of plane curves, infinite series and Taylor series. Of interest to students requiring a conceptual understanding of calculus.
MATH	1850	Limits, differentiation, Fundamental Theorem of Calculus, Mean Value Theorem, curve sketching, maxima/minima, definite and indefinite integrals, applications. Course is not applicable toward the undergraduate Mathematics major requirements.
MATH	1860	Inverse functions, techniques and applications of integration, polar coordinates, sequences and series.



MATH	1880	Inverse functions, techniques and applications of integration, polar coordinates, sequences and series. Maple is used to visualize concepts and to analyze, solve and interpret problems graphically, symbolically and numerically.
MATH	1890	Matrix algebra, systems of linear equations, determinants, vector spaces, linear transformations, eigenvalues and eigenvectors, and applications.
MATH	1920	Theory and applications of derivatives and integrals of a function of one variable.
MATH	1930	Theory and applications of derivatives and integrals of a function of one variable.
MATH	1980	Selected topics in mathematics.
MATH	2280	An overview of the role of microcomputers and information systems. Provides training in word processing, presentation graphics, and spreadsheets or problem solving. Course is not applicable toward the undergraduate Mathematics major requirements.
MATH	2450	Differential calculus of algebraic and trigonometric functions, including limits, curve sketching, motion, maxima/minima, related rates, integral calculus of algebraic functions.
MATH	2460	Transcendental functions, methods of integration, applications of the integral, polar coordinates, vectors and vector operation, lines and planes, parametric equations.
MATH	2600	An introduction to descriptive and inferential statistical methods including point and interval estimation, hypothesis testing and regression. No credit allowed if taken after MATH 3610 or 4680; credit not allowed for both MATH 2600 and 2630. Course is not applicable toward the undergraduate Mathematics major requirements.
MATH	2620	Sample spaces, events, counting techniques, probability distributions and their applications. No credit if taken after 4680. Course is not applicable toward the undergraduate Mathematics major requirements.
MATH	2630	An introduction to descriptive and inferential statistical methods, including numerical and graphical data description, basic probability concepts and distributions, point and interval estimation and hypothesis testing. Credit not allowed for both MATH 2600 & 2630. Course is not applicable toward the undergraduate Mathematics major requirements.
MATH	2850	Geometry of functions of several variables, partial differentiation, multiple integrals, vector algebra and calculus (including Theorems of Green, Gauss and Stokes), and applications.
MATH	2880	Geometry of functions of several variables, partial differentiation, multiple integrals, vector algebra, and calculus (including Theorems of Green, Gauss and Stokes) and applications. Maple is used to solve problems graphically, symbolically and numerically.



MATH	2890	Topics include: matrices, characteristic roots, solution of linear and nonlinear equations, curve fitting, integration, differentiation and numerical solution of ordinary differential equations. MATLAB is introduced and used to analyze problems.
MATH	2950	Theory and applications of the calculus of functions of two or more variables. The fundamental theorems of vector calculus.
MATH	2EL	
MATH	3000	A study of propositional and predicate logic, the symbolic techniques used to evaluate deductive arguments. Topics may include computability, set theory, Bayesianism and other formal systems with mathematical or philosophical relevance.
MATH	3190	This course is intended to introduce students to higher mathematics. The techniques of proving theorems, including proofs by induction, will be emphasized. The course will include elementary set theory and equivalence relations and a discussion of the real number system. Proofs of some basic theorems from algebra, calculus or number theory will be studied.
MATH	3200	Divisibility, congruences, diophantine equations, numerical functions, quadratic reciprocity.
MATH	3320	Sets and mappings, integers, groups, rings and applications.
MATH	3440	Primarily for students in secondary education. Euclidean geometry from a modern viewpoint, constructions and transformations.
MATH	3450	Primarily for students in secondary education. Euclidean geometry from a modern viewpoint, constructions and transformations.
MATH	3510	Contributions to the development of mathematics by various groups and individuals from the earliest history to the present, with special emphasis on the elementary branches: arithmetic, algebra, geometry and calculus.
MATH	3610	Basic probability, sampling, descriptive statistics, statistical inference, regression, correlation, analysis of variance, goodness of fit, model formulation and testing.
MATH	3620	Multiple regression, analysis of covariance, standard experimental designs, contingency tables, nonparametric methods and methods for sample surveys.
MATH	3820	Theory, applications and systems of ordinary differential equations.
MATH	3860	An introduction to the analysis and solution of ordinary differential equations with emphasis on the fundamental techniques for solving linear differential equations.
MATH	3880	An introduction to the analysis and solution of ordinary differential equations with emphasis on the fundamental techniques for solving linear equations. Maple is used to solve problems graphically, symbolically and numerically.
MATH	3920	Selected subjects in mathematics of special interest to students and the professor.



MATH	4290	Sets, relations, functions, axiom of choice, Zorn's lemma, well-ordering theorem, cardinal and ordinal numbers, construction of the real numbers.
MATH	4300	Theory of vector spaces and linear transformations, including such topics as matrices, determinants, inner products, eigenvalues and eigenvectors, and rational and Jordan canonical forms.
MATH	4310	Hermitian and normal operators, multilinear forms, spectral theorem and other topics.
MATH	4330	Arithmetic of the integers, unique factorization and modular arithmetic; group theory including normal subgroups, factor groups, cyclic groups, permutations, homomorphisms, the isomorphism theorems, abelian groups and p-groups.
MATH	4340	Ring theory including integral domains, field of quotients, homomorphisms, ideals, Euclidean domains, polynomial rings, vector spaces, roots of polynomials and field extensions.
MATH	4350	Matrices, systems of equations, vector spaces, linear transformations, determinants, eigenvalues and eigenvectors, generalized inverses, rank, numerical methods and applications to various areas of science.
MATH	4380	Discrete mathematical structures for applications in computer science such as graph theory, combinatorics, and groups theory, asymptotics, recurrence relations and analysis of algorithms.
MATH	4390	Theory of automata and formal languages, computability by Turing machines and recursive functions, uncomputability, NP-Hard and NP-Complete problems.
MATH	4450	Metric spaces, topological spaces, continuous maps, bases and sub bases, closure and interior operators, products, subspaces, sums, quotients, separation axioms, compactness and local compactness.
MATH	4460	Connectedness and local connectedness, convergence, metrization, function spaces. The fundamental groups and its properties, covering spaces, classical applications, e.g. Jordan Curve Theorem, Fundamental Theorem of Algebra, Brouwer's Fixed Point Theorem.
MATH	4540	Smooth curves in Euclidean space including the Frenet formulae. Immersed surfaces with the Gauss map, principal curvatures and the fundamental forms. Special surfaces including ruled surfaces and minimal surfaces. Intrinsic Geometry including the Gauss Theorem Egregium.
MATH	4550	Tensors, vector fields, and the Cartan approach to surface theory, Bonnet's Theorem and the construction of surfaces via solutions of the Gauss Equation. Geodesics parallel transport, and Jacobi Fields. Theorems of a global nature such as Hilbert are Theorem or the Theorem of Hopf-Rinow.
MATH	4600	Real data applications of statistical methods. Emphasis is placed on exploratory data analysis and the use of computing facilities to analyze data and produce statistical reports. Statistical packages used include: MINITAB, SAS, and/or S-PLUS; programming is performed in C or Fortran.



MATH	4610	Continuation of Applications of Statistics I.
MATH	4620	This course covers the measurement of interest, certain annuities, yield rates, amortization and sinking funds, bonds and other securities and application of interest theory.
MATH	4630	The mathematical basis to estimation in various sampling contexts, including probability proportional to size sampling, stratified sampling, two-stage cluster sampling and double sampling.
MATH	4640	Error analysis of statistical algorithms. Numerical linear algebra for linear models. Approximation methods for distribution function probabilities and quantiles. Uniform and non-uniform random number generation. Introduction to simulation methods.
MATH	4660	The basic probability models of applied mathematics and physics, including random walks, Markov chains, branching processes, renewal processes, random graphs and queuing.
MATH	4680	Probability spaces, random variables, probability distributions, moments and moment generating functions, limit theorems, transformations and sampling distributions.
MATH	4690	Sampling distributions, point and interval estimation, hypothesis testing, regression and analysis of variance.
MATH	4710	Floating point arithmetic; polynomial interpolation; numerical solution of nonlinear equations; Newton's method. Likely topics include: numerical differentiation and integration; solving systems of linear equations; Gaussian elimination; LU decomposition; Gauss-Seidel method.
MATH	4720	Likely topics include: Computation of eigenvalues and eigenvectors; solving systems of nonlinear equations; least squares approximations; rational approximations; cubic splines; fast Fourier transforms; numerical solutions to initial value problems; ordinary and partial differential equations.
MATH	4740	Series and numerical solutions to ordinary differential equations, special functions, orthogonal functions, Sturm-Liouville problems, self-adjointness, vector analysis.
MATH	4750	Continuation of vector analysis, introduction to complex analysis, partial differential equations, Fourier series and integrals.
MATH	4760	Survival distributions and life tables, life insurance, life annuities, benefit premiums and reserves and multiple life functions are some topics covered in this course.
MATH	4770	Continuation of Actuarial Mathematics I. Multiple decrement models, collective risk models and applications of risk theory.
MATH	4780	Extrema for functions of one or more variables, Lagrange multipliers, indeterminate forms, inverse and implicit function theorems, uniform convergences, power series, transformations, Jacobians, multiple integrals.
MATH	4790	An introduction to finite-dimensional combined optimization as it relates to business and economics. Linear and non-linear programming.



MATH	4800	Modern theory of differential equations; transforms and matrix methods; existence theorems and series solutions; and other selected topics.
MATH	4810	First and second order equations; numerical methods; separation of variables; solutions of heat and wave equations using eigenfunction techniques; and other selected topics.
MATH	4820	A rigorous treatment of the Calculus in one and several variables. Topics to include: the real number system; sequences and series; elementary metric space theory including compactness, connectedness and completeness; the Riemann Integral.
MATH	4830	Differentiable functions on R^n ; the Implicit and Inverse Function Theorems; sequences and series of continuous functions; Stone-Weierstrass Theorem; Arzela-Ascoli Theorem; introduction to measure theory; Lebesgue integration; the Lebesgue Dominated Convergence Theorem.
MATH	4850	Theory of Laplace, Fourier and other transforms; use of complex variable theory for inversions; applications.
MATH	4860	Conditions for an extrema (Euler's equations, Erdman corner conditions, conditions of Legendre, Jacobi, and Weierstrass, fields of extremals, Hilbert's invariant integral); Raleigh-Ritz method; isoperimetric problems; Lagrange, Mayer-Bolza problems. Recommended: MATH 4820.
MATH	4870	Pontryagin's maximum principle; necessary and sufficient conditions for optimal control, controllability, time optimal control, existence of optimal controls, relationship to the calculus of variations.
MATH	4880	Analytic functions; Cauchy's theorem; Taylor and Laurent series; residues; contour integrals; conformal mappings, analytic continuation and applications.
MATH	4900	Seminar on a topic not usually covered in a course. Library research and paper to be expected.
MATH	4920	Selected subjects in mathematics of special interest to students and the professor. (By arrangement with professor and student.)
MATH	4960	The primary activity will be student solution and presentation of problems of a type given on actuarial exams.
MATH	5010	Introduction to the theory of functions through modeling. Subjects include polynomial, exponential, logarithmic and rational functions, interpolation and modeling of data sets through least squares and other methods. Graduate math credit for education students only.
MATH	5020	This course offers a rigorous introduction to the analysis of functions in a single real variable. Theoretical concepts are complemented by computer-based illustrative examples. Primarily directed toward students in the M.A. program for teachers.
MATH	5030	This course offers a rigorous introduction to the calculus of multi-variable functions using computer-based experiments to illustrate concepts. Primarily directed toward practicing mathematics teachers in high school.



MATH	5040	Introduction to the basic idea of calculus. Subjects include limits, continuity, the derivative and its applications, indefinite and definite integral, Fundamental Theorem of Calculus, evaluation of integrals. Graduate math credit for education students only.
MATH	5050	This course covers various topics in linear and abstract algebra. Topics are chosen so that they are particularly amenable to computer illustrations. Directed toward high school teachers.
MATH	5060	Introduction to basic number theory. Subjects include history of number theory, prime numbers, unique factorization, Euclidean algorithm, Pythagorean relations, number systems, and transformations. Graduate math credit for education students only.
MATH	5070	Descriptive geometry in 2 and 3 dimensions, use of axioms and definitions in the proof theorems, formal Euclidean geometry, transformations. Graduate math credit for education students only.
MATH	5080	Study of the history of mathematics from antiquity to the 20th century concentrating on the development of arithmetic, algebra, geometry and calculus. Graduate math credit for education students only.
MATH	5110	Introduction to the theory of probability, counting principles and combinatorics, risk, coincidence, expectation and conditional probability, probability distributions. Graduate math credit for education students only.
MATH	5120	Introduction to the fundamental ideas of statistics, including sampling techniques, descriptive, variance, confidence intervals, correlation and regression. Graduate math credit for education students only.
MATH	5220	This course covers the measurement of interest, certain annuities, yield rates, amortization and sinking funds, bonds and other securities and application of interest theory.
MATH	5260	Survival distributions and life tables, life insurance, life annuities, benefit premiums and reserves and multiple life functions are some topics covered in this course.
MATH	5270	Continuation of Actuarial Mathematics I. Multiple decrement models, collective risk models, applications of risk theory and application of these models to insurance problems.
MATH	5300	Theory of vector spaces and linear transformations, including such topics as matrices, determinants, inner products, eigenvalues and eigenvectors, and rational and Jordan canonical forms.
MATH	5310	Hermitian and normal operators, multilinear forms, spectral theorem and other topics.
MATH	5330	Arithmetic of the integers, unique factorization and modular arithmetic; group theory including normal subgroups, factor groups, cyclic groups, permutations, homomorphisms, the isomorphism theorems, abelian groups and p-groups.
MATH	5340	Ring theory including integral domains, field of quotients, homomorphisms, ideals, Euclidean domains, polynomial rings, vector spaces, roots of polynomials and field extensions.



MATH	5350	Matrices, systems of equations, vector spaces, linear transformations, determinants, eigenvalues and eigenvectors, generalized inverses, rank, numerical methods and applications to various areas of science.
MATH	5380	Discrete mathematical structures for applications in computer science such as graph theory, combinatorics, groups theory, asymptotics, recurrence relations and analysis of algorithms.
MATH	5390	Theory of automata and formal languages, computability by Turing machines and recursive functions, uncomputability, NP-Hard and NP-Complete problems.
MATH	5450	Metric spaces, topological spaces, continuous maps, bases and sub-bases, closure and interior operators, products, subspaces, sums, quotients, separation axioms, compactness and local compactness.
MATH	5460	Connectedness and local connectedness, convergence, metrization, function spaces. The fundamental groups and its properties, covering spaces, classical applications, e.g. Jordan Curve Theorem, Fundamental Theorem of Algebra, Brouwer's Fixed Point Theorem.
MATH	5520	This course presents an introduction to the logical foundations of mathematics. The geometry of two, three and four dimensional space is examined starting from the axioms of Euclid. The course culminates with an investigation of hyperbolic and projective geometries. Of interest to high school teachers.
MATH	5540	Smooth curves in Euclidean space including the Frenet formulae. Immersed surfaces with the Gauss map, principal curvatures and the fundamental forms. Special surfaces including ruled surfaces and minimal surfaces. Intrinsic Geometry including the Gauss Theorem Egregium.
MATH	5550	Tensors, vector fields and the Cartan approach to surface theory, Bonnet's Theorem and the construction of surfaces via solutions of the Gauss Equation. Geodesics, parallel transport and Jacobi Fields. Theorems of a global nature such as Hilbert's Theorem or the Theorem of Hopf-Rinow.
MATH	5560	Geometrical and topological aspects of curves and surfaces in Euclidean space. The concepts are to be highlighted by the study of specific examples as in minimal surface theory and in "soap bubble" geometry.
MATH	5600	Real data applications of statistical methods. Emphasis is placed on exploratory data analysis and the use of computing facilities to analyze data and produce statistical reports. Statistical packages used include MINITAB, SAS and S-Plus.
MATH	5610	Continuation of Applications of Statistics II.
MATH	5620	Multiple regression, analysis of variance and covariance, general linear models and model building for linear models. Experimental designs include one-way, randomized block, Latin square, factorial and nested designs.
MATH	5630	The mathematical basis to estimation in various sampling contexts, including probability proportional to size sampling, stratified sampling, two-stage cluster sampling and double sampling, is developed.



MATH	5640	Error analysis of statistical algorithms. Numerical linear algebra for linear models. Approximation methods for distribution function probabilities and quantiles. Uniform and non-uniform random number generation. Introduction to simulation methods.
MATH	5660	The basic probability models of applied mathematics and physics, including random walks, Markov chains, branching processes, renewal processes, random graphs and queuing.
MATH	5670	Confounding, fractional replication, complex designs, response surface designs.
MATH	5680	Probability spaces, random variables, probability distributions, moments and moment generating functions, limit theorems, transformations and sampling distributions.
MATH	5690	Sampling distributions, point estimation, interval estimation, hypothesis testing, regression and analysis of variance.
MATH	5710	Floating point arithmetic; polynomial interpolation; numerical solution of nonlinear equations; Newton's method. Likely topics include: numerical differentiation and integration; solving systems of linear equations; Gaussian elimination; LU decomposition; Gauss-Seidel method.
MATH	5720	Likely topics include: Computation of eigenvalues and eigenvectors; solving systems of nonlinear equations; least squares approximations; rational approximations; cubic splines; fast Fourier transforms; numerical solutions to initial value problems; ordinary and partial differential equations.
MATH	5740	Series and numerical solutions to ordinary differential equations, special functions, orthogonal functions, Sturm-Liouville Problems, self-adjointness, vector analysis.
MATH	5750	Continuation of vector analysis, introduction to complex analysis, partial differential equations, Fourier series and integrals.
MATH	5760	Introduction to contemporary ideas of dynamics and the chaotic behavior that occurs when a simple function of one variable is iterated.
MATH	5770	This course is a supplement to MATH 5760 and may be taken concurrently with or after completion of that course. Students will demonstrate the theory in a number of computer-based experiments.
MATH	5780	Extrema for functions of one or more variables, Lagrange multipliers, indeterminate forms, inverse and implicit function theorems, uniform convergences, power series, transformations, Jacobians, multiple integrals.
MATH	5790	An introduction to finite-dimensional combined optimization as it relates to business and economics. Linear and non-linear programming.
MATH	5800	Modern theory of differential equations; transforms and matrix methods; existence theorems and series solutions; and other selected topics.



MATH	5810	First and second order equations; numerical methods; separation of variables; solutions of heat and wave equations using eigenfunction techniques; and other selected topics.
MATH	5820	A rigorous treatment of the Calculus in one and several variables. Topics to include: the real number system; sequences and series; elementary metric space theory including compactness, connectedness and completeness; the Riemann Integral.
MATH	5830	Differentiable functions on R^n ; the Implicit and Inverse Function Theorems; sequences and series of continuous functions; Stone-Weierstrass Theorem; Arzela-Ascoli Theorem; introduction to measure theory; Lebesgue integration; the Lebesgue Dominated Convergence Theorem.
MATH	5850	Theory of Laplace, Fourier and other transforms; use of complex variable theory for inversions; applications.
MATH	5860	Conditions for an extreme (Euler's equations, Erdman corner conditions, conditions of Legendre, Jacobi and Weierstrass, fields of extremals, Hilbert's invariant integral); Raleigh-Ritz method; isoperimetric problems; Lagrange, Mayer-Bolza problems. Recommended: MATH 5820.
MATH	5870	Pontryagin's maximum principle; necessary and sufficient conditions for optimal control, controllability, time optimal control, existence of optimal controls, relationship to the calculus of variations.
MATH	5880	Analytic functions; Cauchy's theorem; Taylor and Laurent series; residues; contour integrals; conformal mappings, analytic continuation and applications.
MATH	5960	The primary activity will be student solution and presentation of problems of a type given on actuarial exams to be run as a problem seminar.
MATH	5970	Students must submit for approval by their adviser a report on the solution of a practical problem involving mathematics. The problem must be drawn from a company, university department of government unit.
MATH	5980	Special topics in mathematics.
MATH	5990	Students will complete a project devised jointly by student and advisor. The project will have significant mathematical content and might originate from courses taken in the program or some aspect of lesson preparation, in the case of practicing high school teachers.
MATH	6150	Normed linear spaces, Banach and Hilbert spaces, linear operators and their spectrum, spectral analysis, illustrative examples from science and engineering.
MATH	6180	Simplex algorithm, ellipsoidal algorithm, Karmarkar's method, interior point methods, elementary convex analysis, optimality conditions and duality for smooth problems, convex programming, algorithms and their convergence.
MATH	6190	Introduction to nonlinear analysis, abstract optimization problems on abstract spaces, applications to calculus of variations, optimal control theory and game theory.



MATH	6300	Group actions, Sylow's theorems, permutation groups, nilpotent and solvable groups, abelian groups, rings, unique factorization domains, fields.
MATH	6310	Field extensions, Galois theory, modules, Noetherian and Artinian rings, tensor products, primitive rings, semisimple rings and modules, the Wedderburn-Artin theorem.
MATH	6320	Radical theory, rings of quotients, Goldie's Theorem, chain conditions, dimensions of rings, module theory, topics in commutative rings.
MATH	6330	Advanced topics in ring theory. Possible topics include group rings, enveloping algebras, almost split sequences, PI-rings, division rings, self-injective rings, and ordered rings.
MATH	6340	Fundamental topics in group theory. Possible topics include free groups, presentations, free products and amalgams, permutation groups, abelian groups, nilpotent and solvable groups, sub normality, extensions, the Schur-Zassenhaus theorem, the transfer homomorphism, linear methods, local analysis.
MATH	6350	Advanced topics in group theory. Possible topics include cohomology of groups, locally, finite groups, character theory, modular, representation theory, representation theory of symmetric and classical groups, finite simple groups, geometric group theory.
MATH	6400	Topological spaces, continuous functions, compactness, product spaces, Tychonov's theorem, quotient spaces, local compactness, homotopy theory, the fundamental group, covering spaces.
MATH	6410	Homology theory, excision, homological algebra, the Brouwer fixed point theorem, cohomology, differential manifolds, orientation, tangent bundles, Sard's theorem, degree theory.
MATH	6420	Categorical properties of and constructions in topological spaces, compactness, connectedness, dimension theory, metrization.
MATH	6430	Compactification and proximity spaces, uniform spaces, completeness and completions, rings of continuous functions.
MATH	6440	Introduction to differential geometry. Topics include differentiable manifolds, vector fields, tensor bundles, the Frobenius theorem, Stokes' theorem, Lie groups.
MATH	6450	Topics include connections on manifolds, Riemannian geometry, the Gauss-Bonnet theorem. Further topics may include: homogeneous and symmetric spaces, minimal surfaces, Morse theory, comparison theory, vector and principal bundles.
MATH	6460	Simplicial and cellular complexes, simplicial and cellular homology, universal coefficient theorem, Kunneth theorem, cohomology theories, cohomology operations, duality on manifolds.
MATH	6470	General homotopy theory, fibrations and cofibrations, higher homotopy groups, weak homotopy equivalence, Hurewicz's theorem, Eilenberg-MacLane spaces, classifying spaces, spectral sequences.



MATH	6500	Existence, uniqueness and dependence on initial conditions and parameter, nonlinear planar systems, linear systems, Floquet theory, second order equations, Sturm-Liouville theory.
MATH	6510	First order quasi-linear systems of partial differential equations, boundary value problems for the heat and wave equation, Dirichlet problem for Laplace equation, fundamental solutions for Laplace, heat and wave equations.
MATH	6520	Topic includes the flow-box theorem, Poincare maps, attractors, w limit sets, Lyapunov stability, invariant submanifolds, Hamiltonian systems and symplectic manifolds.
MATH	6530	Topics may include local bifurcations of vector fields, global stability, ergodic theorems, integrable systems, symbolic dynamics, chaos theory.
MATH	6540	Possible topics may include: the Cauchy-Kovalevskaya Theorem, nonlinear partial differential equations of the first order, theory of Sobolev spaces, linear second order PDE's of elliptic, hyperbolic and parabolic type.
MATH	6550	Selected topics in Partial Differential Equations of current interest emphasizing nonlinear theory. Possible topics may include: Minimal surfaces, applications of the Hopf maximum principle, free boundary value problems, harmonic maps, geometric evolution equations and the Navier-Stokes equation.
MATH	6600	Real data applications of various statistical methods, project design and analysis including statistical consulting experience.
MATH	6610	Real data applications of various statistical methods, project design and analysis including statistical consulting experience.
MATH	6620	Important methods and modeling techniques using generalized linear models and emphasizing loglinear and logit modeling.
MATH	6630	Statistical methods based on counts and ranks; methods designed to be effective in the presence of contaminated data or error distribution misspecification.
MATH	6640	Topics selected from an array of modern statistical methods such as survival analysis, nonlinear regression, Monte Carlo methods, etc.
MATH	6650	Estimation, hypothesis testing, prediction, sufficient statistics, theory of estimation and hypothesis testing, simultaneous inference, decision theoretic models.
MATH	6670	Real analysis, probability spaces and measures, random variables and distribution functions, independence, expectation, law of large numbers, central limit theorem, zero-one laws, characteristic functions, conditional expectations given a σ -algebra, martingales.
MATH	6680	Exponential families, sufficiency, completeness, optimality, equivariance, efficiency. Bayesian and minimax estimation. Unbiased and invariant tests, uniformly most powerful tests. Asymptotic properties for estimation and testing. Most accurate confidence intervals.

MATH	6690	Multivariate normal sampling distributions, T tests and MANOVA, tests on covariance matrices, simultaneous inference, discriminant analysis, principal components, cluster analysis and factor analysis.
MATH	6720	Analytic functions, residues, method of steepest descent, complex differential equations, regular singularities, integral representation, real and complex vector spaces, matrix groups, Hilbert spaces, coordinate transformations.
MATH	6730	Self-adjoint operators, special functions, orthogonal polynomials, partial differential equations and separation of variables, boundary value problems, Green's functions, integral equations, tensor analysis, metrics and curvature, calculus of variations, finite groups and group representations.
MATH	6800	Completeness, connectedness and compactness in metric spaces, continuity and convergence, the Stone-Weierstrass Theorem, Lebesgue measure and integration on the real line, convergence theorems, Egorov's and Lusin's theorems, derivatives, functions of bounded variation.
MATH	6810	The Vitali covering theorem, absolutely continuous functions, Lebesgue-Stieltjes integration, the Riesz representation theorem, Banach spaces, L_p -spaces, abstract measures, the Radon-Nikodym theorem, measures on locally compact Hausdorff spaces.
MATH	6820	Topics include Topological vector spaces, Banach spaces, convexity, the Hahn-Banach theorem, weak and strong topologies, L_p spaces and duality.
MATH	6830	Topics include the Mackey-Ahrens Theorem, Banach algebras, spectra in Banach algebras, commutative Banach algebras, unbounded operators, the spectral theorem, topics in functional analysis.
MATH	6840	Elementary analytic functions, complex integration, the residue theorem, infinite sequences of analytic functions, Laurent expansions, entire functions.
MATH	6850	Meromorphic functions, conformal mapping, harmonic functions and the Dirichlet problem, the Riemann mapping theorem, monodromy, algebraic functions, Riemann surfaces, elliptic functions and the modular function.
MATH	6890	Practicum in solving problems in graduate algebra, topology and analysis. Supplements 6300-10, 6400-10 and 6800-10 and prepares students for doctoral qualifying examination.
MATH	6930	Lectures by visiting mathematicians and staff members on areas of current interest in mathematics.
MATH	6940	Problems and techniques of teaching elementary college mathematics, supervised teaching, seminar in preparation methods.
MATH	6980	Special topics in Mathematics or Statistics.
MATH	6990	Readings in areas of Mathematics of mutual interest to the student and the professor.

MATH	7300	Theory of vector spaces and linear transformations, including such topics as matrices, determinants, inner products, eigenvalues and eigenvectors, and rational and Jordan canonical forms.
MATH	7310	Hermitian and normal operators, multilinear forms, spectral theorem and other topics.
MATH	7330	Arithmetic of the integers, unique factorization and modular arithmetic; group theory including normal subgroups, factor groups, cyclic groups, permutations, homomorphisms, the isomorphism theorems, abelian groups and p-groups.
MATH	7340	Ring theory including integral domains, field of quotients, homomorphisms, ideals, Euclidean domains, polynomial rings, vector spaces, roots of polynomials and field extensions.
MATH	7350	Matrices, systems of equations, vector spaces, linear transformations, determinants, eigenvalues and eigenvectors, generalized inverses, rank, numerical methods and applications to various areas of science.
MATH	7380	Discrete mathematical structures for applications in computer science such as graph theory, combinatorics, groups theory, asymptotics, recurrence relations and analysis of algorithms.
MATH	7390	Theory of automata and formal languages, computability by Turing machines and recursive functions, uncomputability, NP-Hard and NP-Complete problems.
MATH	7450	Metric spaces, topological spaces, continuous maps, bases and sub-bases, closure and interior operators, products, subspaces, sums, quotients, separation axioms, compactness and local compactness.
MATH	7460	Connectedness and local connectedness, convergence, metrization, function spaces. The fundamental groups and its properties, covering spaces, classical applications, e.g. Jordan Curve Theorem, Fundamental Theorem of Algebra, Brouwer's Fixed Point Theorem.
MATH	7540	Smooth curves in Euclidean space including the Frenet formulae. Immersed surfaces with the Gauss map, principal curvatures and the fundamental forms. Special surfaces including ruled surfaces and minimal surfaces. Intrinsic Geometry including the Gauss Theorem Egregium.
MATH	7550	Tensors, vector fields and the Cartan approach to surface theory, Bonnet's Theorem and the construction of surfaces via solutions of the Gauss Equation. Geodesics, parallel transport and Jacobi Fields. Theorems of a global nature such as Hilbert's Theorem or the Theorem of Hopf-Rinow.
MATH	7600	Real data applications of statistical methods. Emphasis is placed on exploratory data analysis and the use of computing facilities to analyze data and produce statistical reports. Statistical packages used include MINITAB, SAS and S-Plus.
MATH	7610	Continuation of Applications of Statistics II.



MATH	7620	Multiple regression, analysis of variance and covariance, general linear models and model building for linear models. Experimental designs include one-way, randomized block, Latin square, factorial and nested designs.
MATH	7630	The mathematical basis to estimation in various sampling contexts, including probability proportional to size sampling, stratified sampling, two-stage cluster sampling and double sampling, is developed.
MATH	7640	Error analysis of statistical algorithms. Numerical linear algebra for linear models. Approximation methods for distribution function probabilities and quantiles. Uniform and non-uniform random number generation. Introduction to simulation methods.
MATH	7660	The basic probability models of applied mathematics and physics, including random walks, Markov chains, branching processes, renewal processes, random graphs and queuing.
MATH	7670	Confounding, fractional replication, complex designs, response surface designs.
MATH	7680	Probability spaces, random variables, probability distributions, moments and moment generating functions, limit theorems, transformations and sampling distributions.
MATH	7690	Sampling distributions, point estimation, interval estimation, hypothesis testing, regression and analysis of variance.
MATH	7710	Floating point arithmetic; polynomial interpolation; numerical solution of nonlinear equations; Newton's method. Likely topics include: numerical differentiation and integration; solving systems of linear equations; Gaussian elimination; LU decomposition; Gauss-Seidel method.
MATH	7720	Likely topics include: Computation of eigenvalues and eigenvectors; solving systems of nonlinear equations; least squares approximations; rational approximations; cubic splines; fast Fourier transforms; numerical solutions to initial value problems; ordinary and partial differential equations.
MATH	7740	Series and numerical solutions to ordinary differential equations, special functions, orthogonal functions, Sturm-Liouville Problems, self-adjointness, vector analysis.
MATH	7750	Continuation of vector analysis, introduction to complex analysis, partial differential equations, Fourier series and integrals.
MATH	7780	Extrema for functions of one or more variables, Lagrange multipliers, indeterminate forms, inverse and implicit function theorems, uniform convergences, power series, transformations, Jacobians, multiple integrals.
MATH	7790	An introduction to finite-dimensional combined optimization as it relates to business and economics. Linear and non-linear programming.
MATH	7800	Modern theory of differential equations; transforms and matrix methods; existence theorems and series solutions; and other selected topics.



MATH	7810	First and second order equations; numerical methods; separation of variables; solutions of heat and wave equations using eigenfunction techniques; and other selected topics.
MATH	7820	A rigorous treatment of the Calculus in one and several variables. Topics to include: the real number system; sequences and series; elementary metric space theory including compactness, connectedness and completeness; the Riemann Integral.
MATH	7830	Differentiable functions on R^n ; the Implicit and Inverse Function Theorems; sequences and series of continuous functions; Stone-Weierstrass Theorem; Arzela-Ascoli Theorem; introduction to measure theory; Lebesgue integration; the Lebesgue Dominated Convergence Theorem.
MATH	7850	Theory of Laplace, Fourier and other transforms; use of complex variable theory for inversions; applications.
MATH	7860	Conditions for an extreme (Euler's equations, Erdman corner conditions, conditions of Legendre, Jacobi and Weierstrass, fields of extremals, Hilbert's invariant integral); Raleigh-Ritz method; isoperimetric problems; Lagrange, Mayer-Bolza problems.
MATH	7870	Pontryagin's maximum principle; necessary and sufficient conditions for optimal control, controllability, time optimal control, existence of optimal controls, relationship to the calculus of variations.
MATH	7880	Analytic functions; Cauchy's theorem; Taylor and Laurent series; residues; contour integrals; conformal mappings, analytic continuation and applications.
MATH	8150	Normed linear spaces, Banach and Hilbert spaces, linear operators and their spectrum, spectral analysis, illustrative examples from science and engineering.
MATH	8180	Simplex algorithm, ellipsoidal algorithm, Karmarkar's method, interior point methods, elementary convex analysis, optimality conditions and duality for smooth problems, convex programming, algorithms and their convergence.
MATH	8190	Introduction to nonlinear analysis, abstract optimization problems on abstract spaces, applications to calculus of variations, optimal control theory and game theory.
MATH	8300	Group actions, Sylow's theorems, permutation groups, nilpotent and solvable groups, abelian groups, rings, unique factorization domains, fields.
MATH	8310	Field extensions, Galois theory, modules, Noetherian and Artinian rings, tensor products, primitive rings, semisimple rings, and modules, the Wedderburn-Artin theorem.
MATH	8320	Radical theory, rings of quotients, Goldie's Theorem, chain conditions, dimensions of rings, module theory, topics in commutative rings.
MATH	8330	Advanced topics in ring theory. Possible topics include group rings, enveloping algebras, almost split sequences, PI-rings, division rings, self-injective rings, and ordered rings.



MATH	8340	Fundamental topics in group theory. Possible topics include free groups, presentations, free products and amalgams, permutation groups, abelian groups, nilpotent and solvable groups, sub normality, extensions, the Schur-Zassenhaus theorem, the transfer homomorphism, linear methods, local analysis.
MATH	8350	Advanced topics in group theory. Possible topics include cohomology of groups, locally finite groups, character theory, modular representation theory, representation theory of symmetric and classical groups, finite simple groups, geometric group theory.
MATH	8400	Topological spaces, continuous functions, compactness, product spaces, Tychonov's theorem, quotient spaces, local compactness, homotopy theory, the fundamental group, covering spaces.
MATH	8410	Homology theory, excision, homological algebra, the Brouwer fixed point theorem, cohomology, differential manifolds, orientation, tangent bundles, Sard' theorem, degree theory.
MATH	8420	Categorical properties of and constructions in topological spaces, compactness, connectedness, dimension theory, metrization.
MATH	8430	Compactification and proximity spaces, uniform spaces, completeness and completions, rings of continuous functions.
MATH	8440	Introduction to differential geometry. Topics include differentiable manifolds, vector fields, tensor bundles, the Frobenius theorem, Stokes' theorem, Lie groups.
MATH	8450	Topics include connections on manifolds, Riemannian geometry, the Gauss-Bonnet theorem. Further topics may include: homogeneous and symmetric spaces, minimal surfaces. Morse theory, comparison theory, vector and principal bundles.
MATH	8460	Simplicial and cellular complexes, simplicial and cellular homology, universal coefficient theorem, Kunneth theorem, cohomology theories, cohomology operations, duality on manifolds.
MATH	8470	General homotopy theory, fibrations and cofibrations, higher homotopy groups, weak homotopy equivalence, Hurewicz's theorem, Eilenberg-MacLane spaces, classifying spaces, spectral sequences.
MATH	8500	Existence, uniqueness and dependence on initial conditions and parameter, nonlinear planar systems, linear systems, Floquet theory, second order equations, Sturm-Liouville theory.
MATH	8510	First order quasi-linear systems of partial differential equations, boundary value problems for the heat and wave equation, Dirichlet problem for Laplace equation, fundamental solutions for Laplace, heat and wave equations.
MATH	8520	Topic includes the flow-box theorem, Poincare maps, attractors, ω -limit sets, Lyapunov stability, invariant submanifolds, Hamiltonian systems and symplectic manifolds.
MATH	8530	Topics may include local bifurcations of vector fields, global stability, ergodic theorems, integrable systems, symbolic dynamics, chaos theory.



MATH	8540	Possible topics may include: the Cauchy-Kovalevskaya Theorem, nonlinear partial differential equations of the first order, theory of Sobolev spaces, linear second order PDE's of elliptic, hyperbolic and parabolic type.
MATH	8550	Selected topics in Partial Differential Equations of current interest emphasizing nonlinear theory. Possible topics may include: Minimal surfaces, applications of the Hopf maximum principle, free boundary value problems, harmonic maps, geometric evolution equations and the Navier-Stokes equation.
MATH	8600	Real data applications of various statistical methods, project design and analysis including statistical consulting experience.
MATH	8610	Real data applications of various statistical methods, project design and analysis including statistical consulting experience.
MATH	8620	Important methods and modeling techniques using generalized linear models and emphasizing loglinear and logit modeling.
MATH	8630	Statistical methods based on counts and ranks; methods designed to be effective in the presence of contaminated data or error distribution misspecification.
MATH	8640	Topics selected from an array of modern statistical methods such as survival analysis, nonlinear regression, Monte Carlo methods, etc.
MATH	8650	Estimation, hypothesis testing, prediction, sufficient statistics, theory of estimation and hypothesis testing, simultaneous inference, decision theoretic models.
MATH	8670	Real analysis, probability spaces and measures, random variables and distribution functions, independence, expectation, law of large numbers, central limit theorem, zero-one laws, characteristic functions, conditional expectations given a σ -algebra, martingales.
MATH	8680	Exponential families, sufficiency, completeness, optimality, equivariance, efficiency. Bayesian and minimax estimation. Unbiased and invariant tests, uniformly most powerful tests. Asymptotic properties for estimation and testing. Most accurate confidence intervals.
MATH	8690	Multivariate normal sampling distributions, T tests and MANOVA, tests on covariance matrices, simultaneous inference, discriminant analysis, principal components, cluster analysis and factor analysis.
MATH	8720	Analytic functions, residues, method of steepest descent, complex differential equations, regular singularities, integral representation, real and complex vector spaces, matrix groups, Hilbert spaces, coordinate transformations.
MATH	8730	Self-adjoint operators, special functions, orthogonal polynomials, partial differential equations and separation of variables, boundary value problems, Green's functions, integral equations, tensor analysis, metrics and curvature, calculus of variations, finite groups and group representations.

MATH	8800	Completeness, connectedness and compactness in metric spaces, continuity and convergence, Stone-Weierstrass Theorem, Lebesgue measure and integration on the real line, convergence theorems, Egorov's and Lusin's theorems, derivatives, functions of bounded variation.
MATH	8810	The Vitali covering theorem, absolutely continuous functions, Lebesgue-Stieltjes integration, the Riesz representation theorem, Banach spaces, L_p -spaces, abstract measures, the Radon-Nikodym theorem, measures on locally compact Hausdorff spaces.
MATH	8820	Topics include Topological vector spaces, Banach spaces, convexity, the Hahn-Banach theorem, weak and strong topologies, L_p spaces and duality.
MATH	8830	Topics include the Mackey-Ahrens Theorem, Banach algebras, spectra in Banach algebras, commutative Banach algebras, unbounded operators, the spectral theorem, topics in functional analysis.
MATH	8840	Elementary analytic functions, complex integration, the residue theorem, infinite sequences of analytic functions, Laurent expansions, entire functions.
MATH	8850	Meromorphic functions, conformal mapping, harmonic functions and the Dirichlet problem, the Riemann mapping theorem, monodromy, algebraic functions, Riemann surfaces, elliptic functions and the modular function.
MATH	8890	Practicum in solving problems in graduate algebra, topology and analysis. Supplements 6300-10, 6400-10 and 6800-10 and prepares students for doctoral qualifying examination.
MATH	8930	Lectures by visiting mathematicians and staff members on areas of current interest in mathematics.
MATH	8940	Problems and techniques of teaching elementary college mathematics, supervised teaching, seminar in preparation methods.
MATH	8960	
MATH	8980	Special topics in Mathematics or Statistics.
MATH	8990	Readings in areas of Mathematics of mutual interest to the student and the professor.
MBC	3100	Consideration of the scientific, ethical, and legal obligations expected in the conduct of academic and industrial pharmaceutical research.
MBC	3310	An introductory course presenting the basic chemical principles governing the behavior of drugs and the design of new therapeutics.
MBC	3320	A course presenting basic chemical principles governing the design and behavior of therapeutics targeted to receptors in physiologic systems which are key to the integrated control of human metabolism.
MBC	3330	Theory and practice of drug design with consideration of molecular aspects that effect drug absorption, distribution, metabolism, and excretion.
MBC	3550	An examination of the levels of structure of proteins, nucleic acids, other biomolecules and biomolecular assemblies.

MBC	3560	An examination of the chemistry and regulation of metabolic processes in cells, interacting cells and tissues.
MBC	3800	A lecture course with emphasis on how the immune system protects the body against bacterial, viral and parasitic invaders. Medically important human infectious diseases are described as well as chemotherapeutic intervention.
MBC	3850	A laboratory course that follows the course material presented in MBC 3800. Both immunology and microbiology experiments that are medically useful and clinically important will be performed.
MBC	3880	Research and lecture teaching fundamental laboratory skills in medicinal and biological chemistry.
MBC	4300	The chemical bases for actions of drugs that counter infectious disease and cancer, including use and modulation of the immune system and its products to target infectious disease and cancer.
MBC	4340	An introduction to natural remedies, their history, source, chemical constituents, documented therapeutic utility and toxicity.
MBC	4380	A lecture/field course emphasizing medicinal and poisonous plants of this locale.
MBC	4390	Consideration of the symptoms, molecular nature, current treatment and amelioration by gene therapy of diseases caused by gene and protein defects.
MBC	4410	A comprehensive examination of the role of carbohydrates, lipids, proteins, vitamins and minerals in maintaining good health, as well as our current understanding of the interplay between nutrition and disease.
MBC	4420	An examination of the basic anatomy, chemistry and physiology of neural systems. The organization of the brain and its role in behavior and in disease states are presented in an interdisciplinary way.
MBC	4430	Mechanisms of pathogenesis and pathophysiological consequences in diseases already well-understood at a biochemical level. Emphasis is placed on the logic behind existing and future drug therapies in disease.
MBC	4450	An examination of all phases of drug discovery and development from conception to marketing: case histories from pharmaceutical research and development.
MBC	4470	This course emphasizes the development of methods for immunotherapeutic intervention in cancer and autoimmune and infectious disease. The course has a seminar/discussion/student presentation format.
MBC	4480	A study of the effects on plant predators of secondary metabolites in plants as a basis for the novel development of therapeutics.
MBC	4710	A survey of novel macromolecular targeting approaches to drug design in important human disorders. The course has a seminar/discussion/student presentation format.
MBC	4720	A survey of novel approaches to drug design and development. The course has a seminar/discussion/student presentation format.

MBC	4760	The biochemical principles underlying toxicological phenomena, including biotransformation, host and environmental modulation, and target organs.
MBC	4770	Theoretical and graphical approaches to the geometry of drug interactions with their receptors. Methods of determining and predicting conformation at drug receptor sites are examined.
MBC	4780	An experiential course in which students acquire practical knowledge through hands-on experience in an area of medicinal and biological chemistry by working in an academic, private or government laboratory or professional site.
MBC	4800	Linear free energy relationships and substituent effects in pharmacologically related agents are considered in the quantitative description of structure vs. drug activity.
MBC	4850	Research experience in medically related immunology including literature investigations, tissue culture, cell sorting and sterile biotechniques and culminating with a seminar and written report.
MBC	4870	Research experience in biomedical chemistry including literature investigations and chemical synthesis of medically important compounds and culminating with a seminar and written report.
MBC	4880	Research experience in medically related biotechnology including literature investigations, informatics, DNA and protein methodologies, and biological activity assays; and culminating with a seminar and written report.
MBC	4900	An examination of a specific question in the context of the primary literature in medicinal or biological chemistry.
MBC	4910	Selected study of topics in biomedical chemistry. New chemical and biochemical strategies in drug design are examined in detail.
MBC	4950	Selected research and study in medicinal chemistry.
MBC	4960	An examination of a specific research question in medicinal or biological chemistry that can be answered through experimental work.
MBC	4980	A detailed examination of new chemical and biochemical strategies in drug design.
MBC	4EL	
MBC	5100	Consideration of the scientific, ethical and legal obligations of the graduate student researcher.
MBC	5380	Lecture/field course examining medicinal and harmful properties of herbals and plants using pharmacognosy, clinical trials and local plant examples.
MBC	5620	A detailed study of biochemical laboratory techniques necessary for the development of novel therapeutics, including bioassays and data analysis.
MBC	5900	Presentation and discussion of advanced research topics in medicinal chemistry, with an emphasis on evaluating and criticizing emerging data as a way of testing hypotheses.

MBC	6100	Readings in and critical analysis of the recent literature in immunology and basic immunologic responses, especially as considered in immunotherapy.
MBC	6190	Discussion of the qualitative and quantitative aspects of the design of new therapeutic agents. Approaches to the design of drugs and new therapeutic modalities directed at enzymes, receptors, membrane transport proteins and nucleic acids are examined.
MBC	6200	Examination of the primary literature on approaches to the design of new therapeutic agents. Recent novel directions in the design of drugs will be examined and compared.
MBC	6300	Experimental research problems in biomedical chemistry.
MBC	6310	Additional experimental research problems in biomedical chemistry (see MBC 6300/8300).
MBC	6420	A detailed analysis of the structure and function of proteins: current methodology for the analysis of structure, the basis for molecular associations, and relationships between structure and biological function.
MBC	6430	The chemical basis for storage and transmission of genetic information.
MBC	6440	The principles of chemical catalysis applied to molecular enzymology.
MBC	6550	A consideration of the structure and function of biological macromolecules as well as the basic and regulated metabolism of cells.
MBC	6750	An advanced course in the application of organic chemistry, stereochemistry, synthesis and kinetics to the study of enzymes, enzyme inhibition and enzyme mechanisms.
MBC	6800	Experimental investigations of current techniques in biochemistry and molecular biology that involve DNA or protein amplification, modification and interactions relevant to drug research.
MBC	6960	Development and pursuit of research leading to an M.S. thesis in medicinal chemistry.
MBC	6980	Selected study of topics in medicinal chemistry. New chemical and biochemical strategies in drug design are examined in detail.
MBC	7100	Consideration of the scientific, ethical and legal obligations of the graduate student researcher.
MBC	7620	A detailed study of biochemical laboratory techniques necessary for the development of novel therapeutics, including bioassays and data analysis.
MBC	7900	Presentation and discussion of advanced research topics in medicinal chemistry, with an emphasis on evaluating and criticizing emerging data as a way of testing hypotheses.
MBC	8100	Readings in and critical analysis of the recent literature in immunology and basic immunologic responses, especially as considered in immunotherapy.
MBC	8190	Discussion of the qualitative and quantitative aspects of the design of new therapeutic agents. Approaches to the design of drugs and new therapeutic modalities directed at enzymes, receptors, membrane transport proteins and nucleic acids are examined.



MBC	8200	Examination of the primary literature on approaches to the design of new therapeutic agents. Recent novel directions in the design of drugs will be examined and compared.
MBC	8300	Experimental research problems in biomedical chemistry.
MBC	8310	Additional experimental research problems in biomedical chemistry (see MBC 6300/8300).
MBC	8420	A detailed analysis of the structure and function of proteins: current methodology for the analysis of structure, the basis for molecular associations, and relationships between structure and biological function.
MBC	8430	The chemical basis for storage and transmission of genetic information.
MBC	8440	The principles of chemical catalysis applied to molecular enzymology.
MBC	8550	A consideration of the structure and function of biological macromolecules as well as the basic and regulated metabolism of cells.
MBC	8750	An advanced course in the application of organic chemistry, stereochemistry, synthesis and kinetics to the study of enzymes, enzyme inhibition and enzyme mechanisms.
MBC	8800	Experimental investigations of current techniques in biochemistry and molecular biology that involve DNA or protein amplification, modification and interactions relevant to drug research.
MBC	8960	Development and pursuit of research leading to a Ph.D. dissertation in medicinal chemistry.
MBC	8980	Selected study of topics in medicinal chemistry. New chemical and biochemical strategies in drug design are examined in detail.
MBDP	603	An introduction to the molecular mechanisms of diseases through comparison of fundamental concepts in microbiology, immunology, oncology, physiology, pharmacology and biochemistry that are common to many diseases.
MBDP	630	Local and outside scientists will present their scientific work in seminars that will take place twice a week. May be repeated for credit.
MBDP	650	Introduction to the laboratory methods used in molecular basis of disease research. Students will conduct short research projects in the laboratories of MBD faculty. May be repeated for credit.
MBDP	656	An in-depth literature review of selected research topics related to disease mechanisms and protection from disease. Faculty-led student discussion of selected articles. May be repeated for credit.
MBDP	660	A weekly report on recent advances in molecular basis of disease taken from original papers to give students an opportunity to find, assess, and report on important developments in the field. May be repeated for credit.
MBDP	698	This is a weekly course combining a journal paper discussion with a research data presentation, both focusing on current work in molecular microbiology. May be repeated for credit.



MBDP	803	An introduction to the molecular mechanisms of diseases through comparison of fundamental concepts in microbiology, immunology, oncology, physiology, pharmacology and biochemistry that are common to many diseases.
MBDP	830	Local and outside scientists will present their scientific work in seminars that will take place twice a week. May be repeated for credit.
MBDP	850	Introduction to the laboratory methods used in molecular basis of disease research. Students will conduct short research projects in the laboratories of MBD faculty. May be repeated for credit.
MBDP	856	An in-depth literature review of selected research topics related to disease mechanisms and protection from disease. Faculty-led student discussion of selected articles. May be repeated for credit.
MBDP	860	A weekly report on recent advances in molecular basis of disease taken from original papers to give students an opportunity to find, assess, and report on important developments in the field. May be repeated for credit.
MBDP	898	This is a weekly course combining a journal paper discussion with a research data presentation, both focusing on current work in molecular microbiology. May be repeated for credit.
MCBP	630	Local and outside scientists, and senior graduate students, will present their scientific work in seminars that usually take place weekly. Enables students to hear state-of-the-art science in the areas of molecular and cellular biology. May be repeated to credit.
MCBP	656	Presentation and discussion in depth of original papers to give students an opportunity to assess and report on important developments in the field. May be repeated for credit.
MCBP	670	The course will cover the fundamentals and the present day research on all major superfamilies of ion-motive ATPases. Special emphasis will be given to the key enzymes of the cell energy cycle, ATP synthases and Na,K-ATPase. The course also will focus on research approaches that are used to analyze structural organization and molecular mechanism of these integral membrane enzymes.
MCBP	673	Students will participate in selected on-going research programs with faculty members of the MCB program. May be repeated for credit.
MCBP	675	Presentations, oral (fall) and poster (spring), at research forums will provide training in communication of experimental findings. This is a MCB programs requirement for all second-year master and second-fifth year doctoral students. May be repeated for credit.
MCBP	689	Intensive study in field of interest, including theoretical and experimental work. May be repeated for credit.
MCBP	830	Local and outside scientists, and senior graduate students, will present their scientific work in seminars that usually take place weekly. Enables students to hear state-of-the-art science in the areas of molecular and cellular biology. May be repeated to credit.



MCBP	856	Presentation and discussion in depth of original papers to give students an opportunity to assess and report on important developments in the field. May be repeated for credit.
MCBP	870	The course will cover the fundamentals and the present day research on all major superfamilies of ion-motive ATPases. Special emphasis will be given to the key enzymes of the cell energy cycle, ATP synthases and Na,K-ATPase. The course also will focus on research approaches that are used to analyze structural organization and molecular mechanism of these integral membrane enzymes.
MCBP	873	Students will participate in selected on-going research programs with faculty members of the MCB program. May be repeated for credit.
MCBP	875	Presentations, oral (fall) and poster (spring), at research forums will provide training in communication of experimental findings. This is a MCB programs requirement for all second-year master and second-fifth year doctoral students. May be repeated for credit.
MCBP	889	Intensive study in field of interest, including theoretical and experimental work. May be repeated for credit.
MCOE	4000	The study of the structure and functional implications of the musculoskeletal, cardiovascular and respiratory systems of the human, and an introduction to the peripheral nervous system. An emphasis is placed on the biomechanisms of spine and extremity movement as it applies to the study of anatomy.
MCOE	4070	An integrated study of structure and function of the central and peripheral nervous systems. Principles of neurophysiological and neuropathological motor and sensory function and related basic assessment skills will be emphasized.
MCOE	4110	The integrated study of the physiology of various systems of the human body throughout the lifespan. The focus will be on the pathophysiology of the various systems with emphasis on clinical manifestations and their influence on client examination and strategies for health promotion.
MCOE	4200	Health and wellness as they relate to able-bodied clients and clients with disability. The mind-body interaction will be explored as it relates to the role of the physical therapist as health educator. Principles of nutritional and pharmacological management will be discussed in the content of maintenance of health.
MCOE	4250	An introduction to the physical examination process. Includes the integration of anatomy, analysis of movement, health and observation skills. Emphasis on basic examination skills.
MCOE	4600	Integration of the organizing principles of biomechanics, neurosciences and exercise physiology as they relate to an understanding of how voluntary, coordinated human movement is controlled. The implications on the management of movement dysfunction will be discussed.
MCOE	4800	In-depth exploration of selected clinical topics (Physical Therapy).



MED	1000	Experiential learning for music education majors. All music education majors must register for this course when enrolled in the following classes: MUS 1500, 1510, 1530, 1550, 1560, 3500, 3510, 3520, or any MED course. A total of 5 semesters is required. Offered as P/NC only. - 0 hours.
MED	3000	General overview of music education. Addresses history and philosophy of music education, music in a diverse society, classroom observation skills, analysis of music teaching, classroom communication and educational theories.
MED	3030	Topics: Children's voices, music literacy, appreciation, creativity, classroom instruments. Analysis of music books, comparative methodology, curriculum integration. May include field experience.
MED	3300	Choral/Gen cluster 3 cr.; Inst cluster 4 cr. A study of the techniques and teaching procedures used in the presentation of the instrumental music program in elementary and secondary schools. Field experience required. Includes participation in MUS 1000:002.
MED	3310	Topics: Children's voices, music reading readiness and music reading, appreciation, creativity, use of classroom instruments. Projects: Analysis of music books for children, a comparative review of Orff, Kodaly, Dalcroze, & Gordon. Field experience required.
MED	3320	Choral/General cluster 4 cr.; Instrumental cluster 3 cr. An overview of secondary school problems of vocal music education. Field experience required. Includes participation in MUS 1000:002.
MED	3330	Topics include children's voices, music readiness skills, appreciation, creativity, use of classroom instruments. Projects include keyboard technology, analysis of basic series, a comparative review of Orff, Kodaly, Dalcroze and Gordon. Includes computer and keyboard technology and field experience.
MED	3350	Topics: Adolescent voices, advanced music literacy, appreciation, composition, classroom instruments. Projects: Accompanying proficiency, basic series analysis, comparative methodology, curriculum integration. Field experience required.
MED	4230	This course will provide students majoring in education an overview of the role of music and art in educational curriculum development. Students will learn about the history of art and music through lecture, discussion and participation in art and music activities and develop methods of teaching art and music in the classroom. Interdisciplinary teaching and curriculum planning methods will be a focus of the course, affording students methods of incorporating the historical, cultural and social aspects of art and music in a general curriculum. (Students may enroll in either the Music or Art Education Sections)
MED	4900	This course is required for all music education majors. This course focuses reflectivity on common experiences in student teaching. Attention is also given to resume preparation, portfolio use and job interviews.



MED	4930	This course is required for all music education majors. Planned field experiences in public school classrooms under the direction of University supervisors. Observation of teaching of experienced teachers; gradual acceptance of full teaching responsibility by student teacher. Must register for 6 hours elementary and 6 hours secondary.
MED	4950	A workshop developed around topics of interest and concern for preservice teachers and other education personnel. Practical application of workshop topics will be emphasized. Students have the option of receiving P/NC for workshops.
MED	4990	Individual study is designed to provide a student with the opportunity to work individually on professional interests and concerns under the direction of the faculty of the Department of Music.
MED	5330	Rehearsal techniques and teaching strategies for the public school instrumental music teacher. Designed to enhance the effective teaching of fundamental musical skills through hands-on experiences.
MED	5340	The impact of historical, sociological and philosophical influences on various music curricula, past and present. Integration of skill development and content learning for designing comprehensive and sequential objectives for school music programs.
MED	5360	Theory and techniques for teaching of musical skills. Sequences for development of tonal and rhythm skills, techniques and materials for instruction plus measurement and evaluation of music learning.
MED	5370	Study of theories of musical behavior and pattern perception.
MED	5990	Individual study is designed to provide a student the opportunity to work independently on professional problems under the direction of the faculty of the Department of Music.
MED	6920	Open to the graduate student who elects a research project to fulfill the research requirement of the master's degree program.
MED	6930	Critical inquiry into specific topics through lectures, class seminar reports and discussion. Seminar topics announced in schedule of classes.
MED	6960	Open to the graduate student who elects a master's thesis to fulfill the research requirement of the master's degree program.
MED	6980	The area of study will be announced at the time the course is offered.
MEDI	605	Application of advanced statistical techniques with particular emphasis on problems in the biomedical sciences. Multiple regressions, methods of analysis of variance, categorical data analysis including logistic regression, nonparametric and survival analysis. Problems whose solutions involve using a statistical program (SAS or SPSS).
MEDI	620	This course will enable the health care professional to understand those forces driving change in the managed care era and will help prepare them for the future.
MEDI	672	A lecture and/or seminar course on topics of current interest in medicine with special emphasis on the fundamentals of human life under normal, experimental, or pathological conditions. May be



repeated for credit.

MEDI	673	Student will participate in selected ongoing research programs of members of the staff. May be repeated for credit.
MEDI	689	Intensive study in field of interest, including theoretical and experimental work. May be repeated for credit.
MEDI	703	Internal Medicine Clerkship (12 weeks)
MEDI	704	Students will be designated as an Acting Intern with increased responsibility for patient management & under supervision.
MEDI	705	Students will be designated as an Acting Intern with increased responsibility for patient management & under supervision.
MEDI	706	Students will see outpatients: 10 half days in Ambulatory Private Patient Care at UPMC. Additional responsibilities include taking histories & physicals, assisting in minor surgeries, as well as consultation rounds. Reading of selected dermatologic textbooks during the clerkship is also expected.
MEDI	707	The students will have the opportunity to expand their knowledge of endocrinology by actively participating in the initial evaluation, diagnosis, and management of patients with endocrine and metabolic problems under the supervision of a faculty member. The clerk is expected to attend and participate in the diabetic and endocrine clinics. Also they will participate in the care of inpatients with endocrine and metabolic disorders and patients seen in consultation. The clerk is expected to attend the Endocrinology Conference held once monthly and the weekly medical Mortality & Morbidity Conference and Medical Grand Rounds. In addition, the clerks will be given the opportunity to participate in the performance of endocrine function tests (pituitary function tests, adrenal function tests, etc.). At the end of the rotation, the student is expected to be able to: 1. Recognize the symptoms and signs of the most common endocrine and metabolic disorders. 2. List the indications, contraindications, and be able to interpret commonly used endocrine function tests. 3. Analyze the clinical and laboratory data and identify the most likely diagnosis. 4. Submit proper therapeutic recommendations.
MEDI	708	
MEDI	709	This course provides a focused opportunity for the senior student to study gastroenterologic and hepatologic diseases in both inpatient and outpatient settings.
MEDI	710	This is an elective that serves to strengthen basic science experiences and clerkship experiences. It also serves to provide further knowledge and clinical base necessary for transition to residency program.
MEDI	711	This is an elective designed to give the student a broad exposure to types of health problems faced by older adults as well as settings in which Geriatric Medicine is practiced. Weekly or biweekly discussion sessions complement clinical experiences in outpatient, long term care and home based sites.



MEDI	712	The primary goal is to expand the student's fund of knowledge in electrocardiography. This elective will also give the student an opportunity to investigate a particular topic in some depth and present his/her findings to the cardiology staff at a house staff/student conference.
MEDI	713	The student will perform histories and physical exams on inpatients and outpatients, participate in daily hospital rounds, lab and microscope use and interpretation. The student will observe bone marrow aspiration and biopsy.
MEDI	714	The student is expected to know how to evaluate patients who present with possible infectious diseases including, but not restricted to, fevers of unknown origin, acute febrile episodes, urinary tract infections, pneumonia, endocarditis, parasitic infestation, postoperative fever, AIDS. Decide upon the appropriate therapeutic and diagnostic approach for each patient evaluated; follow all patients on a daily basis; review the medical literature on diseases seen on service. The student, by the end of the clerkship, should be able to perform and identify organisms on Gram stain and according to source, make a reasonable estimate of what the organisms are. Be familiar with the general microbiology laboratory and how it can be useful in patient management; know the appropriate means of obtaining cultures from various sites.
MEDI	715	This elective consists of a mixture of acting internship inpatient consultation, and outpatient experiences. The student will have primary and/or consultative responsibility for patients who have a variety of acid-base and electrolyte disorders and problems in clinical nephrology and renal transplantation. The principal method of learning will be problem-based case analysis on inpatient/consultative rounds. The student will be directed to do in depth reading regarding his patients and selected topics. In addition, ad hoc seminars on relevant topics will be scheduled for the members of the Nephrology Service. To optimize the students' efficiency and ability to utilize library, radio pager is furnished.
MEDI	716	Student(s) will assist in consultations and management of a wide variety of patients with pulmonary diseases. This will include In-patient and outpatient consultations, hospital ward, and SICU patients. Participation in procedures including bronchoscopies. Intubations, lung and chest wall biopsies, cardiopulmonary exercise testing and pulmonary function testing will occur throughout the month. A didactic and bedside lecture course related to the pathophysiology of pulmonary diseases and pulmonary disease will be presented.



MEDI	717	The intent of the clerkship is to make students skillful in the differential diagnosis of the common rheumatic disorders, the collagen vascular diseases and chronic pain syndromes. All students will be provided with a core packet of materials that form the scientific basis for the practice of rheumatology. The students make rounds on the consultative rheumatology service as well as participate in taking care of in-house hospital patients. Monday, Wednesday, Thursday and Friday mornings and Tuesday and Wednesday afternoons will be spent in the clinic evaluating new clinic patients with rheumatic diseases and return visits from patients previously seen in the rheumatology clinic. The clinic experience will hopefully provide the opportunity for the student to gain experience in the art of arthrocentesis as well as the soft tissue injection. Emphasis will also be placed on the radiologic interpretation of rheumatic disease and rheumatology/radiology rounds constitute an important part of the rotation. During the rotation, the student will work closely with the resident or residents on the service.
MEDI	723	Students will be designated as an Acting Intern with increased responsibility for patient management & under supervision.
MEDI	724	This elective is designed to provide the students with an opportunity to gain the knowledge, skills and attitude required to diagnose and manage hematologic disorders. In addition, the student will have opportunities to gain the fundamental skills in the laboratory aspects of hematology, to include routine hematology laboratory, hemostasis and blood banking. Safety in handling of blood and blood products will be learned.
MEDI	730	Students will see outpatients: 10 half days in Ambulatory Private Patient Care at UPMC. Additional responsibilities include taking histories & physicals, assisting in minor surgeries, as well as consultation rounds. Reading of selected dermatologic textbooks during the clerkship is also expected.
MEDI	731	This course provides a focused opportunity for the senior student to study gastroenterologic and hepatologic diseases in both inpatient and outpatient settings.



MEDI	732	The intent of the clerkship is to make students skillful in the differential diagnosis of the common rheumatic disorders, the collagen vascular diseases and chronic pain syndromes. All students will be provided with a core packet of materials that form the scientific basis for the practice of rheumatology. The students make rounds on the consultative rheumatology service as well as participate in taking care of in-house hospital patients. Monday, Wednesday, Thursday and Friday mornings and Tuesday and Wednesday afternoons will be spent in the clinic evaluating new clinic patients with rheumatic diseases and return visits from patients previously seen in the rheumatology clinic. The clinic experience will hopefully provide the opportunity for the student to gain experience in the art of arthrocentesis as well as the soft tissue injection. Emphasis will also be placed on the radiologic interpretation of rheumatic disease and rheumatology/radiology rounds constitute an important part of the rotation. During the rotation, the student will work closely with the resident or residents on the service.
MEDI	734	A four week rotation for fourth year medical students interested in pursuing Nephrology as a specialty. There is a great opportunity for dialysis observation and management, and most of the rotation relates to etiology and management of chronic renal failure.
MEDI	735	Exposure to EKGs, Echocardiography and stress testing, cardiac catheterization and critical care of cardiac patients. Inpatient and outpatient histories and physical exams. Observation if appropriate in cardiac surgery.
MEDI	745	In the summer after the second year of medical school, MD/PhD students will identify a clinical mentor. This faculty member will be responsible for the clinical training program of the student, and will provide formative and summative feedback concerning the development of clinical skills and a foundation for subsequent clinical clerkship training. The mentor may change during the course of the student's graduate school years, but any change should occur after the end of a semester. Although students may choose a clinical mentor from any department, the following specialties are particularly suited to training MD/PhD students with limited prior clinical training and restricted hours of availability: Internal Medicine: Students may schedule sessions in General Medicine or subspecialty clinics according to interest, or in the hospital setting (though the latter may be more difficult to arrange). Contact: Dr. Christopher Lynn, Clerkship Director. Student time commitment: Students are expected to spend 8 hours per month in clinical training. This can be divided into weekly 2 hour session, biweekly 4 hour sessions or an 8 hour day per month. Students are encouraged to discuss the most appropriate schedule with their laboratory mentor to ensure that the clinical experience does not interfere with graduate coursework or research progress. The program should be formalized in writing, and submitted to the MD/PhD Director for approval. Students should see about one patient per hour of training. Students should keep a log of their patients, their diagnoses, and any procedures performed. An electronic logging system for patient experiences will be developed.

Credit:

Upon completion of 3 years of graduate training, assuming 40 weeks per year of participation, students will have accumulated about 300 hours of clinical experience. This is approximately equivalent to 2 months of clinical electives (8 h/d X 5 d/w X 4 weeks = 160 h/mo), and students will be awarded 2 months of 4th year elective credit for this training upon re-enrolling in the College of Medicine. This credit should allow further flexibility in 4th elective scheduling, enabling additional research months, off site rotations, etc. If students require more than 3 years of graduate work, continued participation in the clinical training program is strongly encouraged, but no more than 2 months of elective time will be awarded.

MEDI	872	A lecture and/or seminar course on topics of current interest in medicine with special emphasis on the fundamentals of human life under normal, experimental, or pathological conditions. May be repeated for credit.
MEDI	873	Student will participate in selected ongoing research programs of members of the staff. May be repeated for credit.
MEDI	889	Intensive study in field of interest, including theoretical and experimental work. May be repeated for credit.
MET	1020	Essentials of dimensioning, size, position and form tolerancing and their application in shop processes. Pictorial drawings are created freehand and with the use of drawing instruments.
MET	1110	Material and machining processes dealing with production methods, machining capabilities, tolerances. Metal working with lathe, mill, etc., along with processes such as molding, stamping, forging, etc.
MET	1120	Provides students with an opportunity to gain hands-on experience with machine tools and gauging measurement instruments.
MET	1250	Introduction to two-dimensional and three-dimensional Computer Aided Drafting. Laboratory based experiences with creating and dimensioning working drawings, part libraries, entity insertion, graphics manipulation and customization.
MET	2050	Application of physical principles for the design of systems to transport liquids in closed hydraulic or process piping systems; friction, pumping, flow meters and gauges.
MET	2100	Review and extension of static force analysis: free-body diagrams, forces, moments, dry friction and static equilibrium applied to machines, mechanisms, trusses and frames.
MET	2110	A course in machinery component design with emphasis on the selection of commercial components on the basis of forces and stresses involved.
MET	2120	Introduction to the study of stress distribution and deformation of elastic materials due to applied loads. Consideration of stress, strain, compression, tension, shears, torsion, moments and combined loading in basic machine elements.
MET	2150	Survey of tooling and production activities adaptable to numerical control equipment and processes. Includes terminology, definitions and functions. Students will learn how to create part programs for CNC machinery.



MET	2210	Analysis of thermodynamic concepts as they apply to heating and power production; conservation of energy, work and heat, engines and refrigeration. Includes laboratory experiences.
MET	2350	Continuation of MET 1250. Topics covered include attributes, with attention to geometric tolerancing and true dimensioning. Application of three-dimensional modeling techniques and the preparation of detail drawings from the model.
MET	2980	Student performs work on a specialized project of an advanced nature under the supervision of a Mechanical Engineering Technology faculty member.
MET	3100	Basic principles and laws of classical thermodynamics, equations of state, reversibility and entropy applied to processes and cycles for ideal and non-ideal substances.
MET	3200	Introduction to the engineering design process. Analysis of stress, strain, deflection and fatigue in mechanical design. Design of beams, columns, springs and machine elements.
MET	3300	Investigation of DC and AC circuits using basic circuit analysis techniques. Study of the characteristics and applications of electronic devices, including transistors and integrated circuits.
MET	3400	Static force and moment analysis using vector methods. Applications of dry friction. Analysis of structures and machines. Dynamic analysis using force and acceleration, energy and momentum methods.
MET	3EL	
MET	4100	Fundamentals of fluid statics and dynamics including differential analysis, dimensional analysis and similitude, laminar and turbulent flow, viscosity and boundary layer concepts, and compressible flow.
MET	4150	Pipe flow, determination of drag coefficients, flow visualization and force-momentum experiments, performance characteristics of pumps, compressors and fans, steam power plant performance analysis, refrigeration cycles, air conditioning processes.
MET	4200	Design and application of mechanical components and machine elements including shafts, gears, gear drives, belt drives, chain drives, fasteners, power screws, clutches, brakes and machine frames.
MET	4300	Introduction to control system language, with emphasis on sensors, signal conditioning and instrument characteristics. Includes entry level design, selection and specification of continuous process control systems.
MET	4400	Fundamentals of applied heat transfer by conduction, laminar and turbulent convection, condensation and boiling, radiation exchange between surfaces, and heat exchangers.
MET	4500	A project is used to demonstrate the engineering design process in a real-world setting. Teams use Engineering College Computing facilities to conduct product analysis and prepare working drawings and presentation documentation.



MET	4600	Application of human factors and engineering practices toward accident prevention and elimination of hazards. Topics include liability, standards, OSHA, hazard control, accident investigation and safety management.
MET	4700	Introduction to statistical quality control, including sampling, statistical inference, control charts, specifications and tolerances, and acceptance sampling by attributes and variables.
MFGM	8480	This seminar covers conceptual framework and relevant empirical studies on technology management. The literature from Technology Management as it relates to the management of product, manufacturing and supply chain technologies will be discussed.
MFGM	8490	This seminar focuses broadly on key issues related to supply chain management issues in relation to effective information flows, product flows, distribution and logistics, key business process integration across supply chains.
MFGM	8630	This course is an applied study of mathematical programming and stochastic processes. After discussing the notions of Markov and Renewal processes, we introduce a variety of applications with emphasis on manufacturing.
MFGM	8690	This course will cover the theory and application of different conceptual models that explain the firm's ability to leverage technological innovation and achieve commercialization of its technology.
MFGM	8810	One (!) credit hour requirement of these courses will be met by requiring the students to attend a reasonable number (10) of research seminars and colloquia in and outside the college, doctoral dissertation proposal and defenses at the college, etc., during one academic year.
MFGM	8830	This seminar emphasizes the behavioral issues (cognition, empowerment, self-efficacy, etc.) that determine how effectively advanced manufacturing technologies are utilized in manufacturing or product development.
MFGM	8840	The seminar examines the theory and research related to the formulation and implementation of manufacturing strategy including the strategic planning process and techniques for industry and competitive analysis.
MFGM	8850	This individually designed course will provide advanced readings in areas needed by a doctoral student.
MFGM	8860	This course discusses multivariate data analysis. Topics include: principal components analysis, factor analysis, multidimensional scaling, cluster analysis, multiple regression analysis and multivariate analysis of variance. Statistical software packages are used.
MFGM	8870	This is an advanced second course in Statistical methods or management science or research methods. This course is designed for individual needs of the student to provide more depth in the research method as required.



MFGM	8880	The course seeks to frame and discuss key issues that arise as social scientists conduct theoretically-relevant empirical research. In the course, the theory building in manufacturing management as well as research process and the literature, tools and techniques associated with each phase of the process will be introduced.
MFGM	8890	This seminar provides an understanding of the design and management of manufacturing systems. This begins with an understanding of how manufacturing has evolved over time, continues with descriptions of current trends and ideas in manufacturing system design and concludes with discussion of future changes,
MFGM	8900	This course provides students with the opportunity to experience a realistic manufacturing problem and to develop approaches to solving that problem under the supervision of a faculty member.
MFGM	8960	Dissertation
MFGM	8980	This seminar focuses on current topics relating to manufacturing management. The specific seminar topic will change each semester.
MGMT	3770	The ethical dilemmas faced by organizational leaders are explored and a four-lens model of ethical decision-making is presented. Students will practice using the model to resolve common ethical dilemmas for new and experienced managers.
MGMT	3910	In-depth independent research work under the supervision of a faculty member.
MGMT	3940	This internship experience is designed for JA students who plan to combine their business education with prior Junior Achievement experience.
MGMT	4210	Covers theory, practice, and techniques in identifying major organizational problems and issues and leading the organization through change efforts.
MGMT	4250	Course examines the process and implementation of performance management systems at both individual and group levels. Performance appraisal, coaching, development planning, and performance problems will be discussed.
MGMT	4330	Advanced study of the methods and evaluation of planned change. Includes needs analysis, applied measurement and evaluation, and development of process consultation skills required in change.
MGMT	4780	This course focuses on concepts and experiences for developing leadership skills that facilitate organizational development and change. Writing, cases, videos and exercises are used extensively.
MGMT	4900	This seminar is designed to facilitate applications of managerial skills, tools and techniques in meeting contemporary challenges in organizations.
MGMT	4910	Students have the opportunity to conduct an intensive investigation in a Human Resource Management area, supervised by a departmental faculty member. A formal paper is expected at the study's end.



MGMT	4940	A supervised work experience for outstanding students. The internship involves practical experience. A written report is required of the student.
MGMT	4EL	
MGMT	5110	Course is designed to provide a comprehensive, accurate and up-to-date picture of the field of management. This course focuses on organizational behavior (individual and small group) and organizational theory (large group and total organization). Also included is a review of the key functions of management; (1) planning, (2) organizing, (3) leading, (4) staffing and (5) controlling.
MGMT	6100	This course seeks to challenge students to discover their core values and how they shape beliefs and actions. Students will learn how to apply four theoretical perspectives to issues facing them as business persons.
MGMT	6110	Detailed understanding to the basic processes and techniques for analysis of dynamic changes in the internal and external environment of complex organizations. The course generally involves the writing of research papers and case analyses.
MGMT	6150	The course explores how one's own leadership competencies can be developed and applied most effectively in a variety of situations.
MGMT	6160	Students will develop an understanding of the strategic use of power and influence to exercise leadership in organizations. Skill development in the diagnosis and practical use of power and influence to mobilize action, to negotiate, and to resolve conflicts will be emphasized.
MGMT	6190	Students will learn and apply the key theories and practices of change management and organizational development processes.
MGMT	6930	Independent research opportunities are provided to advanced students for pursuing topics in depth under the faculty supervision.
MICB	502	
MICB	602	The medically-important protozoa, arthropods and helminths, together with their infections will be described during lectures and in the laboratory. Students will prepare several short reports and present a class seminar.
MICB	604	Integration of genetic, biomechanical, and physiologic approaches in the study of bacteria that cause disease. Presentations by instructor and students of selected papers and texts.
MICB	612	An introduction to the human toxicity and mode of action of fungal toxins including mycotoxins, hallucinogens, and poisonous mushrooms. This course will include field gathering and identification of edible and poisonous fungi.
MICB	620	A series of lectures describing the classification, replication strategies and structural composition of the major families of animal viruses that infect humans.



MICB	621	An in-depth analysis of current research in virology including the reading and analysis of recently published papers on the replication and molecular biology of animal viruses, particularly viruses belonging to the Togaviridae and coronaviridae and the bacterial and plant viruses that are homologous to these two families of animal viruses.
MICB	622	A laboratory course in which the students will learn to grow tissue culture cells and grow, quantify, purify, and analyze animal viruses. The student will complete a research project on a problem concerning the molecular biology of animal virus replication.
MICB	623	The course consists of seminars and laboratory. There will be a review of aspects of fungal structure, taxonomy, genetics, physiology, and ecology. The student will be instructed in detail on contemporary work with fungal pathogens and on the application of genetic and immunological methods to study of the fungi. Laboratory work will include instruction on the identification and handling of fungi together with physiological exercises.
MICB	624	Research in aspects of immunology, genetics, taxonomy and/or physiology is the subject of a project which is conducted under supervision of the instructor. The results will be presented as a written report. The course may be combined with Advanced Mycology Co-Seminar (MICB653/853).
MICB	625	Review and discussion including the molecular basis for antigen recognition, the initiation and regulation of immune responses, and modern approaches to immunotherapy.
MICB	640	Review of important principles on which our current understanding of immunology is based. Consists of didactic lectures and student-led discussions of relevant research articles.
MICB	651	Weekly seminars by students, faculty and guests. Attendance and one formal presentation are required for credit per semester.
MICB	652	Examining the interrelationships among microorganisms in different environments, particularly animal and human. Faculty-led student discussion of selected articles.
MICB	653	The student will make an in-depth literature review of a selected topic concerning the fungi. Topics may include immunology, taxonomy, physiology, genetics, virology, or other areas by approval. Critical analysis of research methodology will be made in discussion with the instructor and the student will present his/her findings at a seminar or in a written report.
MICB	655	A weekly report on recent advances in immunobiology and microbial pathogenesis taken from original papers to give students an opportunity to find, assess, and report on important developments in the field. May be repeated for credit.
MICB	660	This seminar course covers different topics of particular interest in immunology and emphasizes the methods and logic of research and how to read and critically evaluate the research. May be repeated for credit.



MICB	661	Research papers in the areas of medical mycology and related fields will be reviewed and critiqued by students. Reviews will be presented by students in seminar format.
MICB	672	A lecture and/or seminar course on topics of current interest in microbiology with special emphasis on the fundamentals of mammalian, especially human, life under normal, experimental, or pathological conditions. Students and department faculty will present and moderate the discussion of original research publications.
MICB	673	Students will participate in selected on-going research programs of members of the department faculty. May be repeated for credit.
MICB	689	Intensive study in field of interest, including theoretical and experimental work. May be repeated for credit
MICB	802	The medically-important protozoa, arthropods and helminths, together with their infections will be described during lectures and in the laboratory. Students will prepare several short reports and present a class seminar.
MICB	804	Integration of genetic, biomechanical, and physiologic approaches in the study of bacteria that cause disease. Presentations by instructor and students of selected papers and texts.
MICB	812	An introduction to the human toxicity and mode of action of fungal toxins including mycotoxins, hallucinogens, and poisonous mushrooms. This course will include field gathering and identification of edible and poisonous fungi.
MICB	816	Modern techniques and related theory in molecular and cellular immunology.
MICB	820	A series of lectures describing the classification, replication strategical and structural composition of the major families of animal viruses that infect humans.
MICB	821	An in-depth analysis of current research in virology including the reading and analysis of recently published papers on the replication and molecular biology of animal viruses, particularly viruses belonging to the Togaviridae and coronaviridae and the bacterial and plant viruses that are homologous to these two families of animal viruses.
MICB	822	A laboratory course in which the students will learn to grow tissue culture cells and grow, quantify, purify, and analyze animal viruses. The student will complete a research project on a problem concerning the molecular biology of animal virus replication.
MICB	823	The course consists of seminars and laboratory. There will be a review of aspects of fungal structure, taxonomy, genetics, physiology, and ecology. The student will be instructed in detail on contemporary work with fungal pathogens and on the application of genetic and immunological methods to study of the fungi. Laboratory work will include instruction on the identification and handling of fungi together with physiological exercises.



MICB	824	Research in aspects of immunology, genetics, taxonomy and/or physiology is the subject of a project which is conducted under supervision of the instructor. The results will be presented as a written report. The course may be combined with Advanced Mycology Co-Seminar (MICB653/853).
MICB	825	Review and discussion including the molecular basis for antigen recognition, the initiation and regulation of immune responses, and modern approaches to immunotherapy.
MICB	840	Review of important principles on which our current understanding of immunology is based. Consists of didactic lectures and student-led discussions of relevant research articles.
MICB	851	Weekly seminars by students, faculty and guests. Attendance and one formal presentation are required for credit per semester.
MICB	852	Examining the interrelationships among microorganisms in different environments, particularly animal and human. Faculty-led student discussion of selected articles.
MICB	853	The student will make an in-depth literature review of a selected topic concerning the fungi. Topics may include immunology, taxonomy, physiology, genetics, virology, or other areas by approval. Critical analysis of research methodology will be made in discussion with the instructor and the student will present his/her findings at a seminar or in a written report.
MICB	855	A weekly report on recent advances in immunobiology and microbial pathogenesis taken from original papers to give students an opportunity to find, assess, and report on important developments in the field. May be repeated for credit.
MICB	860	This seminar course covers different topics of particular interest in immunology and emphasizes the methods and logic of research and how to read and critically evaluate the research. May be repeated for credit.
MICB	861	A lecture and/or seminar course on topics of current interest in microbiology with special emphasis on the fundamentals of mammalian, especially human, life under normal, experimental, or pathological conditions. Students and department faculty will present and moderate the discussion of original research publications.
MICB	872	
MICB	873	Students will participate in selected on-going research programs of members of the department faculty. May be repeated for credit.
MICB	889	Intensive study in field of interest, including theoretical and experimental work. May be repeated for credit
MIME	1000	The mechanical and industrial engineering professions are discussed with emphasis on career opportunities. Orientation to the university campus, study skills and time management. Word processing, spreadsheets, e-mail and MATLAB programming are studied.



MIME	1010	Social protocol and ethics in industry are reviewed. Resume writing and interview skills are developed. Course assists in preparing the student for the co-op experience in industry.
MIME	1100	Techniques for visualization and representation of machine components using solid modeling and projection. Section views, orthographic projection, dimensioning and tolerancing. CAD techniques for solving vector problems.
MIME	1200	Concepts in engineering design. Working in teams to use these concepts on multiweek design projects. The emphasis is hands-on creative components, teamwork, and effective communication. Reverse engineering: students will dismantle common products to determine how they were designed.
MIME	1650	Engineering properties of materials, the effect of atomic bonding and crystalline structure on the mechanical properties of metals, ceramics and polymers. Common measurement, testing and comparison techniques to aid in selection of materials. Laboratory experiences include compressive and tensile strength testing, the effects of heat upon strength, hardness and micro-structure, the effects of combining certain materials in a composite to improve overall mechanical properties.
MIME	2000	How to write engineering laboratory reports. Statistical analysis of experimental data, uncertainty analysis, general characteristics of measurement systems, static and dynamic measurements, computer data acquisition, applications to thermal, mechanical and electrical systems.
MIME	2300	Kinematics of particles and rigid bodies. Thorough study of kinetics of particles and rigid bodies using Newton's laws of motion, work-energy methods, and impulse and momentum methods.
MIME	2600	The study of micro-economic and macro-economic theories. Methods of economic analysis, including the time value of money, are described. Economic decision criteria are used to select best alternatives with emphasis in engineering. Impact of economic decisions on various sectors of society is discussed.
MIME	2650	Manufacturing processes discussed include metal casting and forming such as forging, rolling, extrusion, stamping and drawing. Metal cutting processes such as turning, boring, drilling, milling, sawing and broaching are discussed. Polymer processes including injection molding and extrusion as well as ceramic part production are covered. Laboratory experiences include creating parts using many of these processes.
MIME	2920	A special project by the student to investigate or solve an acceptable problem in industrial or mechanical engineering. This course is primarily intended for students interested in mechanical, industrial or manufacturing engineering early in their undergraduate program. Instructor will specify scope of project to correspond to credit hours.



MIME	2980	A special topic at the undergraduate level in Mechanical, Industrial or Manufacturing Engineering to be offered as a course during a term by a faculty member. Credits will correspond to regular class meetings of one lecture hour per week per credit hour.
MIME	2990	An independent study by the student to investigate or solve an acceptable problem in industrial or mechanical engineering. This course is primarily intended for engineering students early or midway through their program of study. Instructor will specify scope of project to correspond to credit hours.
MIME	3300	Design and analysis of mechanisms, gear trains, planetary gear trains, cam-and-follower devices with application to mechanical systems. Motion, force, torque and vibration analysis. Balancing of rotating and reciprocating components in machines.
MIME	3310	Applications of mechanics of materials to analysis and design of mechanical components; introduction to fracture mechanics; applications of failure theories to design of machine elements subjected to static and cyclic loadings.
MIME	3320	Application of failure theories in static and fatigue loading to the design and analysis of mechanical elements including fasteners, power screws, welded joints, springs, bearings, gears, clutches, brakes and shafts.
MIME	3330	This laboratory course consists of experiments in strength of materials and stress analysis. Experiments include stress analysis of straight and curved beams, analysis of torsion and combined stresses in shafts, stress concentrations, and determination of mechanical properties from tension tests and fatigue tests.
MIME	3360	This laboratory course will be taken concurrently with Mechanical Vibration and consists of experiments to determine the natural frequency of one degree of freedom systems, free and forced vibrations of lumped parameter systems, mode shapes and natural frequencies of multidegree of freedom systems, and mode shapes and natural frequencies of torsional vibration systems.
MIME	3370	Modeling mechanical systems, mechanical elements, equations of motion for single-DOF and multi-DOF systems, linearization of equations of motion, free and forced response, electrical systems, frequency response, feedback control systems.
MIME	3380	Physical modeling and feedback principles are applied for control of mechanical systems. Transient response, root locus and frequency response principles are experimentally applied to the control of basic mechanical and electrical systems.
MIME	3390	This laboratory course consists of experiments in solid mechanics including mechanical testing, stress and deflection analysis, fatigue, stability and mechanical vibrations.



MIME	3400	Introduction to thermal sciences with an emphasis on the first and second law of thermodynamics. Topics include conservation of energy for closed and open systems, thermodynamic properties and cycles and entropy production.
MIME	3410	Review of open and closed systems in thermodynamics, the Carnot principle and cycle efficiency concepts. Application to gas and vapor power cycles and refrigeration cycles. Thermodynamic property relations, gaseous mixtures and combustion.
MIME	3420	This laboratory course is to be taken with Fluid Mechanics and Thermodynamics II to illustrate the concepts in those courses. Experiments include fluid statics, forces on a submerged surface, center of pressure, manometers, surface tension, flow visualization, Bernoulli's equation, control volume analysis, viscous flow in pipes, flow over bodies, turbomachinery, and thermodynamic cycles.
MIME	3430	Fluid mechanics for mechanical engineers. Topics include fluid statics and dynamics, equations of motion, dimensional analysis, boundary layer theory, flow in pipes, turbulence, fluid machinery, potential flow, CFD and aerodynamics.
MIME	3440	A comprehensive study of conduction, convection and radiation. Derivation and solution of differential equations related to heat transfer. Analysis of forced and free convection and heat exchangers. Dimensional analysis related to heat transfer.
MIME	3450	This laboratory course is to be taken with Heat Transfer to illustrate the concepts in this course. Experiments include Fourier's Law, cooling of fins/rods, determination of free and forced convection heat transfer coefficients, heat exchangers, Stefan Boltzmann Law, surface emission, surface reflection.
MIME	3470	Determination of transition Reynolds number, measurement of basic fluid properties, buoyancy, calibration of flow measuring devices, pipe flow, determination of drag coefficients, study of fluid flow by use of aerodynamic smoke tunnel, performance characteristics of pumps and fans, internal combustion engines, refrigeration cycles, solar collection, heat exchangers, determination of free and forced convection heat transfer coefficients.
MIME	3710	A study of the methods used to analyze, design and specify the human performance in operation/production systems for the purpose of improving productivity. Computerized predetermined time systems, robots and material handling equipment are utilized in the laboratory environment to design production systems.



MIME	3780	The development of the fundamentals required in an engineering and manufacturing environment where technical competency is considered standard and an appreciation of the human behavioral responses to managerial policies and rules is essential. This course covers the basics of planning organizing, leading and control from the subordinates' as well as the manager's perspective.
MIME	3940	Students in the Industrial and Mechanical Engineering programs are to enroll in this course during each of their approved Co-Op experiences.
MIME	3950	Approved co-op work experience beyond third required co-op experience. Course may be repeated.
MIME	4000	This course introduces the student to the areas of probability theory and statistical inferences. Topics include sample spaces, the concepts of random variables, probability distributions; functions of random variables, transformation of variables, moment generating functions, sampling and estimation theory; T, F and chi-square distribution.
MIME	4010	This course continues the student's development of statistical tools and techniques. Topics include test of hypothesis, nonparametric statistics, simple linear regression and correlation, multiple linear regression, analysis of variance and factorial experiments.
MIME	4020	Students learn fundamental statistical process control, including control charting and sampling using variables and attributes. Also covered are the fundamentals of implementing and managing a continuous quality improvement program.
MIME	4050	Characteristics of the human as an operator in human-machine systems. Human abilities to process information and perform physical tasks within the constraints of environmental conditions - temperature, illumination, noise, etc.
MIME	4060	Students apply machine tools and fabrication processes to optimize the manufacture of a product. Emphasis is on engineering design integrated with economic principles and fabricating methods.
MIME	4070	The study of machining processes using numerical control machine tools and controllers. Development of programs to machine parts on mills and lathes. Conversion of CAD models to programs through software interfaces.
MIME	4080	This course focuses on the mathematical methods of Operations Research and their applications in engineering. Topics include the optimal solution of deterministic and stochastic mathematical models, modeling process, linear programming, the simplex method, duality theory and sensitivity analysis.
MIME	4090	This course extends the mathematical methods of Operations Research I and their application. Topics include transportation and assignment problems, network analysis, PERT-CPM, Markov chains and queuing theory.



MIME	4100	Discrete and continuous simulation models are used to study queuing, networks, manufacturing and related engineering systems. Simulation languages and animation are covered. Statistical inference is used to draw conclusions and to identify the best system.
MIME	4110	The planning, scheduling and control of inventory and production. Critical path methods, PERT, applications of mathematical and computer methods.
MIME	4160	Planning, design, development, management and control of production and distribution systems to effectively distribute goods and services from the producer to the user. Aspects of facilities for manufacturing, material handling, packaging and distribution; concepts of group technology and computer-aided facility design and utilization of optimal plant design are covered.
MIME	4200	Students work in teams using knowledge gained in earlier courses to solve real design, manufacturing and operational problems relevant to industry. Oral and written communications with participating companies as well as teamwork are stressed. Other topics include patents, product liability, safety, ethics and design for manufacturing.
MIME	4210	Analytic mechanics are applied to automotive structures. This includes the forces, time dependent motions including bounce and pitch modes, suspension kinematics, limitations imposed by the human body, and how the automotive structure must be designed to accommodate these.
MIME	4230	The study of human movement including muscle mechanics, kinematics, kinetics and energetics of human gait, anthropometry and application to bioengineering and orthopedics.
MIME	4270	Principles of CAD systems and their relationship to the design process. Topics include CAD hardware as well as geometric modeling of curves, surfaces and solids.
MIME	4280	An introduction to the basic concepts of the finite element method. Topics include engineering analysis of continuous systems, numerical solutions of boundary value problems, method of weighted residuals and the principle of minimum potential energy, applications of commercially available finite element programs.
MIME	4300	Theory of elasticity, plane stress and plane problems, yield criteria and failure theories, bending of beams, energy methods, curved flexural members, unsymmetric bending, torsion, shear center and axisymmetrically loaded members.
MIME	4310	Review of elasticity of anisotropic solids, determination of mechanical properties of fiber-reinforced lamina, analysis and performance of laminated composites.
MIME	4320	Fatigue design methods; fatigue fracture mechanisms; cyclic deformation behavior and material cyclic properties; stress-based, and fracture mechanics-based methodologies to fatigue life prediction of smooth and notched members subjected to constant or variable amplitude loadings.



MIME	4330	An introduction to the science and practice related to the musculoskeletal problems of work. This course includes some of the methodologies that define occupational biomechanics including anthropometry, work-capacity evaluation, bioinstrumentation, biomechanical models, and work classification and time prediction.
MIME	4340	Application of experimental techniques to stress analysis, comparison of experimental and analytical methods, theory of electrical resistance gages, methods of photoelasticity including photostress, data acquisition systems and their use.
MIME	4410	[3 hours] This course focuses on the technical aspects of sustainable energy technologies, such as wind, solar, biomass, ocean waves/tides, geothermal, and hydropower; it also covers issues and applications related to storage, transportation, distribution, industrial usage, and buildings. The course investigates the progress, challenges, and opportunities of each technology to be both technically feasible and economically viable.
MIME	4510	Theory of energy transfer between fluid and rotor in turbo machines. Design of turbo machine components. Applications to pumps, compressors and turbines.
MIME	4520	Control of the thermal environment within enclosed spaces including psychometric properties of air heating and cooling, loads and factors affecting human comfort. Analysis of basic heating and refrigeration systems, heat pumps, heaters, utilization of solar energy, humidifiers, energy conservation and controls for systems.
MIME	4530	Study of Carnot, Otto, Diesel and Brayton Cycles, performance characteristics, combustion engines and construction details of internal combustion engines. Analysis of problems associated with carburetion, fuel injection, combustion, cooling, supercharging, emissions and emission control.
MIME	4540	Mechanics and thermodynamics of jet propulsion. Fundamentals of high-speed flow. Analysis of gas turbine engine components: diffuser, compressor, turbine and nozzle. Investigation of characteristics of ramjets, turbojets, turbofans and turboprops. Introduction to solid and liquid rockets.
MIME	4550	Fundamentals of aerodynamics, potential flow theory, aerodynamic forces and moments, introduction to numerical analysis, application to internal flows, theory of lift for infinite and finite wings, induced drag.
MIME	4560	Analysis of compressible flow phenomena including shock and detonation waves. Internal flow with friction and heat addition. Analysis and application to supersonic airfoil theory, inlet nacelles, nozzles to generate supersonic thrust and jet engine combustors.



MIME	4580	Design of thermal systems, analysis and design of systems involving energy transfer due to fluid flow and heat transfer. The analogy between fluid mechanics, heat transfer and electrical circuits will be developed and used. Methods for determining on-design and off-design performance and estimating the performance of existing designs.
MIME	4590	Development of the generalized Reynolds equation. Study of hydrodynamic and hydrostatic forms of lubrication. Slider and journal bearing problems. Analysis of cavitation. Gas bearings. Stability and thermal effects. Bearing design considerations. Analysis of seals. Effects of wear.
MIME	4640	An introduction to the basic theory of stochastic processes, Markov chains, Markov processes, renewal theory, ergodicity, stationarity, applications in queuing, inventory and reliability.
MIME	4690	Reliability of components and multicomponent systems. Static and dynamic reliability models for both independent and dependent failures. Effects of hot and cold redundancy. Reliability testing consideration and renewal theory.
MIME	4730	Mathematical methods used in forecasting and time series analysis. Brown's exponential smoothing, Winter's seasonal forecasting and Box-Jenkins methods are introduced and used in forecasting. Applications include forecasting demand to aid production planning, inventory control, short and long range planning.
MIME	4780	Decision analysis of economic and multi-objective projects under conditions of risk and uncertainty. Use of wealth building approaches, decision trees, statistical decision analysis and decision techniques for capital investment and multiple attribute problems.
MIME	4800	Design considerations for economic manufacturing including overview of design process, design for assembly, design for material handling, design for recyclability and design of experiments including Taguchi Analysis.
MIME	4810	This course analyzes the major manufacturing material removal processes including machining, flame cutting, electro-discharge machining, etc. Analysis of tool wear, mechanics, cutting fluids, chip control and thermal effects are discussed.
MIME	4920	A special project by the student to investigate or solve an acceptable problem in industrial or mechanical engineering. This course is primarily intended for students interested in mechanical, industrial or manufacturing engineering nearing completion of their undergraduate degree. Instructor will specify scope of project to correspond to credit hours.
MIME	4980	A special topic at the undergraduate level in Mechanical, Industrial or Manufacturing Engineering to be offered as a course during a term by a faculty member. This is intended for students nearing graduation. Credits will correspond to regular class meeting of one lecture hour per week per credit hour.



MIME	4990	An independent study by the student to investigate or solve an acceptable problem in industrial or mechanical engineering. This course is primarily intended for engineering students nearing graduation. Instructor will specify scope of study to correspond to credit hours.
MIME	5010	This course continues the students' development of statistical tools and techniques. Topics include test of hypothesis, nonparametric statistics, simple linear regression and correlation, multiple linear regression, analysis of variance and factorial experiments. Not available for credit to IE students.
MIME	5020	Students learn fundamental statistical process control including control charting and sampling using variables and attributes. Also covered are the fundamentals of implementing and managing a continuous quality improvement program.
MIME	5050	Characteristics of the human as an operator in human-machine systems. Human abilities to process information and perform physical tasks within the constraints of environmental conditions - temperature, illumination, noise, etc. Lecture and lab experiences.
MIME	5060	Students integrate machine tools and fabrication processes to optimize the manufacture of a product. Emphasis is on engineering design integrated with economic principles and fabricating methods.
MIME	5070	The study of machining processes using numerical control machine tools and controllers. Development of programs to machine parts on mills and lathes. Conversion of CAD models to programs through software interfaces.
MIME	5080	This course focuses on the mathematical methods of Operations Research and their applications in engineering. Topics include the optimal solution of deterministic and stochastic mathematical models, modeling process, linear programming, the simplex method, duality theory and sensitivity analysis.
MIME	5090	This course extends the mathematical methods of Operations Research I and their application. Topics include transportation and assignment problems, network analysis, PERT-CPM, Markov chains and queuing theory.
MIME	5100	Discrete and continuous simulation models are used to study queuing networks, manufacturing and related engineering systems. Simulation languages and animation are covered. Statistical inference is used to draw conclusions and to identify the best system.
MIME	5110	The planning, scheduling and control of inventory and production. Critical path methods, PERT, applications of mathematical and computer methods.

MIME	5160	Planning, design, development, management and control of production and distribution systems to effectively distribute goods and services from the producer to the user. Aspects of facilities for manufacturing, material handling, packaging and distribution; concepts of group technology and computer-aided facility design and utilization of optimal plant design are covered.
MIME	5210	Analytic mechanics are applied to automotive structures. This includes the forces, time dependent motions including bounce and pitch modes, suspension kinematics, limitations imposed by the human body, and how the automotive structure must be designed to accommodate these.
MIME	5230	The study of human movement including muscle mechanics, kinematics, kinetics and energetics of human gait, anthropometry and application to bioengineering and orthopedics.
MIME	5280	Numerical solutions of boundary value problems, variational calculus and the principle of minimum potential energy, finite element formulation of two dimensional field and elasticity problems, axisymmetric elements, finite element programming.
MIME	5300	Theory of elasticity, plane stress and plane strain problems, yield criteria and failure theories, bending of beams, energy methods, curved flexural members, unsymmetric bending, torsion, shear center and axisymmetrically loaded members.
MIME	5310	Review of elasticity of anisotropic solids, determination of mechanical properties of fiber-reinforced lamina, analysis and performance of laminated composites.
MIME	5320	Fatigue design methods; fatigue mechanisms; cyclic deformation behavior and material cyclic properties; stress-based and fracture mechanics-based methodologies to fatigue life prediction of smooth and notched members subjected to constant or variable amplitude loadings.
MIME	5330	Methodologies that define musculoskeletal problems of work including anthropometry, work capacity evaluation, bioinstrumentation, biomechanical models, and work classification and time prediction. Some applications in occupational biomechanics are presented including manual material handling.
MIME	5340	Application of experimental techniques to stress analysis, comparison of experimental and analytical methods, theory of electrical resistance gages, methods of photoelasticity including photostress, data acquisition systems and their use.
MIME	5510	Theory of energy transfer between fluid and rotor in turbo machines. Design of turbo machine components. Applications to pumps, compressors and turbines.

MIME	5520	Control of the thermal environment within enclosed spaces including psychometric properties of air heating and cooling, loads and factors affecting human comfort. Analysis of basic heating and refrigeration systems, heat pumps, heaters, utilization of solar energy, humidifiers, energy conservation and controls for systems.
MIME	5530	Study of Carnot, Otto, Diesel and Brayton Cycles, performance characteristics, combustion engines and construction details of internal combustion engines. Analysis of problems associated with carburetion, fuel injection, combustion, cooling, supercharging, emissions and emission controls.
MIME	5540	Mechanics and thermodynamics of jet propulsion. Fundamentals of high-speed flow. Analysis of gas turbine engine components: diffuser, compressor, turbine and nozzle. Investigation of characteristics of ramjets, turbojets, turbofans and turboprops. Introduction to solid and liquid rockets.
MIME	5550	Fundamentals of aerodynamics, potential flow theory, aerodynamic forces and moments, introduction to numerical analysis, application to internal flows, theory of lift for infinite and finite wings, induced drag.
MIME	5560	Analysis of compressible flow phenomena including shock and detonation waves. Internal flow with friction and heat addition. Analysis and application to supersonic airfoil theory, inlet nacelles, nozzles to generate supersonic thrust and jet engine combustors.
MIME	5580	Design of thermal systems, analysis and design of systems involving energy transfer due to fluid flow and heat transfer. The analogy between fluid mechanics, heat transfer and electrical circuits will be developed and used. Methods for determining on-design and off-design performance and estimating the performance of existing designs.
MIME	5590	Development of the generalized Reynolds equation. Study of hydrodynamic and hydrostatic forms of lubrication. Slider and journal bearing problems. Analysis of cavitation. Gas bearings. Stability and thermal effects. Bearing design considerations. Analysis of seals. Effects of wear.
MIME	5640	An introduction to the basic theory of stochastic processes, Markov chains, Markov processes, renewal theory, ergodicity, stationarity, applications in queuing, inventory and reliability.
MIME	5680	
MIME	5690	Reliability of components and multicomponent systems. Static and dynamic reliability models for both independent and dependent failures. Effects of hot and cold redundancy. Reliability testing consideration and renewal theory.
MIME	5730	Mathematical methods used in forecasting and time series analysis. Brown's exponential smoothing, Winter's seasonal forecasting and Box-Jenkins methods are introduced and used in forecasting. Applications include forecasting demand to aid production planning, inventory control, short and long range planning.



MIME	5750	A study of the methods used to analyze, design and specify the human performance in operation/production systems for the purpose of improving productivity. Computerized predetermined time systems, robots and material handling equipment are utilized in the laboratory environment to design production systems.
MIME	5780	Decision analysis of economic and multi-objective projects under conditions of risk and uncertainty. Use of wealth building approaches, decision trees, statistical decision analysis, and decision techniques for capital investment and multiple attribute problems.
MIME	5800	Design considerations for economic manufacturing including overview of design process, design for assembly, design for material handling, design for recyclability and design of experiments including Taguchi Analysis.
MIME	5810	This course analyzes the major manufacturing material removal processes including machining, flame cutting, electro-discharge machining, etc. Analysis of tool wear, mechanics, cutting fluids, chip control and thermal effects are discussed.
MIME	5920	A special project by the student to investigate or solve an acceptable problem in industrial or mechanical engineering. This course is primarily intended for graduate students interested in mechanical, industrial or manufacturing engineering.
MIME	5980	A special topic at the graduate level in Mechanical, Industrial or Manufacturing Engineering to be offered as a course during a term by a faculty member.
MIME	6000	An advanced course in mathematical analysis for engineers. Topics include matrix methods, eigenvalues and eigenvectors, systems of equations, series representations including FFT, ordinary differential equations and Bessel functions. This course will make use of computer-aided-mathematics techniques and include engineering applications.
MIME	6100	Partial differential equations for engineering applications including elliptic, parabolic, hyperbolic differential and non-linear systems of equations. Solution procedures include separation of variables, Laplace transform methods, solutions using complex analysis including conformal mapping and numerical methods.
MIME	6120	Sensor selection, data acquisition system selection, evaluation of system response, digital sampling theory, statistical data analysis, space-time correlations, spectral analysis, analog and digital signal conditioning, and static and dynamic measurements.
MIME	6150	An advanced course in mathematical analysis for engineers. Topics include real and complex solutions to polynomial and transcendental equations, approximate interpolation and integration procedures, matrix methods, solutions of systems of nonlinear equations, ordinary and partial differential equations.

MIME	6180	Current design and methods in micromachining mechanical and electrical components on silicon wafers with an emphasis on mechanical as well as the LIGA Microcasting techniques. Both prototyping and mass production practices will be covered.
MIME	6190	Design, analysis, and synthesis of integrated electromechanical systems. Transducer models, signal conditioning and power amplification, and analog-to-digital interfaces. Topics will focus on mechanical engineering applications of process control and data acquisition.
MIME	6200	Study of dynamics of a system of particles and rigid bodies using Newtonian and Lagrangian Mechanics including multi-body systems. Principles of nonlinear system dynamics and stability.
MIME	6210	Advanced concepts in normal mode theory for discrete systems and vibration of continuous systems such as bars, beams and plates.
MIME	6230	Theory and implementation of contemporary parametric sculptured surface modeling technology. Non-uniform rational B-spline [NURBS] curves and surfaces. Fundamental computational algorithms, construction techniques and advanced modeling topics.
MIME	6300	A unified approach to the study of the mechanics of continuous media; analysis of tensors; kinematics of material media; analysis of deformation and stress; the mathematical statement of the laws of conservation of mass, momentum and energy; formulation of the mechanical constitutive equations for various classes of solids and fluids.
MIME	6320	Formulation of isoperimetric elements, coordinate transformation, solids of revolution, bending of flat plates, general shell elements, dynamics, vibrations and time dependent problems, geometric and material nonlinearity.
MIME	6350	Review of tensor analysis, analysis of stress and strain, three dimensional equations of elasticity, plane problems in rectangular Cartesian and polar coordinates.
MIME	6360	Review of elastic stress-strain relations, analysis of strain rate and concept of stress rate, criteria of yielding and rules of plastic flow, elastoplastic bending and torsion, theory of slip line fields, mechanics of metal forming processes.
MIME	6370	Principles of fracture mechanics and its applications to the prevention of fractures in components and structures, linear elastic and elastic-plastic fracture mechanics, fracture mechanisms, fracture toughness, applications to fatigue crack propagation.
MIME	6380	
MIME	6410	An advanced course in viscous fluid flow. Topics include relationships between boundary layer and viscous flow, laws of conservation of mass and momentum, exact solutions, similarity solutions, creeping flow, boundary layer concept, stability of laminar flows, small-disturbance stability, linearized stability of parallel flows and transition to turbulence.



MIME	6420	Theoretical analysis of problems in steady-state and transient heat conduction with constant and variable material properties, heat-source systems, Laplace transforms techniques, numerical and computer solutions, analogies.
MIME	6430	Second law of thermodynamics based on statistical mechanics. Prediction of properties from microscopic data based on statistical mechanics. General thermodynamic relations to include Maxwell relations and the Clapeyron equation, prediction of unmeasurable property changes from equations of state for condensed phases and real gases. Thermodynamic equilibrium of chemical reacting species. Single and multiphase equilibria in ideal and real solutions.
MIME	6440	Properties of various partial differential equations. Basics of finite difference methods. Governing equations of fluid mechanics and heat transfer. Numerical solution of inviscid flow equations. Methods for solving Euler equations. Treatment of shock waves. Applications to simple compressible flows. Numerical methods for boundary-layer type equations.
MIME	6450	Digital data acquisition and analysis; limitations and interpretation of physical measurements; sources of errors and difficulties in experimental technique; advanced experimental methods for static and dynamic measurements in thermal systems and fluid flow.
MIME	6510	This course covers laminar and turbulent boundary layer theory. Topics include boundary layer equations, separation, similarity, 2-D and 3D, control, integral methods, turbulence, stability, transition and heat transfer.
MIME	6520	Study of convection processes involving the transfer of heat, mass and momentum. Boundary layer theory. Analogy between heat and momentum transfer. Condensation and boiling, two-phase flow, diffusion, mass transfer between phases.
MIME	6540	Finite difference procedures applied to the solution of reduced forms of the Navier-Stokes equations. Numerical solution of compressible and incompressible forms of the Navier-Stokes equations for laminar and turbulent flows. Fundamental turbulence models. Solution enhancement methods including multi-grid schemes and the use of preconditioning. Grid generation procedures using algebraic and differential equation methods. Structured versus unstructured grid methods. Grid adaptation procedures. Computer program applications.
MIME	6550	Study of the nature, origin and dynamics of turbulence. Governing equations of turbulent flows. Internal and external flows. Aspects of free shear flow, turbulent boundary layers and statistical descriptions are presented. Numerical and experimental methods applied to turbulent flow.



MIME	6560	Physics and chemistry of combustion processes; chemical thermodynamics; chemical kinetics; heat and mass transfer in the combustion of gas, liquid and solid fuels; flame speed determination; applications to combustion efficiency, pollutant formation and combustor design.
MIME	6630	Techniques of statistical analysis which are applicable in a modern day manufacturing environment. Course is meant to provide the student having little or no background in the statistical areas with a sufficiently disciplined course to use statistical methods.
MIME	6640	Mathematical models of inventory and production systems. Consideration of static and dynamic problems under the influence of deterministic probabilistic demand. Demand forecasting using Box-Jenkins models of adaptive forecasting. Consideration of echelon inventory problems.
MIME	6670	Single channel and multichannel queuing problems with Poisson arrivals and negative exponential service times. Single and multichannel systems with general service disciplines. Priority queues, busy period and waiting time distributions.
MIME	6720	Design and analysis of experiments including analysis of variance and regression analysis. Factorial, blocked and nested models are considered together with appropriate estimation and post ANOVA tests.
MIME	6740	A consideration of general systems optimization techniques: classical calculus methods, Lagrange multipliers, linear and nonlinear programming, penalty functions, search methods and dynamic programming. Applications to design and manufacturing problems.
MIME	6780	Classical analysis of the theories of organization and management applied to engineering and high technology management.
MIME	6790	Measures of effectiveness for a human-machine system. Design of the system to effect the optimum operation. Emphasis on quantitative models for studying information processing, control and decision making aspects of human performance in human-machine system.
MIME	6800	Advanced studies of traditional manufacturing processes and advanced manufacturing systems with emphasis on manufacturing engineering processes and equipment, machine tools, process planning, design and operation of manufacturing systems.
MIME	6810	This course is comprised of two parts: joining processes and assembly systems. Commonly used joining methods, such as welding, mechanical fastening and adhesion are discussed. General principles of assembly are presented with extensive use of automobile assembly as an example.
MIME	6900	Research credit hours toward the Master of Science degree in Mechanical, Industrial and Manufacturing Engineering Department. Students are to use the section number of their thesis/dissertation adviser.



MIME	6920	A special project by the student to investigate or solve an acceptable problem in industrial or mechanical engineering. This course is primarily intended for graduate students interested in mechanical, industrial or manufacturing engineering.
MIME	6930	This is a seminar for graduate students in Mechanical, Industrial and Manufacturing Engineering. Topics include orientation to the graduate program and special topics by speakers from industry and other universities. Credit does not apply toward a graduate degree.
MIME	6960	Master's thesis research.
MIME	6980	A special topic at the graduate level in Mechanical, Industrial or Manufacturing Engineering to be offered as a course during a term by a faculty member.
MIME	6990	An independent study by the student to investigate or solve an acceptable problem in industrial or mechanical engineering. This course is primarily intended for graduate students in mechanical, industrial or manufacturing engineering.
MIME	8000	An advanced course in mathematical analysis for engineers. Topics include matrix methods, eigenvalues and eigenvectors, systems of equations, series representations including FFT, ordinary differential equations and Bessel functions. This course will make use of computer-aided-mathematics techniques and include engineering applications.
MIME	8100	Partial differential equations for engineering applications including elliptic, parabolic, hyperbolic differential and non-linear systems of equations. Solution procedures include separation of variables, Laplace transform methods, solutions using complex analysis including conformal mapping and numerical methods.
MIME	8120	Sensor selection, data acquisition system selection, evaluation of system response, digital sampling theory, statistical data analysis, space-time correlations, spectral analysis, analog and digital signal conditioning, and static and dynamic measurements.
MIME	8150	An advanced course in mathematical analysis for engineers. Topics include real and complex solutions to polynomial and transcendental equations, approximate interpolation and integration procedures, matrix methods, solutions of systems of nonlinear equations, ordinary and partial differential equations.
MIME	8180	Current design and methods in micromachining mechanical and electrical components on silicon wafers with an emphasis on mechanical as well as the LIGA Microcasting techniques. Both prototyping and mass production practices will be covered.
MIME	8190	Design, analysis and synthesis of integrated electromechanical systems. Transducer models, signal conditioning and power amplification, and analog-to-digital interfaces. Topics will focus on mechanical engineering applications of process control and data acquisition.

MIME	8200	Study of dynamics of a system of particles and rigid bodies using Newtonian and Lagrangian Mechanics including multi-body systems. Principles of nonlinear system dynamics and stability.
MIME	8210	Advanced concepts in normal mode theory for discrete systems and vibration of continuous systems such as bars, beams and plates.
MIME	8230	Theory and implementation of contemporary parametric sculptured surface modeling technology. Non-uniform rational B-spline [NURBS] curves and surfaces. Fundamental computational algorithms, construction techniques and advanced modeling topics.
MIME	8300	A unified approach to the study of the mechanics of continuous media; analysis of tensors; kinematics of material media; analysis of deformation and stress; the mathematical statement of the laws of conservation of mass, momentum and energy; formulation of the mechanical constitutive equations for various classes of solids and fluids.
MIME	8320	Formulation of isoperimetric elements, coordinate transformation, solids of revolution, bending of flat plates, general shell elements, dynamics, vibrations, and time dependent problems, geometric and material nonlinearity.
MIME	8350	Review of tensor analysis, analysis of stress and strain, three dimensional equations of elasticity, plane problems in rectangular Cartesian and polar coordinates.
MIME	8360	Review of elastic stress-strain relations, analysis of strain rate and concept of stress rate, criteria of yielding and rules of plastic flow, elastoplastic bending and torsion, theory of slipline fields, mechanics of metal forming processes.
MIME	8370	Principles of fracture mechanics and its applications to the prevention of fractures in components and structures, linear elastic and elastic-plastic fracture mechanics, fracture mechanisms, fracture toughness, applications to fatigue crack propagation.
MIME	8380	
MIME	8410	An advanced course in viscous fluid flow. Topics include relationships between boundary layer and viscous flow, laws of conservation of mass and momentum, exact solutions, similarity solutions, creeping flow, boundary layer concept, stability of laminar flows, small-disturbance stability, linearized stability of parallel flows and transition to turbulence.
MIME	8420	Theoretical analysis of problems in steady-state and transient heat conduction with constant and variable material properties, heat-source systems, Laplace transforms techniques, numerical and computer solutions, analogies.



MIME	8430	Second law of thermodynamics based on statistical mechanics. Prediction of properties from microscopic data based on statistical mechanics. General thermodynamic relations to include Maxwell relations and the Clapeyron equation, prediction of unmeasurable property changes from equations of state for condensed phases and real gases. Thermodynamic equilibrium of chemical reacting species. Single and multiphase equilibria in ideal and real solutions.
MIME	8440	Properties of various partial differential equations. Basics of finite difference methods. Governing equations of fluid mechanics and heat transfer. Numerical solution of inviscid flow equations. Methods for solving Euler equations. Treatment of shock waves. Applications to simple compressible flows. Numerical methods for boundary-layer type equations.
MIME	8450	Digital data acquisition and analysis; limitations and interpretation of physical measurements; sources of errors and difficulties in experimental technique; advanced experimental methods for static and dynamic measurements in thermal systems and fluid flow.
MIME	8510	This course covers laminar and turbulent boundary layer theory. Topics include boundary layer equations, separation, similarity, 2-D and 3D, control, integral methods, turbulence, stability, transition, and heat transfer.
MIME	8520	Study of convection processes involving the transfer of heat, mass and momentum. Boundary layer theory. Analogy between heat and momentum transfer. Condensation and boiling, two-phase flow, diffusion, mass transfer between phases.
MIME	8540	Finite difference procedures applied to the solution of reduced forms of the Navier-Stokes equations. Numerical solution of compressible and incompressible forms of the Navier-Stokes equations for laminar and turbulent flows. Fundamental turbulence models. Solution enhancement methods including multi-grid schemes and the use of preconditioning. Grid generation procedures using algebraic and differential equation methods. Structured versus unstructured grid methods. Grid adaptation procedures. Computer program applications.
MIME	8550	Study of the nature, origin and dynamics of turbulence. Governing equations of turbulent flows. Internal and external flows. Aspects of free shear flow, turbulent boundary layers and statistical descriptions are presented. Numerical and experimental methods applied to turbulent flow.
MIME	8560	Physics and chemistry of combustion processes; chemical thermodynamics; chemical kinetics; heat and mass transfer in the combustion of gas, liquid and solid fuels; flame speed determination; applications to combustion efficiency, pollutant formation and combustor design.

MIME	8630	Techniques of statistical analysis which are applicable in a modern day manufacturing environment. Course is meant to provide the student having little or no background in the statistical areas with a sufficiently disciplined course to use statistical methods.
MIME	8640	Mathematical models of inventory and production systems. Consideration of static and dynamic problems under the influence of deterministic probabilistic demand. Demand forecasting using Box-Jenkins models of adaptive forecasting. Consideration of echelon inventory problems.
MIME	8670	Single channel and multichannel queuing problems with Poisson arrivals and negative exponential service times. Single and multichannel systems with general service disciplines. Priority queues, busy period and waiting time distributions.
MIME	8720	Design and analysis of experiments including analysis of variance and regression analysis. Factorial, blocked and nested models are considered together with appropriate estimation and post ANOVA tests.
MIME	8740	A consideration of general systems optimization techniques: classical calculus methods, Lagrange multipliers, linear and nonlinear programming, penalty functions, search methods and dynamic programming. Applications to design and manufacturing problems.
MIME	8780	Classical analysis of the theories of organization and management applied to engineering and high technology management.
MIME	8790	Measures of effectiveness for a human-machine system. Design of the system to effect the optimum operation. Emphasis on quantitative models for studying information processing, control and decision making aspects of human performance in human-machine system.
MIME	8800	Advanced studies of traditional manufacturing processes and advanced manufacturing systems with emphasis on manufacturing engineering processes and equipment, machine tools, process planning, design and operation of manufacturing systems.
MIME	8810	This course is comprised of two parts: joining processes and assembly systems. Commonly used joining methods, such as welding, mechanical fastening and adhesion are discussed. General principles of assembly are presented with extensive use of automobile assembly as an example.
MIME	8900	Research credit hours toward the doctoral degree for students in the Mechanical, Industrial and Manufacturing Engineering Department. Students are to use the section number of their dissertation adviser.
MIME	8920	A special project by the student to investigate or solve an acceptable problem in industrial or mechanical engineering. This course is primarily intended for graduate students interested in mechanical, industrial or manufacturing engineering.
MIME	8930	This is a seminar for graduate students in Mechanical, Industrial and Manufacturing Engineering. Topics include orientation to the graduate program and special topics by speakers from industry and other universities. Credit does not apply toward a graduate degree.



MIME	8960	Doctoral dissertation research credit hours for students in the Mechanical, Industrial and Manufacturing Engineering Department. Students are to use the section number of their dissertation adviser.
MIME	8980	A special topic at the graduate level in Mechanical, Industrial or Manufacturing Engineering to be offered as a course during a term by a faculty member.
MIME	8990	An independent study by the student to investigate or solve an acceptable problem in industrial or mechanical engineering. This course is primarily intended for graduate students in mechanical, industrial or manufacturing engineering.
MKTG	3130	Examination of the role of logistics and supply chain management in creating value and as sources of competitive advantage. Analysis of transportation, warehousing, inventory management and materials management.
MKTG	3140	Course focuses on developing an international marketing plan. Global market screening, selection and development of a plan of action are explored in hands-on learning experience.
MKTG	3170	An introduction to marketing for non-business students. Focus is on planning and executing marketing programs in not-for-profit organizations. No credit for CBA students.
MKTG	3200	A macro approach to marketing utilizing readings and cases on topics related to the interface between managerial marketing and external socio-economic systems.
MKTG	3260	A study on how firms can capitalize on the Internet to conduct business internationally, assess e-commerce readiness in key regions, localize Web presence and contents and build business service infrastructures.
MKTG	3280	A study of Internet-based marketing management, including market opportunity and environmental assessment, Web presence and value propositions, and special issues concerning marketing mix design and implementation.
MKTG	3690	Focuses on communication tools in marketing: advertising, sales promotion, specialty advertising, packaging, publicity, direct marketing and personal selling. Attention to managerial decision making, legal and ethical aspects of promotion.
MKTG	3850	Utilization of the behavioral sciences for the analysis of both consumer and business markets. Designing marketing programs to build strong seller-buyer relationships.
MKTG	3870	Project-oriented course providing hands-on experience in advertising campaign design. Emphasis on strategy and application involved in advertising.
MKTG	3880	This course addresses the fundamentals of marketing information system, marketing research and data-based marketing. Emphasis is on searching, developing and providing customer information for marketing decision making.



MKTG	3910	Techniques used and problems encountered in direct marketing. Analysis of the various marketing strategies, with an emphasis on promotions and media employed. Analysis of the social issues of direct marketing is included.
MKTG	4120	Channel structure and institutions, logistics, transportation, channel design, channel operations, behavioral dimensions such as leadership, conflict, cooperation and control.
MKTG	4130	This capstone course, which focuses on small and global firms, is designed to sharpen students' integrative decision-making abilities through case analysis and a simulation or project-based analysis experience.
MKTG	4220	Physical supply, logistics and transportation functions are discussed within the context of a global marketplace, global business operations and international trade.
MKTG	4520	A course designed for students interested in market analysis and marketing research who wish further training in market analysis tools, research methodology, data analysis and analytical decision making models.
MKTG	4540	Analysis of business markets and development of programs to market industrial business-to-business products/services.
MKTG	4570	Developing, analyzing, organizing, planning, implementing and controlling the organization's product and pricing policies. Both existing and new products will be considered.
MKTG	4940	Receive practical business experience working in an organization.
MKTG	4980	Analysis of current issues in Marketing, International Business, or Business Economics.
MKTG	4990	Independent study in marketing, international business, or business economics. Student must submit a proposal to be approved by a department faculty member prior to enrolling in the course.
MKTG	5170	An introduction to marketing for non-business students. Focus is on planning and executing marketing programs in not-for-profit organizations. No credit for CBA students.
MKTG	5410	Examines the areas of marketing management, marketing functions and institutions, and the role of marketing in the organization. The course explores the relationship between marketing and the environment.
MKTG	6080	Physical supply, logistics, transportation, sourcing and negotiating within a global context are evaluated. Impact of global business operations and world trade are discussed.
MKTG	6120	This course focuses on the application of marketing concepts and techniques to marketing problems. Emphasis is on decision-making using cases, simulation and computer analyses.
MKTG	6140	Course will examine the theoretical and managerial development of relationship marketing as an organizational strategy to build and maintain profitable customer relationships.



MKTG	6150	Course will study how marketing managers can analyze data collected from customers to assist organizations in making appropriate decisions and target marketing resources to serve the needs of customers and increase return for the organization.
MKTG	6200	Interdisciplinary (economics, psychology, geography, marketing, marketing channel) approach to analyzing and understanding markets (market structure). Product, pricing, promotion and channel management decisions taught as a function of market structure.
MKTG	6210	Explores behavioral dimensions of buyers focusing on psychological processes, individual differences, interpersonal influences, environmental influences, and incorporating these individual, group, and contextual influences into strategic marketing decisions.
MKTG	6220	Course focuses on the integration of marketing communication tools in achieving desired changes in consumer attitudes and behaviors. Organizations realize the benefit of integrating their marketing communication efforts to achieve synergistic and superior results.
MKTG	6230	Course will examine how marketing processes can leverage e-commerce opportunities to create greater customer value in relational and transactional exchanges, and to build virtual value networks spanning functional, organizational and geographical boundaries.
MKTG	6240	The roles and functions of the business-to-business sales manager will be examined, including using market and competitive analysis in sales planning and strategy development, as well as sales management operations.
MKTG	6250	The roles and functions of the business-to-business salesperson will be examined in managing accounts considered strategic to meeting organizational goals. Students will partner with area businesses to play the role of the strategic account manager by identifying, selecting, selling to and building relationships.
MKTG	6290	Nature, structure, and managerial problems and processes in the field of business-to-business marketing.
MKTG	6310	Course will provide an understanding of how new products and services are designed and commercialized, and will take a strategic and managerial perspective in defining how to best plan, lead, and develop the processes of managing innovation and new products/services.
MKTG	6320	Course will address the strategic importance of branding and will focus on the design and implementation of marketing Programs and activities to build, measure, and manage brand equity.
MKTG	6330	Course focuses on the managerial applications of marketing research techniques including the design, analysis, and interpretation of marketing research studies, and is designed to help managers recognize the role of information gathering and analysis in making better decisions.



MKTG	6400	This course focuses on identifying and servicing foreign market opportunities. Skills in research, strategic and tactical analysis, and adaptation are developed.
MKTG	6960	Master's thesis. Requires student to submit for approval a written proposal. Faculty member must approve proposal and organize thesis committee to supervise project.
MKTG	6980	Current issues/developments in marketing, international business, or business economics are discussed.
MKTG	6990	Independent study in marketing, international business, or business economics. A proposal for the independent study must be approved by faculty member and department chair.
MKTG	7410	Examines the areas of marketing management, marketing functions and institutions, and the role of marketing in the organization. The course explores the relationship between marketing and the environment.
MKTG	8140	Course will examine the theoretical and managerial development of relationship marketing as an organizational strategy to build and maintain profitable customer relationships.
MKTG	8150	Course will study how marketing managers can analyze data collected from customers to assist organizations in making appropriate decisions and target marketing resources to serve the needs of customers and increase return for the organization.
MKTG	8220	Course focuses on the integration of marketing communication tools in achieving desired changes in consumer attitudes and behaviors. Organizations realize the benefit of integrating their marketing communication efforts to achieve synergistic and superior results.
MKTG	8230	Course will examine how marketing processes can leverage e-commerce opportunities to create greater customer value in relational and transactional exchanges, and to build virtual value networks spanning functional, organizational and geographical boundaries.
MKTG	8240	The roles and functions of the business-to-business sales manager will be examined, including using market and competitive analysis in sales planning and strategy development, as well as sales management operations.
MKTG	8250	The roles and functions of the business-to-business salesperson will be examined in managing accounts considered strategic to meeting organizational goals. Students will partner with area businesses to play the role of the strategic account manager by identifying, selecting, selling to and building relationships.
MKTG	8290	Nature, structure, and managerial problems and processes in the field of business-to-business marketing.
MKTG	8310	Course will provide an understanding of how new products and services are designed and commercialized, and will take a strategic and managerial perspective in defining how to best plan, lead, and develop the processes of managing innovation and new products/services.



MKTG	8320	Course will address the strategic importance of branding and will focus on the design and implementation of marketing Programs and activities to build, measure, and manage brand equity.
MKTG	8330	Course focuses on the managerial applications of marketing research techniques including the design, analysis, and interpretation of marketing research studies, and is designed to help managers recognize the role of information gathering and analysis in making better decisions.
MKTG	8400	This course focuses on identifying and servicing foreign market opportunities. Skills in research, strategic and tactical analysis, and adaptation are developed. Ph.D. students are assigned additional readings from the academic literature.
MKTG	8790	A seminar in selected topics in Marketing. Ph.D. students are assigned readings from the Marketing academic literature. They will complete several research papers focusing on specific topics that advance the field and that are suitable for submission to an academic journal or conference.
MLS	6010	Introduction to the concerns and methods of graduate study in the Humanities. This course will demonstrate, through readings from different eras, the interrelated nature of literature, philosophy and history.
MLS	6020	Drawing from major principles and concepts in the social sciences, this course examines issues of the individual and society from a range of disciplinary approaches. Special topics vary.
MLS	6030	This course discusses the major ideas of the natural sciences in terms of their impact upon the human species. Specific topics vary.
MLS	6040	An examination of the concept of creativity in the fields of visual art, theater, dance and music. Topics covered vary with instructor.
MLS	6400	Individually supervised study in the humanities. Permission of the Director required. May be repeated for additional credit.
MLS	6500	Individually supervised study in the social sciences. Permission of the Director required. May be repeated for additional credit.
MLS	6600	Individually supervised study in the natural sciences. Permission of the Director required. May be repeated for additional credit.
MLS	6700	Individualized or small-group study in the visual and performing arts.
MLS	6990	Permission of the Director required. May be repeated for additional credit.
MLS	WAC	
MPHY	601	This course considers the physical principles and instrumentation of radiation physics and diagnostic imaging including basic atomic and nuclear properties, production of x-rays, interaction of radiation with matter, radiographic and fluoroscopic imaging systems, and the principles of x-ray computed tomography.
MPHY	602	This course is a continuation of Radiation Physics I and includes the radioactive decay principles, basics of nuclear medicine imaging including SPECT and PET, basic concepts of NMR and MR imaging, and the principles of ultrasound including Doppler ultrasound.



MPHY	604	This course considers the physical principles and instrumentation of diagnostic image formation including radiography, fluoroscopy, computed tomography, ultrasound, nuclear medicine and magnetic resonance imaging.
MPHY	606	Course covers the physical aspects of diagnostic and therapeutic applications of radionuclides. This includes radiation detectors and imaging systems, emission tomography, counting statistics, equipment testing, radiopharmaceuticals and internal radiation dosimetry.
MPHY	610	Review of the clinical aspect of diagnostic imaging of clinical modalities and anatomy as approved by instructor. Review typically will include reading, discussion, and clinical image review covering radiological anatomy, physiology, disease states, and considerations for diagnostic interpretation of images. May be repeated for credit.
MPHY	611	A series of lectures on various topics in radiation therapy give an overview of radiation therapy in the clinical care of patients and familiarize students with a variety of options for treatment of cancer patients.
MPHY	612	Series of lectures covering dosimetry fundamentals, dosimetry of photon and electron beams using ionization chambers through applications of cavity theory. Dosimetry of pulse mode detectors and applications of Monte Carlo calculations.
MPHY	613	Series of lectures in Radiation dosimetry Physics. This includes use of ionization chamber in determination of absorbed dose and measurement of radiation with other techniques.
MPHY	616	A series of introductory lectures on radiation biology with emphasis on the effects of radiation on cellular components. The course also covers the radiation effect on mammals.
MPHY	618	Basic radiation physics and physical aspects of treatment planning, using photon and electron beams as well as brachytherapy sources will be taught.
MPHY	619	Fundamental information about the physical characteristics of the sources used in brachytherapy, the methods used for implant planning and evaluation of plans.
MPHY	620	Course considers the hazards associated with radioactivity and electromagnetic radiation, including types and sources of radiation, radiation measurement and units, dosimetry, radiation protection practices required by governmental regulation and medical facility accrediting bodies.
MPHY	624	Overview of physics as applied to physiological and biological systems, including body mechanics, osmosis, respiratory and cardiovascular mechanisms, electric signals, speech, hearing, and sight.
MPHY	626	Computer fundamentals and problem solving through programming. Typical problems include PDD, TAR, TMR, MU calculations, scatter summation, TMR for arc and dose distributions.



MPHY	628	Basics of electronics circuit design to perform specific tasks as it relates to medical physics applications.
MPHY	630	Introduces the student to the various equipment and methods used in radiation detection and measurement. Introduces advanced concepts in error analysis, energy spectra unfolding, fit results with function, etc. The lab portion of this course, PHYS6180, is taught through the University of Toledo.
MPHY	631	Anatomy/Physiology Course has been developed to provide basic knowledge regarding anatomy and physiology to the students enrolled in the Medical Physics degree. The student will learn about structures and functions of the human body, from cell to gross anatomy. Topics covered will include but not be limited to anatomy and physiology of the cardiovascular, pulmonary, GI, renal, endocrine, nervous, and reproductive system of the human body.
MPHY	632	Basic practical considerations in measurements of photon and electron beam parameters of the linear accelerator.
MPHY	640	The electron linear accelerator will be described in theory and operation as it relates to medical physics and cancer patients. The physics aspect of particle acceleration and x-ray and electron generation using these units as well as dose delivery to the patient is considered.
MPHY	650	Recent developments, special topics, critical analysis of recent publications, and literature reviews in specific areas of medical physics. May be repeated for credit.
MPHY	652	Review of fundamentals of radiation safety and protection, instrumentation, radioactivity, radiation interaction with matter, and biological effects of radiation. Also, measurement methods, safety practices and regulations for use of radiation in research and medicine are presented.
MPHY	655	Presentation and critical review of original papers on developments in medical sciences. May be repeated for credit.
MPHY	661	Clinical training in radiation therapy physics to graduate students who have obtained an MS or Ph.D. degree in the field of medical physics or related area. May be repeated for credit.
MPHY	662	Clinical training in radiation therapy physics to graduate students who have obtained an MS or Ph.D. degree in the field of medical physics or related area. May be repeated for credit.
MPHY	663	Clinical training in radiation therapy physics to graduate students who have obtained an MS or Ph.D. degree in the field of medical physics or related area. May be repeated for credit.
MPHY	672	Lecture and seminar course on topics of current interest in medical physics. May be repeated for credit.
MPHY	673	Students will participate in selected ongoing research programs of members of the department faculty. May be repeated for credit.



MPHY	684	Combination of reading, lecture and discussion within a defined area of medical physics. Defined topics are: dosimetry, internal dosimetry, radiobiology, monte carlo analysis, image processing, topical study. May be repeated for credit.
MPHY	686	Combination of reading, lecture and discussion within a defined area of radiology. Defined topics are: radiographic imaging, computed tomography, magnetic resonance imaging, nuclear medicine, diagnostic ultrasound, diagnostic quality control, digital imaging. May be repeated for credit.
MPHY	688	Combination of reading, lecture, and discussion within a defined area of radiation therapy. Defined topics are: 3-D conformal treatment planning, 3-D dose compensators, stereotactic radiosurgery, electron arc therapy, photon and electron algorithms, treatment planning dosimetry verification, total body irradiation, total body skin. May be repeated for credit.
MPHY	697	Develop an in-depth scholarly project in radiation therapy to fulfill the requirements for the MSBS degree. May be repeated for credit.
MPHY	801	This course considers the physical principles and instrumentation of radiation physics and diagnostic imaging including basic atomic and nuclear properties, production of x-rays, interaction of radiation with matter, radiographic and fluoroscopic imaging systems, and the principles of x-ray computed tomography.
MPHY	802	This course is a continuation of Radiation Physics I and includes the radioactive decay principles, basics of nuclear medicine imaging including SPECT and PET, basic concepts of NMR and MR imaging, and the principles of ultrasound including Doppler ultrasound.
MPHY	804	This course considers the physical principles and instrumentation of diagnostic image formation including radiography, fluoroscopy, computed tomography, ultrasound, nuclear medicine and magnetic resonance imaging.
MPHY	806	Course covers the physical aspects of diagnostic and therapeutic applications of radionuclides. This includes radiation detectors and imaging systems, emission tomography, counting statistics, equipment testing, radiopharmaceuticals and internal radiation dosimetry.
MPHY	810	Review of the clinical aspect of diagnostic imaging of clinical modalities and anatomy as approved by instructor. Review typically will include reading, discussion, and clinical image review covering radiological anatomy, physiology, disease states, and considerations for diagnostic interpretation of images. May be repeated for credit.
MPHY	811	A series of lectures on various topics in radiation therapy give an overview of radiation therapy in the clinical care of patients and familiarize students with a variety of options for treatment of cancer patients.



MPHY	812	Series of lectures covering dosimetry fundamentals, dosimetry of photon and electron beams using ionization chambers through applications of cavity theory. Dosimetry of pulse mode detectors and applications of Monte Carlo calculations.
MPHY	813	Series of lectures in Radiation dosimetry Physics. This includes use of ionization chamber in determination of absorbed dose and measurement of radiation with other techniques.
MPHY	816	A series of introductory lectures on radiation biology with emphasis on the effects of radiation on cellular components. The course also covers the radiation effect on mammals.
MPHY	818	Basic radiation physics and physical aspects of treatment planning, using photon and electron beams as well as brachytherapy sources will be taught.
MPHY	819	Fundamental information about the physical characteristics of the sources used in brachytherapy, the methods used for implant planning and evaluation of plans.
MPHY	820	Course considers the hazards associated with radioactivity and electromagnetic radiation, including types and sources of radiation, radiation measurement and units, dosimetry, radiation protection practices required by governmental regulation and medical facility accrediting bodies.
MPHY	824	Overview of physics as applied to physiological and biological systems, including body mechanics, osmosis, respiratory and cardiovascular mechanisms, electric signals, speech, hearing, and sight.
MPHY	826	Computer fundamentals and problem solving through programming. Typical problems include PDD, TAR, TMR, MU calculations, scatter summation, TMR for arc and dose distributions.
MPHY	828	Basics of electronics circuit design to perform specific tasks as it relates to medical physics applications.
MPHY	830	Introduces the student to the various equipment and methods used in radiation detection and measurement. Introduces advanced concepts in error analysis, energy spectra unfolding, fit results with function, etc. The lab portion of this course, PHYS6180, is taught through the University of Toledo.
MPHY	832	Basic practical considerations in measurements of photon and electron beam parameters of the linear accelerator.
MPHY	840	The electron linear accelerator will be described in theory and operation as it relates to medical physics and cancer patients. The physics aspect of particle acceleration and x-ray and electron generation using these units as well as dose delivery to the patient is considered.
MPHY	850	Recent developments, special topics, critical analysis of recent publications, and literature reviews in specific areas of medical physics. May be repeated for credit.



MPHY	852	Review of fundamentals of radiation safety and protection, instrumentation, radioactivity, radiation interaction with matter, and biological effects of radiation. Also, measurement methods, safety practices and regulations for use of radiation in research and medicine are presented.
MPHY	855	Presentation and critical review of original papers on developments in medical sciences. May be repeated for credit.
MPHY	863	Clinical training in radiation therapy physics to graduate students who have obtained an MS or Ph.D. degree in the field of medical physics or related area. May be repeated for credit
MPHY	872	Lecture and seminar course on topics of current interest in medical physics. May be repeated for credit.
MPHY	873	Students will participate in selected ongoing research programs of members of the department faculty. May be repeated for credit.
MPHY	884	Combination of reading, lecture and discussion within a defined area of medical physics. Defined topics are: dosimetry, internal dosimetry, radiobiology, monte carlo analysis, image processing, topical study. May be repeated for credit.
MPHY	886	Combination of reading, lecture and discussion within a defined area of radiology. Defined topics are: radiographic imaging, computed tomography, magnetic resonance imaging, nuclear medicine, diagnostic ultrasound, diagnostic quality control, digital imaging. May be repeated for credit.
MPHY	888	Combination of reading, lecture, and discussion within a defined area of radiation therapy. Defined topics are: 3-D conformal treatment planning, 3-D dose compensators, stereotactic radiosurgery, electron arc therapy, photon and electron algorithms, treatment planning dosimetry verification, total body irradiation, total body skin. May be repeated for credit.
MPHY	896	Disciplinary or interdisciplinary investigation of significant problems at the doctoral level leading to the preparation of a scientific project for presentation as a dissertation.
MSL	1010	Introduces students to issues and competencies that are central to a commissioned officer's responsibilities. Establishes a framework for understanding leadership, officer ship, Army values, physical fitness and time management. Leadership Lab required.
MSL	1020	Builds upon the basic leadership fundamentals introduced in MSL 1010 and includes lessons in goal setting, problem solving, critical thinking, values clarification, leadership and followership, and introduces techniques for improving listening and speaking skills. Leadership Lab required.
MSL	1030	Students participate in the U.S. Army's physical fitness program three days each week. The sessions include running, strength exercises, agility exercises and organized sports.



MSL	1040	Students participate in the U.S. Army's physical fitness program three days each week. The sessions build upon the fitness level previously achieved.
MSL	2010	Identifies successful leadership characteristics through observation of others and self, using experiential learning exercises designed to teach students how to communicate, how to build teams and how to plan and organize effectively. Leadership Lab required.
MSL	2020	Students examine how to build successful teams, including methods for influencing action and achieving goals, effective communication techniques, values and ethics, problem solving and physical fitness. Leadership Lab required.
MSL	2030	Students participate in physical training three times each week. Students learn how to conduct and lead a military physical training session.
MSL	2040	Students participate in physical training three times each week. The sessions build upon the training level previously achieved.
MSL	2200	This training is a six week course in leadership management and interpersonal skills taught at Ft. Knox, Kentucky. The training compresses the Military Science 1000 and 2000-level courses. Camp graduates are eligible to enter the Army ROTC Advanced course.
MSL	2990	Students will study an appropriate subject mutually agreed upon between the student and instructor.
MSL	3010	Students assess leadership abilities, plan and conduct individual and small unit training, and apply basic tactical principles and reasoning skills. Leadership Lab required
MSL	3020	Examines the role that communications, values and ethics play in effective leadership. Topics include ethical decision making, consideration of others and Army Leadership Doctrine. Leadership Lab required.
MSL	3030	Students design and implement weekly physical training sessions. In addition, they learn how to supervise a group training session.
MSL	3040	Students design and implement weekly physical training sessions. The sessions build upon the skill level previously achieved.
MSL	3600	Three weeks of intensive field training conducted at Ft. Benning, Georgia. Combines the study of military airborne operations, strenuous physical conditioning, military parachute techniques and culminates with five parachute jumps from military aircraft.
MSL	3700	Three weeks of practical experience serving as a platoon leader with U.S. Army soldiers. This training puts the student in leadership situations and allows them to practice and hone their leadership skills in a real world environment.
MSL	3800	Two weeks of intensive field training conducted at an Army installation. Combines the study of Military Heliborne Operations, strenuous physical conditioning and advanced rappelling. Culminates with 4 rappels from a military helicopter.



MSL	3850	This is an intense five-week course conducted between the junior and senior year. This concentrated practical training provides an opportunity to evaluate the student's application of academic knowledge over a myriad of leadership situations and tasks.
MSL	3990	Students will study an appropriate subject mutually agreed upon between the student and instructor.
MSL	4010	Develops student proficiency in planning and executing complex operations, functioning as a member of a staff and mentoring subordinates. Students explore the Army's training management system, methods of effective staff collaboration and developmental counseling techniques.
MSL	4020	Course includes a case study analysis of military law and practical exercises on establishing an ethical command climate. Students complete a semester-long Senior Leadership Project that requires them to plan, organize, analyze and demonstrate their leadership skills.
MSL	4030	Students design and implement a physical training program for the entire semester. They supervise and critique implementation of the MS 3030 students' weekly training plans.
MSL	4040	Students design and implement a physical training program for the entire semester. The sessions build upon the skill level previously achieved.
MSL	4800	An in-depth study of the battle and its place in American history, examining combat leadership and the decision making process at both the operational and tactical level.
MSL	4990	Students will study an appropriate subject mutually agreed upon between the student and instructor.
MUS	1000	Required of music majors and minors. Weekly departmental student recitals. Offered as P/NC only.
MUS	1010	Required of music majors and minors. Attend 8 department concerts and 2 non-department concerts. Offered as P/NC only.
MUS	1100	Introduction of basic computer applications for music sequencing, notation, and digital recording used in music classes.
MUS	1200	Basic guitar skills: note reading, chords, accompaniment, variety of musical styles. Includes rhythmic and aural training, theory and ensemble playing. Students must provide acoustic guitars. May be repeated for credit.
MUS	1250	Classical and popular literature in a variety of styles and period will be explored. May be repeated for credit. Students may take P/NC.
MUS	1260	Continuation of MUS 1250. Classical and popular literature in a variety of styles and period will be explored. May be repeated for credit. Students may take P/NC.
MUS	1280	Develops basic vocal techniques with attention to the principles of voice production, vowel formation, breathing, articulation and flexibility. May be repeated for credit. Open to all students regardless of major. Students may take P/NC.



MUS	1500	Principles, concepts, difficulties typical of stringed instruments and pedagogy addressed through performance.
MUS	1510	Principles, concepts, difficulties typical of percussion instruments and pedagogy addressed through performance.
MUS	1530	Principles, concepts, difficulties typical of brass instruments and pedagogy addressed through performance.
MUS	1550	Principles, concepts, difficulties typical of woodwind instruments and pedagogy addressed through performance.
MUS	1560	An overview of principles, concepts and difficulties typical of string, brass, woodwind and percussion instruments.
MUS	1570	Progressive sequence of keyboard skills courses stressing technique, repertoire, sight reading, harmonization, improvisation and transposition. Includes keyboard technology.
MUS	1580	Provides instruction in keyboard skills required for the various degree programs. Progressive sequence of courses stressing technique, repertoire, sight reading, harmonization, transposition. Includes keyboard technology.
MUS	1590	Provides instruction in jazz keyboard skills, including jazz techniques, voicings, repertoire, sight reading and harmonization.
MUS	1610	Dictation, ear training and sight singing skills in rhythm, melody and harmony. Basic theoretical skills include key signatures, clefs, notation of scales, chords and rhythm patterns. Includes computer technology.
MUS	1620	Continuation of 1610. Emphasis on melody dictation and sight singing. Additional skill development in harmonizations, figured bass and study of basic forms. Includes computer technology.
MUS	1700	Introduction to jazz performance practices, nomenclature, chord and music notation, analysis and improvisation.
MUS	1800	Private music lessons for first-year music majors and minors. Must be taken twice, and a grade of B or better is required in each semester.
MUS	1810	MUS 1810 APPLIED MUSIC FOR THE NON-MAJOR Private music lessons for provisional and non-music majors. May be repeated for credit. Limited by instructor availability.
MUS	2200	Introduction to the fundamentals of music, including notation, key and time signatures, scales, intervals, chords, melodic and formal analysis and elementary compositional procedures. Students may take P/NC. Not for major credit.
MUS	2210	The study of vocal and instrumental music from the standard repertoire primarily through listening. Previous music training is not required, but regular listening is part of the course. Not for major credit. Students may take P/NC.



MUS	2220	A study of the development of jazz styles including listening skills and historical perspectives. Because the major innovations and stylistic interpretations of jazz are a result of African Americans, the course includes a study of how their culture influenced the development of jazz. Students may take P/NC.
MUS	2230	Addresses relationships among music as an art form and its effects on the listener. Also examines the role music plays in our everyday lives. No previous music experience required. Not for major credit.
MUS	2240	A study of the styles, techniques and history of rock and roll. Students may take P/NC. Not for major credit.
MUS	2250	The cultures of various ethnic groups (Native Americans, African-American, Mennonite, Moravian, Creole and others) are examined, especially as they relate to the development of folk, popular and art music styles in the United States. This course includes listening. Students may take P/NC. Not for major credit.
MUS	2260	Introduction to electronic music for non-majors. Electronic music as a part of music history. Techniques, literature, scientific advances, instrumental development. Hands-on learning using studio instruments, composition and recording.
MUS	2270	Examination of contemporary recording technology for live recording and studio applications. Emphasis on microphone placement, signal processing devices and multitrack mix down techniques.
MUS	2410	A study of music from various world cultures and jazz. A special emphasis is placed on developing listening skills.
MUS	2420	This course examines the following world cultures and their music- Indonesian, Chinese, Middle eastern, North African, South African, West African and Balkan Countries. Student may take P/NC.
MUS	2530	International Phonetic Alphabet mastery; pronunciation of English, German, Latin, Italian and French in relation to art song and aria form, emphasis on the sound of the language. Meets two hours per week.
MUS	2540	Continuation of MUS 2530. IPA; pronunciation of German and English in relation to art song and aria form; emphasis on the sound of the language. Meets two hours per week.
MUS	2550	For instrumental and keyboard majors. Develops basic vocal techniques with attention to the principles of voice production, vowel formation, breathing, articulation and flexibility. May be repeated for credit.
MUS	2570	Provides instruction in keyboard skills required for the various degree programs. Progressive sequence of courses stressing technique, repertoire, sight reading, harmonization, improvisation and transposition. Includes keyboard technology.
MUS	2580	Provides instruction in keyboard skills required for the various degree programs. Progressive sequence stressing technique, repertoire, sight reading, harmonization, improvisation and transposition. Includes keyboard technology.



MUS	2590	MUS-2590 KEYBOARD FUNDAMENTALS for PIANO MAJORS, to be taken in conjunction with music theory. Fundamental keyboard skills including harmony, technique, transposition, improvisation, sight reading, score reading, and ensemble playing.
MUS	2610	Continuation of 1620. Students develop proficiency in all musical elements through analytical, written and aural studies. Primary materials are the common practice period literature and small formal units. Includes computer technology.
MUS	2620	Continuation of 2610. Students are introduced to contemporary topics, styles and music through analysis and creative assignments. Dictation and sight singing studies will also develop topics from MUS 2610. Includes computer technology.
MUS	2700	Practical application of beginning jazz improvisation techniques as applied to modal, blues, and the chord-scale relationships, ear training, and style analysis as applied to jazz.
MUS	2710	Practical application of intermediate jazz improvisation techniques as applied to jazz standards and bebop playing.
MUS	2800	Private music lessons for sophomore music majors.
MUS	2990	Designed to meet the needs of individual students who wish to pursue projects in the area of music.
MUS	3010	Open to any qualified student.
MUS	3020	Open to any qualified student.
MUS	3030	Open to a limited number of qualified students.
MUS	3040	Open to a limited number of qualified students.
MUS	3050	Open to a limited number of qualified students upon sufficient demand and with the permission of the instructor. The study and performance of chamber music literature.
MUS	3090	Open to any qualified student. Fulfills the large ensemble participation requirement for instrumentalists.
MUS	3130	Open to any qualified student.
MUS	3140	A select group of singers.
MUS	3150	Open to qualified students.
MUS	3160	Open to any qualified student. No audition necessary.
MUS	3170	Open to a limited number of qualified students.
MUS	3180	Open to any qualified student. No audition necessary.
MUS	3190	
MUS	3260	A continuation of the aesthetic and technical aspects of electronically or computer generated music and sound. Emphasis on individual lab work and project presentation.
MUS	3270	This class examines state-of-the-art recording techniques with an emphasis on digital audio technology. Topics include principles of sound design and hard disk recording systems, with assigned production in the lab.



MUS	3280	The presentation of cultural and commercial entertainment in the form of concert events is examined from artistic, technical, and business viewpoints. The roles of the cultural impresario and concert promoter in contemporary society are examined.
MUS	3290	Provides a practical application of the skills acquired in MUS 3280, Concert and Event Production. Students gain experience working on various campus musical productions and events.
MUS	3410	A study of the literature, composers, theorists, trends and musical style of Western Music from Plainchant through Early Classic.
MUS	3420	An intensive study of the music of the Late Classic period to the present day through the examination of major trends and styles.
MUS	3450	An in-depth study of jazz styles, trends, performers and composers geared for music majors.
MUS	3470	Students study the methods and techniques of sound production and design used in the theatre. Tools and techniques of audio production are used in laboratory recording and mix down. (Alternate years.)
MUS	3500	Basic baton techniques and rehearsal routine applicable to both vocal and instrumental conducting. Preparation of scores and opportunity for conducting experience with student groups. Includes MUS 1000:002 and video recording technology.
MUS	3510	Conducting techniques and rehearsal routine especially concerned with choral groups. Opportunities to direct choral groups. Includes MUS 1000:002 and video recording technology.
MUS	3520	Conducting techniques and rehearsal routine especially concerned with instrumental ensembles. Opportunities to direct student instrumental groups. Includes MUS 1000:002 and video recording technology.
MUS	3530	The organization and training of marching bands in secondary schools. Problems of planning and charting football shows for band of different sizes. Opportunity for practical laboratory experience. Includes computer technology and both music writing and marching band drill design software.
MUS	3540	Instruction in the art of improvisation in the jazz style. A study of jazz harmony, melodic construction, keyboard voicings and practice materials. Lab instruction in combo performance techniques and repertoire. May be repeated for credit.
MUS	3550	Intended for classroom music teachers, school choral directors, and private voice teachers. A study of anatomy and acoustics of the vocal instrument and techniques for developing the singing voice, with a survey of materials for class and individual instruction, including appropriate solo and ensemble repertoire for singers in elementary and secondary schools.
MUS	3560	A study of teaching materials and conducting techniques of the jazz idiom.
MUS	3570	Comprehensive study of techniques and materials for private and group guitar instruction.

MUS	3580	Designed for keyboard majors to develop functional skills and harmonization, improvisation, transposition, sight reading, score reading, etc. Successful completion of this course fulfills the piano requirement for student teaching and Licensure.
MUS	3590	Exploration of techniques and materials for comprehensive, private and group instruction.
MUS	3610	The study of musical structures: the theme, the motive, the phrase and analysis of homophonic and polyphonic forms and procedures.
MUS	3630	A study of wind, percussion and string instrumentation; scoring for small ensembles, band and orchestra. Opportunities for performances of student scores by university organizations. Includes computer technology.
MUS	3650	Scoring for contemporary jazz ensembles. A study of jazz notations, voicing, orchestration and composition for small jazz groups and the rhythm section.
MUS	3660	Advanced scoring for contemporary jazz ensembles. A study of notations, voicing, orchestration and composition for large jazz groups.
MUS	3700	Practical application of advanced jazz improvisation techniques as applied to avant-garde, fusion and chromatic playing.
MUS	3710	Practical application of jazz improvisation techniques as applied to contemporary jazz composition and performance.
MUS	3800	Private music lessons for junior music majors.
MUS	3810	A juried public performance of no more than 25-minutes of musical compositions selected from repertoire studied in MUS 4800 and in consultation with the student's major applied professor.
MUS	4290	Designed to provide students with professional experience in their area of interest within the music industry; students may enroll for variable credit internships up to 6 credits.
MUS	4410	Course will examine the development of the orchestral and chamber repertoire, from their origins to the present day.
MUS	4420	A study of the vocal literature of western music, including art song, choral and operatic work.
MUS	4450	A survey of piano or organ/harpsichord literature from earliest publications to the present. Emphasis on a particular period or genre at the discretion of the instructor.
MUS	4460	The history and literature of the guitar, including a study of the Renaissance and Baroque lute, vihuela and Baroque guitar, 19th and 20th century instruments.
MUS	4620	Study of counterpoint in all species, primarily in 18th century style. Development of motive with invertible counterpoint, canon, and analysis and composition of inventions and fugues.
MUS	4640	A study of contrapuntal techniques practiced in the 20th century through analysis and creative assignments.



MUS	4690	May be repeated, but maximum accumulated credit is six hours toward graduation. Beginning composition including writing in the smaller musical forms. Opportunity for performance of original student compositions.
MUS	4800	Private music lessons for seniors.
MUS	4810	A juried public performance of no more than 50-minutes of musical compositions selected from repertoire studied in MUS 4800 and in consultation with a student's major applied professor.
MUS	4980	Critical inquiry into specific topics through lectures, class seminar reports and discussion. Seminar topics announced in semester schedule of classes.
MUS	4990	Designed to meet the needs of individual students who wish to pursue projects in the area of music.
MUS	5010	Students will perform a wide variety of band literature.
MUS	5020	Open to any qualified student.
MUS	5030	Open to a limited number of qualified students.
MUS	5040	Open to a limited number of qualified students.
MUS	5050	Open to a limited number of qualified students upon sufficient demand and with the permission of the instructor. The study and performance of chamber music literature.
MUS	5090	Open to any qualified student.
MUS	5130	Open to any qualified student.
MUS	5140	A select group of singers.
MUS	5150	Open to qualified students.
MUS	5160	Open to any qualified student.
MUS	5170	Open to a limited number of qualified students.
MUS	5180	Open to any qualified student.
MUS	5190	Open to any qualified student.
MUS	5410	Explores the function and styles of music in various cultures.
MUS	5440	The area of study will be announced at the time the course is offered.
MUS	5490	An intensive study of the literature, composers, theorists, trends and musical styles during the 20th century.
MUS	5510	Conducting techniques and rehearsal routine, especially concerned with choral groups. Opportunities to direct student choral groups.
MUS	5520	Conducting techniques and rehearsal routine especially concerned with instrumental ensembles. Opportunities to direct student instrumental groups.
MUS	5590	Exploration of techniques and materials for comprehensive, private and group instruction.
MUS	5610	Application of various analytical theories of music to selected works from different style periods to further the understanding of musical forms and works.
MUS	5630	A study of 16th, 18th and 20th century polyphony. Analysis of selected works and composition exercises will be the basis for comparing and contrasting these three styles.



MUS	5650	Detailed study of various contrapuntal procedures as employed from the Middle Ages through the present. Composers and their works are studied by analysis and original creative assignments.
MUS	5800	1, 2, or 4 hours. Methods and literature of the highest levels (6,7,8). Preparation for professional-level performance. May be repeated for credit with permission of the instructor. Intended for music education majors.
MUS	5900	The study of sources and bibliographical materials in music.
MUS	6000	Required for the Master of Music Performance degree. A passing grade documents successful completion of the recital requirement. Must be taken during the semester in which the recital is presented.
MUS	6450	An in-depth study of jazz styles, trends, performers and composers through historical and analytical research.
MUS	6560	An in-depth study of pedagogical materials, rehearsal and conducting.
MUS	6600	Examination and analysis of jazz scores with creative assignments in jazz orchestration and composition in traditional and contemporary styles. May be repeated one time.
MUS	6650	Examination and analysis of scores of varied composers and styles; creative assignments in orchestration exploring traditional and contemporary textures and timbres.
MUS	6690	May be repeated, but maximum accumulated credit is six hours. Beginning composition, including writing in the smaller musical forms, to advanced compositions for large.
MUS	6700	Practical application and analysis of jazz improvisation methods and techniques as applied to contemporary jazz composition and performance. May be repeated one time.
MUS	6800	Study of methods and literature of the highest levels (7,8). Preparation for professional-level performance. May be repeated for credit with permission of the instructor.
MUS	6980	Selected subjects in music in areas of special interest to the advanced master's degree student. The seminar topic will be announced in the semester schedule of classes.
MUS	6990	Designed to meet the needs of individual students who wish to pursue projects in the area of music.
NASC	1100	Elementary study of motion and gravity, thermodynamics, wave phenomena, light, electricity, magnetism, models of the atom, the solar system, stars and galaxies.
NASC	1110	Quantitative measurements and predictions concerning the physical universe in a laboratory environment. Motion, electric and magnetic fields, properties of matter, temperature and heat, radioactive decay. Two hours of laboratory per week.



NERS	581	The content of the medical neuroscience course includes not only the basic science concepts introduced in more traditional neuroanatomy courses, it also incorporates neurohistology, neuroembryology, neurophysiology, neuropathology, and neuroradiology. The usefulness of these concepts is reinforced by numerous clinically-based lectures which emphasize the importance of integrating basic neuroanatomical knowledge with the clinical symptoms presented by a neurological deficit. Other clinically-based lectures present current medical concepts concerning neuroimmunology, neurodegenerative diseases, pain, sleep, epilepsy, substance abuse, and memory and learning.
NEUR	701	Neurology (4 weeks)
NEUR	704	This elective is designed primarily for fourth year students who want additional experience in evaluation, diagnosis and management of neurological disorders. This elective is offered to students who have successfully completed three years of medical school as well as the required neurology clerkship. Responsibilities include evaluation and management of patients in the outpatient and inpatient settings as well as rotation through the neurophysiology laboratory (EEG and EMG). Additional experience in allied specialties such as Neuroradiology, PM& R and Neurosurgery can be arranged on an individual basis to complement neurological teaching.
NEUR	707	Students will be designated as an Acting Intern with increased responsibility for patient management & under supervision.
NEUR	710	The elective is organized as a 4 week block. Students will identify a mentor for the rotation and plan on spending majority of time working with them on a clinical or basic science research project. The purpose of this elective is to provide students additional opportunity to work with faculty and provide additional exposure to neurological disorders. Students will have opportunity to work in clinics once to twice a week with faculty; additional clinical experience can be obtained in neurophysiology (EEG, EMG) laboratory. Most of the time will be spent on developing a research project that is student initiated such as a case report with literature review or working on a pre-existing research project with a faculty/mentor of the student's choosing. Developing a manuscript for publication or presentation at a national meeting is strongly encouraged. This elective is geared towards students interested in a career in neurology or related disciplines but is not limited to those students. Completion of required Neurology Clerkship is encouraged but is not a prerequisite for this elective.



NEUR 745

In the summer after the second year of medical school, MD/PhD students will identify a clinical mentor. This faculty member will be responsible for the clinical training program of the student, and will provide formative and summative feedback concerning the development of clinical skills and a foundation for subsequent clinical clerkship training. The mentor may change during the course of the student's graduate school years, but any change should occur after the end of a semester. Although students may choose a clinical mentor from any department, the following specialties are particularly suited to training MD/PhD students with limited prior clinical training and restricted hours of availability:

Neurology: Students may schedule sessions in the clinic or on the inpatient/consult service. Contact: Dr. Imran Ali, Clerkship Director.

Student time commitment: Students are expected to spend 8 hours per month in clinical training. This can be divided into weekly 2 hour session, biweekly 4 hour sessions or an 8 hour day per month. Students are encouraged to discuss the most appropriate schedule with their laboratory mentor to ensure that the clinical experience does not interfere with graduate coursework or research progress. The program should be formalized in writing, and submitted to the MD/PhD Director for approval. Students should see about one patient per hour of training. Students should keep a log of their patients, their diagnoses, and any procedures performed. An electronic logging system for patient experiences will be developed.

Credit:

Upon completion of 3 years of graduate training, assuming 40 weeks per year of participation, students will have accumulated about 300 hours of clinical experience. This is approximately equivalent to 2 months of clinical electives (8 h/d X 5 d/w X 4 weeks = 160 h/mo), and students will be awarded 2 months of 4th year elective credit for this training upon re-enrolling in the College of Medicine. This credit should allow further flexibility in 4th elective scheduling, enabling additional research months, off site rotations, etc. If students require more than 3 years of graduate work, continued participation in the clinical training program is strongly encouraged, but no more than 2 months of elective time will be awarded.

NEUR 751

This elective is designed primarily for fourth year students who want additional experience in evaluation, diagnosis and management of neurological disorders. This elective is offered to students who have successfully completed three years of medical school as well as the required neurology clerkship. Responsibilities include evaluation and management of patients in the outpatient and inpatient settings as well as rotation through the neurophysiology laboratory (EEG and EMG). Additional experience in allied specialties such as Neuroradiology, PM&R and Neurosurgery can be arranged on an individual basis to complement neurological teaching.

NEUS 702

Students will be designated as an Acting Intern with increased responsibility for patient management & under supervision.



NNDP	581	A survey of medical neuroscience, taught as part of the medical school curriculum. It includes lectures, laboratories, and patient-presentation sessions.
NNDP	601	The objectives of the course are to study nervous system development, organization and structure and of nervous system-related diseases.
NNDP	650	Training and practice in presenting seminars on neuroscience research. May be repeated for credit.
NNDP	654	A weekly report on recent advances in neurobiology taken from original papers to give the students an opportunity to find, critically assess, and report on these studies. Students will develop skills for communicating scientific ideas in a seminar format. May be repeated for credit.
NNDP	656	Tutorial course between major advisor and student to acquaint student with important writings relevant to neuroscience concepts. May be repeated for credit.
NNDP	672	Tutorial course between major advisor and student to acquaint student with the range of topics of current major interest in neuroscience research. May be repeated for credit.
NNDP	673	
NNDP	689	Independent library and laboratory work under the supervision of the major advisor. May be repeated for credit.
NNDP	699	
NNDP	781	A survey of medical neuroscience, taught as part of the medical school curriculum. It includes lectures, laboratories, and patient-presentation sessions.
NNDP	801	The objectives of the course are to study nervous system development, organization and structure and of nervous system-related diseases.
NNDP	850	Training and practice in presenting seminars on neuroscience research. May be repeated for credit.
NNDP	854	A weekly report on recent advances in neurobiology taken from original papers to give the students an opportunity to find, critically assess, and report on these studies. Students will develop skills for communicating scientific ideas in a seminar format. May be repeated for credit.
NNDP	856	Tutorial course between major advisor and student to acquaint student with important writings relevant to neuroscience concepts. May be repeated for credit.
NNDP	872	Tutorial course between major advisor and student to acquaint student with the range of topics of current major interest in neuroscience research. May be repeated for credit.



NNDP	889	Independent library and laboratory work under the supervision of the major advisor. May be repeated for credit.
NNDP	899	Training in neuroscience research techniques through laboratory experience. May be repeated for credit.
NNDP	999	
NURA	1180	This course focuses on caring for adults in long term and community health settings with an emphasis on at risk popular Pathophysiology of selective organ systems and nursing process are introduced.
NURA	1190	Using Orem's theory and nursing process, this course introduces the student to basic concepts in nursing and foundational skills. Theory is reinforced by caring for individuals in acute-care settings.
NURA	1290	Nursing management of adults with acute and chronic health deviations. Clinical experiences in acute and community settings under the guidance of faculty.
NURA	2110	Focuses on nursing care of individuals across the life-span experiencing self-care deficits in mental health in acute/community settings. Clinical emphasis is on coping/adaptation and therapeutic communication.
NURA	2180	Focus is on health care needs of childbearing families, newborns and the gynecological care of women with self-care deficits. Clinical experiences are in ambulatory, acute care and community settings.
NURA	2190	Nursing management of adults with increasingly complex self-care deficits. Clinical experiences in acute and chronic care settings, under the guidance of faculty.
NURA	2280	Focus is on health promotion/health deviations of infants and children in a family centered approach. Clinical will emphasize the elements present in theory in diverse locations with multiple patients.
NURA	2290	Focuses on nursing management of adults with self-care deficits requiring critical, urgent, acute and rehabilitative care. Clinical experiences include leadership/management roles with guidance from faculty and preceptor.
NURA	2300	The course is designed to be the capstone experience to assist the senior nursing students as they prepare for their professional practice. Health promotion, maintenance and restoration are emphasized to promote self-care behaviors.
NURA	2990	A course designed to provide educational opportunities in a specialized academic area under the direct supervision of a faculty member.
NURS	1000	Course provides opportunity for development of academic, personal, and interpersonal skills required to become a successful, independent learner, introduces student to professional nursing as a career.
NURS	1EL	
NURS	2EL	



NURS	3010	Provides foundational knowledge of nursing theory, professional concepts, therapeutic communication and applied interventions. Incorporates laboratory experience with simulated clients.
NURS	3060	Focuses on the holistic model integrating technology, scientific knowledge, and alternative/complementary clinical caring modalities into basic and advanced practices of nursing. Elective.
NURS	3070	This theory course focuses on the concepts, knowledge, and skills necessary to provide holistic nursing care to individuals and their significant others who are affected by a terminal illness. Elective.
NURS	3110	Provides for acquisition of knowledge and development of skill in comprehensive nursing assessment.
NURS	3120	Care of adults with common nursing problems using Orem's Self-Care Deficit Theory of Nursing.
NURS	3130	Focus on theories and concepts of aging and health, based on Universal Self-Care Requisites from Orem's Self-Care Deficit Theory of Nursing.
NURS	3170	Basic science of pathophysiology of disease across the life span. Prepares for critical thinking in application of concepts to nursing practice.
NURS	3180	Fundamental pharmacologic principles of physiological response to drugs, therapeutic outcomes and potential drug interactions. Prepares for critical thinking in application of pharmacotherapy principles to nursing.
NURS	3210	Application of principles of nursing interventions in the learning lab on simulated clients.
NURS	3620	Provides didactic and clinical opportunities relevant to care of women across lifespan. Various clinical settings used in application of nursing system with a self-care framework.
NURS	3630	Psychosocial influences on self-care agency are presented within the context of culturally competent nursing care. Concepts are interpreted within self-care deficit theory and applied in clinical experiences.
NURS	3640	Nursing care of infants, children, and adolescents within families and groups using Orem's Self Care Deficit Theory of Nursing. Clinical experiences in wellness, acute, and chronic care settings.
NURS	3EL	
NURS	4010	Focuses on design and implementation of nursing care for aggregates and communities. Individual and family care is provided within the context of population health.
NURS	4020	Focus on principles and theories of management/leadership as a basis for provision of nursing care.
NURS	4030	Design and implementation of nursing systems for the adult population with complex health states. Includes application of nursing leadership principles in clinical settings.



NURS	4040	Interdisciplinary dialogue among health professionals. Explores potential conflicts among nurses, physicians and other health care providers. Includes conflict resolution, truth telling, withdrawing nutrition and hydration, whistle blowing and assisted suicide. Elective.
NURS	4050	Focuses on concepts, knowledge and skills necessary to assist individuals who have cancer and their families. Emphasizes helping people to care for themselves throughout their illness. Elective.
NURS	4080	Clinical elective with focus on the practice of perioperative nursing.
NURS	4120	Focus on principles of management and leadership for the baccalaureate prepared nurse. Provision of professional care in a variety of settings.
NURS	4140	Students will critically evaluate publishing research for clinical relevance, identify a research problem, select a conceptual framework, review selected literature, and prepare a quantitative or qualitative research proposal.
NURS	4150	Overview of pathologic processes that influence the development of diseases in humans. Includes discussion of normal function and the impact of disease on health.
NURS	4160	Focuses on specialty specific comprehensive and problem focused advanced patient assessment. Specialty laboratory practice and supervision are required.
NURS	4170	Examination of impact on health care of selected components of human sexuality. Aspects include sexual assessment, sexual changes during the life span and disturbances in sexuality due to health conditions. Elective.
NURS	4180	Focus on RN student's transition to professional higher education and theory-based practice. Current professional issues are explored. Political, socioeconomic, ethical and legal issues are critically examined and discussed.
NURS	4190	Focus on application of Self-Care Deficit Theory of Nursing and health maintenance for older individuals within the family and environment; emphasis on development of interpersonal skills for RNs.
NURS	4200	Focuses on the design and implementation of nursing care for aggregates and communities. Individual and family care is provided within the context of population focused care.
NURS	4210	Emphasizes all phases of the research process. Analysis and application of research strategies for the professional nurse.
NURS	4220	Concepts of pathophysiology and pharmacology. Prepares for critical thinking in application of concepts to nursing practice.
NURS	4230	Nursing application of health history, physical and psychosocial assessment skills across the lifespan.
NURS	4250	This course provides an overview of NCLEX and practice in the application of knowledge required for the professional nursing examination.



NURS	4280	Research and treatment related to addictive behaviors are critiqued. Nursing interventions specific for addicted persons are evaluated. Implications of legal/social/health policies on services for the population are explored. Elective.
NURS	4600	Clinical elective with focus on design and implementation of partially and wholly compensatory nursing systems for clients with critical health states.
NURS	4720	Clinical elective with focus on advanced issues in women's and neonatal healthcare.
NURS	4950	Introduction to concepts, issues and processes in nursing research. Emphasis on critical analysis and evaluation of published research for nursing practice and research role of baccalaureate nurse.
NURS	4990	Independent study in nursing.
NURS	4EL	
NURS	501	
NURS	502	
NURS	504	Using Orem's SCDT, students assess individuals and families and apply the nursing process in order to promote the health of individuals and families across the life span. Includes 90 clinical hours.
NURS	505	Examines foundational chemical, physical, cellular biological, and microbiological principles of human physiology. Focuses on advanced physiologic and pathophysiologic mechanisms underlying human responses to genetic, defense, and nervous system disease.
NURS	506	Focuses on the development of the professional nursing role. Students explore the effects of historical, legal, and ethical influences on professional nursing. Cultural diversity also is examined.
NURS	507	Focuses on therapeutic communication skills at the intrapersonal and interpersonal levels. Explore nursing agency from a holistic perspective. Includes 30 clinical hours.
NURS	509	Investigate human behavior using nursing and other theories from related disciplines. Apply psychotherapeutic intervention theories. Evaluate for clinical application with individuals and groups. Includes 120 clinical hours.
NURS	510	Analyze human responses to biopsychosocial and spiritual stressors. Examine stressors in relation to group and family psychotherapy theories. Includes 180 clinical hours.
NURS	511	Students maintain a caseload of clients/families/groups experiencing mental health problems in a practicum setting. Motivation for change will be analyzed in relation to human behavior. Includes 240 clinical hours.
NURS	514	Apply Orem's SCDT in the design and implementation of nursing systems that assist individuals and families in achieving and maintaining optimal health. Includes 90 clinical hours.



NURS	516	Integrate nursing theory and models into professional nursing practice. Focuses on ethical, political, and economic issues that impact nursing practice. Differentiation of advanced practice and entry level roles are explored.
NURS	519	Integrates interpersonal strategies and complementary modalities through peer counseling and supervision. Analyzes personal abilities and limitations in developing therapeutic relationships with individuals and groups. Includes 60 hours clinical.
NURS	522	Program capstone experience that integrates nursing theory, research, and practice to fulfill the requirements of the MSN degree.
NURS	524	Using Orem's SCDT, students design and implement nursing systems that assist individuals and families with complex problems to achieve and maintain optimal health. End of life care is addressed. Includes 120 clinical hours.
NURS	525	Focuses on advanced physiologic and pathophysiologic mechanisms underlying disease across the life span. Examines cardiovascular, respiratory, endocrine, muscular skeletal, nervous, genitourinary, hepatobiliary, renal, integumentary and gastrointestinal systems.
NURS	527	Examination of the impact of selected components of human sexuality on health care. Aspects include sexual assessment, changes during the life span and disturbances in sexuality due to health conditions.
NURS	528	Required for Psychiatric-Mental Health Students
NURS	533	Focuses on acquisition of graduate level skills in collection and documentation of assessment data across the life-span. Differentiates normal from abnormal findings. Supervised laboratory practice is required.
NURS	535	
NURS	536	
NURS	540	Explores roots of nursing as a science and art. Examines personal and professional values in the context of ethical decision-making. Emphasis is on analysis and evaluation of selected nursing and ethical theories. Course Enrollment is Limited.
NURS	544	Students apply epidemiological principles and Orem's SCDT to improve the health status of aggregates, vulnerable populations and communities. Includes 90 clinical hours.
NURS	546	
NURS	550	Explores family and cultural diversity theories and processes. Examines assessment, analysis and evaluation of family function. Analyzes cultural competence of advanced practice nursing. Course Enrollment is Limited.
NURS	551	Application of nursing theory and research with clients in wellness promotion or complex care states. Emphasis is on the assessment and analysis of human responses and outcomes of care.
NURS	553	Explores the public policy process from agenda setting through program evaluation. Focus is on how health problems are brought to the attention of government and solutions are obtained. Some field work is expected.



NURS	554	Students demonstrate integration of nursing knowledge and skill in designing and implementing nursing systems in a capstone clinical experience. Includes 300 clinical hours.
NURS	555	
NURS	567	Focuses on fundamental pharmacological principles. Prepares for critical thinking in application of pharmacotherapy principles to nursing. Emphasizes physiological responses to drugs, expected outcomes, and potential drug interactions.
NURS	568	Focuses on advanced physiologic and pathophysiologic mechanisms underlying human responses to disease illness across the life-span. Students will build on existing knowledge of human anatomy and physiology. Course Enrollment is Limited.
NURS	569	Focuses on advanced pharmacologic principles in decision-making for pharmacotherapy. Emphasizes responses to drugs, expected outcomes, and potential drug interactions. Discusses professional responsibilities of prescriptive privileges.
NURS	570	Focuses on analysis of a clinical problem using clinical reasoning and diagnostic hypothesis formation. Students will practice developing a working diagnosis. Includes 60 hours of laboratory.
NURS	574	Focuses on acquisition of advanced skills in collection and documentation of assessment data across the life span. Differentiates normal from abnormal findings. Supervised laboratory practice is required. Course Enrollment is Limited. Includes 60 hours laboratory.
NURS	581	Focuses on the health care needs of children and adolescents and principles of health promotion and wellness. Students will have an opportunity to begin development of skills in primary and specialty care settings. Includes 180 hours clinical.
NURS	582	Focuses on the care of children and adolescents with an emphasis on the management of common acute and stable chronic illnesses. Includes 180 hours clinical.
NURS	583	Focuses on management of common and complex acute and chronic conditions of children and adolescents. Issues of disability and developmental conditions are addressed. Emphasis is on integration of the advanced practice role.
NURS	585	
NURS	586	
NURS	587	
NURS	591	Critically evaluate published research for clinical relevance, identify a research problem, select a conceptual framework, review selected literature, and prepare a quantitative or qualitative research proposal.
NURS	593	
NURS	594	
NURS	595	
NURS	596	



NURS	597	
NURS	598	Program capstone emphasizes independent comprehensive review preparation for exams with synthesis of knowledge from the total graduate nursing curriculum and review of relevant literature in selected field of study.
NURS	601	
NURS	602	
NURS	603	Focuses on the care of adolescents and adults with an emphasis on the management of common acute and stable chronic illnesses. Includes 180 clinical hours.
NURS	604	Focuses on the care of women and principles of health promotion and wellness. Students will have the opportunity to continue development of skills in primary care. Includes 180 clinical hours.
NURS	605	Focuses on management of common and complex acute and chronic conditions of adults and older adults. Urgent care issues are addressed. Emphasis is on integration of the advanced practice role. Includes 180 clinical hours.
NURS	607	Focuses on advanced therapeutic communication skills in the nurse-client relationship and analysis of Self-care agency. Complementary modalities are explored. Includes 45 clinical hours.
NURS	608	Focuses on the care of adolescents and adults with an emphasis on the management of common acute and stable chronic illnesses. Includes 180 clinical hours.
NURS	609	Focuses on the care of women and principles of health promotion and wellness. Students will have an opportunity to begin development of skills in primary and specialty care settings. Includes 180 clinical hours.
NURS	610	Focuses on management of common and complex acute and chronic conditions of adults and older adults. Urgent care issues are addressed. Emphasis is on integration of the advanced practice role. Includes 240 clinical hours.
NURS	614	Focuses on the issues and role of the advanced practice nurse, including historical and current perspectives of the advanced role. Examines health care system issues pertaining to advanced practice.
NURS	621	Focuses on primary care of common and chronic illness of adolescents and adults. Clinical experiences will continue to incorporate women and children, adults, and target populations. Includes 180 clinical hours.
NURS	622	Focuses on the primary care of children and women's health and includes normal prenatal care. Emphasis is on health promotion and common acute illness. Includes 180 clinical hours.
NURS	623	Focuses on primary care management of acute and chronic conditions of adults and older adults. Urgent care issues are addressed. Emphasizes integration of primary care concepts across the life span. Includes 240 clinical hours.



NURS	650	This course focuses on the fundamental concepts and principles of human genetics and the applications of this knowledge to clinical practice situations in a variety of settings.
NURS	660	Explores selected nursing topics with in-depth analysis and Synthesis. Classroom and independent study required. Students choose one sub-topic. Sub-topics are Nursing Theory, Family Theories, Ethics, Cultural Diversity.
NURS	664	Examination of issues of aging focusing on current research and reading in gerontological and rehabilitation nursing practice. May be repeated for credit.
NURS	668	
NURS	670	
NURS	671	Focuses on skills to develop curricular components for nursing instructional programs. Examines the relationships among mission, philosophy, goals, and outcomes for various learning environments.
NURS	672	Focuses on teaching-learning theories, processes, strategies, and styles. Examines evaluation principles and strategies in the classroom and clinical setting.
NURS	673	Applies knowledge of learning and evaluation theories in the development and implementation of a program of instruction. Within a seminar format, emphasizes significant issues in healthcare education.
NURS	689	The student and faculty member agree on a course of study that will enable the student to achieve his/her objectives. An Independent Study Contract and Evaluation Form are submitted to the Associate Dean of the Graduate Nursing Program. May be repeated for credit.
NURS	695	Research in nursing to fulfill the requirement of Master of Nursing Program. May be repeated for credit and divided across semesters.
NURS	696	
NURS	697	
NURS	698	Option to develop an in-depth scholarly project to fulfill the research requirement of the Nursing Master's Program. The (required) 2 credit hours may be divided and repeated across semesters. Only 2 credit hours are applicable for the degree. May be repeated for credit.
NURS	699	Implementation of thesis. May be repeated for credit.
NURS	701	Research in nursing to fulfill the research requirement of the Nursing Master's Program. The (required) 2 credit hours may be divided and repeated across semesters. Only 2 credit hours are applicable for the degree. May be repeated for credit.
NURS	702	
NURS	702	This course examines the application of organizational and leadership theories and strategies to assess process and outcomes in a variety of health care settings. Focus is on the role of the advanced practice nurse in analyzing clinical patterns and issues in complex practice settings, health care organizations, and communities.



NURS	703	Examines principles/practice of quality management/clinical performance in care delivery and outcomes. Focuses on role and accountability of the advanced practice nurse/collaborative team for maintaining safety and improving quality of care.
NURS	704	This course is an extension of basic research and utilization methods. The focus is on preparing the student for leadership in clinical research, research utilization, and grant-writing activity.
NURS	705	Systematic assessment of clinical and administrative information needs of health care systems. Examines the technology and strategies needed to support patients, nurses, and health care delivery in dynamic environmental systems.
NURS	706	This course uses epidemiologic models to analyze and construct interventions for health care delivery systems. The focus is on safe, quality, culturally-appropriate advanced nursing practice activities to meet emerging world needs.
NURS	707	This course examines marketing and entrepreneurial strategies for advanced nursing practice in complex health care systems. The focus is on creating and evaluating marketing plans and entrepreneurial activities.
NURS	708	This course examines diagnostic laboratory and imaging methods as foundational evidence for assessment and intervention in the care of patient populations. The focus is on examining the basis for diagnosis using laboratory and imaging procedures, assessing the quality and reliability/sensitivity of diagnostic test results, understanding the technology used in diagnostic testing, and utilizing cost-benefit data in ordering diagnostic testing.
NURS	709	This course provides a forum to articulate and explore advanced nursing practice roles and responsibilities. The focus will be on leading nursing practice in patient advocacy, teaching, collaboration, and the design and provision of care.
NURS	710	This course is guided, independent project utilizing research to improve patient outcomes, health care delivery, or nursing practice.
NURS	718	This course examines evidence practices in administrative health care settings. The focus is on examining current status and creating and evaluating innovative administrative practices based on best practices. Competencies include model application for finance and clinical outcomes.
NURS	797	Individually precepted practicum that requires advanced nursing practice with individuals and groups. Includes seminar that facilitates synthesis and application of all prior learning for evidence-based practice.
NURS	798	Individually precepted practicum that requires leadership and practice at the aggregate/systems/organizational level of health care. Includes required seminar that facilitates application, synthesis, and evaluation of prior learning in applied practice.
NURS	WAC	
OBGY	701	Obstetrics and Gynecology (6 weeks)



OBGY	713	Student will be integrated in to the MFM service as a member of the team, participating in all aspects of the practice of Maternal Fetal Medicine both inpatient and outpatient. The student will be exposed to the care of high risk pregnant women and their fetus in the prenatal, intrapartum and postpartum period. This experience will be obtained at the Toledo Hospital. The student is required to carry out a literature review of a relevant MFM topic and make 15 minute presentation to the MFM team. Students are required to have and carry a pager.
OBGY	716	The student will have the opportunity to observe the practice of gynecologic oncology and care for women with gynecologic cancer. The student will be integrated in to the gyn oncology service as a member of the team and be involved with outpatient clinics, inpatient care, and surgery. The student will be exposed to all areas of gynecologic oncology; pelvic examinations, hospital care of high-risk patients, oncologic survey, chemotherapy, pathology, radiology, and radiation oncology.
OCCH	502	Scientific, regulatory and management principles applicable to the anticipation, recognition, evaluation and control of physical, chemical, and biological agents and ergonomic and psychological factors associated with illnesses in occupational environments.
OCCH	506	Scientific, regulatory and management principles applicable to anticipation, identification, investigation and control of mechanical hazards, unsafe work practices, and ergonomic and behavioral factors associated with accidents and injuries in occupational environments.
OCCH	516	Scientific, regulatory and management principles applicable to human disease associated with food, water, air and soil contamination. Focuses on biology and chemistry of contamination and transformation, exposure monitoring and contaminant control.
OCCH	526	Scientific, regulatory and managerial principles applicable to characteristics, exposure control, storage, transport and disposal of chemical, biological and radiological agents; accidental and intentional (terrorism) disaster preparedness and emergency response; and, personnel protective equipment and site assessment/monitoring.
OCCH	531	Scientific principles and practices applicable to the toxicology, evaluation, and control of chemical agents associated with human diseases resulting from various environmental exposures. Content includes normal/abnormal human physiology, exposure assessment, and exposure control.
OCCH	541	Qualitative and quantitative aspects of air contaminant modeling, local and general ventilation, and respiratory protection for controlling human exposures to hazardous chemical, biological and radiological agents.



OCCH	552	Scientific principles and practices applicable to the pathogenicity, evaluation and control of microbiological agents, parasitic agents, and some biological vectors associated with human diseases resulting from various environmental exposures. Content includes normal/abnormal human physiology relative to exposure, exposure assessment, and exposure control.
OCCH	562	Scientific principles and practices applicable to the potential effects, evaluation, and control of physical agents associated with human diseases resulting from various environmental exposures. Agents include ionizing and nonionizing radiation, noise and vibration, and temperature and pressure extremes. Content includes normal/abnormal human physiology, exposure assessment, and exposure control.
OCCH	570	Scientific and mathematical principles of quantitative human health risk assessment, including hazard identification, dose-response assessment, human exposure assessment, and risk characterization. Emphasis on practice of risk assessment, management and communication relative to public, environmental, and occupational health safety.
OCCH	575	Lectures focus on concepts of hazard, risk and accident; accident causation theories (single factor, Domino, multiple factors, energy release, behavioral); accident investigation; estimating accident costs; recordkeeping; and incidents rates.
OCCH	600	An introduction to descriptive statistics including measurement of central tendency, dispersion, relative position, correlation, and regression. Inferential statistical theory, selected nonparametric methods, application of computers, and occupational exposure assessment will be discussed.
OCCH	601	The course will present principles of the epidemiology method including problem solving. Various study designs will be discussed, including prospective and retrospective studies, analytic, and experimental methods.
OCCH	610	The course focuses on the application of epidemiological techniques to the study of effects of occupational and environmental exposures.
OCCH	673	Students will participate in selected ongoing research programs of members of the faculty. May be repeated for credit.
OCCH	689	The student and instructor will agree on a program of study that will enable the student to achieve specific learning objectives. May be repeated for credit.
OCCH	696	Comprehensive or focused practical training in environmental and occupational health at a designated agency, organization, or company. May be repeated for credit.
OCCH	697	Independent development by a student with approval and guidance by a major advisor, of a paper, manual, software, etc., applicable to a specific area of environmental and occupational health. May be repeated for credit.



OCCH	699	Research in occupational health or a related area to fulfill the research requirements for the MSOH degree. Must meet the guidelines established by the Graduate School. May be repeated for credit.
OCCT	2550	Introduces the occupational therapy profession and occupational therapy's role in maintaining functional daily living. Explore your daily occupations through self-reflection and develop strategies for personal growth.
OCCT	700	Provides logical system for occupational therapy models of practice. Applies terminology through student experiences with occupational analysis and synthesis. Includes Level I fieldwork experience (12 hours). Fall Prerequisite: Admission to OTD Program
OCCT	701	Examines the biomechanical model of practice including its musculoskeletal and kinesiological foundations. Includes assessments and interventions for prevention, adaptation, and compensation. Includes Level I fieldwork experience (12 hours). Fall Prerequisite: Admission to OTD Program
OCCT	702	Part I: Continues OCCT701. Part II: An introduction to the nervous system, with emphasis on the neurological basis of human occupation and the effects of neurological conditions (disease, injury, and mental illness) on occupational performance. Examines a model of practice based on functions of the nervous system. Spring Prerequisite: Occupational Therapy Models of Practice I Co-requisite: Occupational Therapy Models of Practice III
OCCT	703	Explores historical and alternative conceptual frameworks of occupation and therapeutic occupation. Examines cognitively based and general models of practice. Presents related assessments and interventions for prevention, adaptation, and compensation. Includes two Levels I fieldwork experiences (24 hours and 9 hours). Spring Prerequisite: Occupational Therapy Models of Practice I Co-requisite: Occupational Therapy Models of Practice II
OCCT	704	Examines models of practice specific to pediatric population with neurological impairments. Intervention strategies focus on neurodevelopment, neurorehabilitation, sensory integration, motor learning, and motor control impairments. Includes two Levels I fieldwork experiences (12 hours and 16 hours). Summer Prerequisite: Occupational Therapy Models of Practice II



OCCT	711	Examines quantitative and qualitative research methodologies. Includes critical analysis of occupational therapy research. Explores areas of possible research interest with guidance from potential major advisors. Fall Prerequisite: Admission to the OTD Program
OCCT	721	Explores the role of occupational therapist as educator. Examines educational theory, instructional methods and technology, and evaluation of teaching effectiveness with patients, families, peers, supervisees, and community groups. Fall Prerequisite: Admission to OTD Program
OCCT	722	Applies teaching principles as students assume the role of educators to the community. Explores the role of the therapist in design, development, implementation, and evaluation of occupational therapy curricula. Integrates presentation of self and professionalism. Summer Prerequisite: Occupational Therapy Advocacy I
OCCT	731	Introduces Level I and Level II Fieldwork, and the Capstone Experience, including policy, procedures, and documentation and the portfolio assignment. Defines professional behavior and health care communication. Encourages discussion of Level I fieldwork experiences. Fall Prerequisite: Admission to the OTD Program
OCCT	732	Emphasizes interviewing clients for an occupational profile. Encourages discussion of Level I fieldwork experiences. Introduces the course sequence of the Capstone Experience. Spring Prerequisite: Fieldwork and Professional Development Seminar I
OCCT	733	Introduces Capstone Seminar opportunities in teaching, research, program development, or clinical practice. Introduces Capstone Manual and structure for planning the individualized Capstone Experience. Provides a forum for discussion fieldwork experiences. Summer Prerequisite: Fieldwork and Professional Development Seminar II
OCCT	740	Reviews the physical and mental health conditions that challenge successful and satisfying occupational performance, with an emphasis on the aspects of medical management and rehabilitation relevant to the role of the occupational therapist. Spring Prerequisite: Occupational Therapy Advocacy I
OCCT	803	



OCCT	805	Examines occupational therapy models of practice that support occupational performance throughout the lifespan, including prevention of occupational impairment. Examines the psychosocial aspects of disease and disability. Includes Level I fieldwork experience (56 hours). Fall Prerequisite: Occupational Therapy Models of Practice IV Co-requisite: Occupational Therapy Models of Practice VI
OCCT	806	Examines compensation-oriented models of practice including assistive technology, positioning, patient handling, and mobility. Presents occupational and non-occupational assessments and interventions for prevention, adaptation, and compensation. Includes Level I fieldwork experience (2 hours). Fall Prerequisite: Occupational Therapy Models IV Co-requisite: Occupational Therapy Models V
OCCT	807	Examines contemporary and possible models of practice emphasizing wellness, health promotion, community care, population-based intervention and other emerging trends. Provides students with leadership experiences in program development. Includes two Levels I fieldwork experiences (20 hours). Spring Prerequisite: Occupational Therapy Models of Practice VI Co requisite: Occupational Therapy Models of Practice VIII
OCCT	808	Models of practice emphasizing group occupational forms, group process, and therapeutic use of self in groups. Involves practice in assessment and intervention with persons experiencing both physical and mental health conditions. Includes Level I fieldwork experience at mental health sites (10 hours). Spring Prerequisite: Occupational Therapy Models of Practice VI Co-requisite: Occupational Therapy Models of Practice VII
OCCT	812	Provides structure for student, guided by faculty mentor, to define a research question, investigate the literature, explore the site(s) for data collection, and prepare preliminary research proposal. Involves individual faculty contact. Spring Prerequisite: Research in Occupational Therapy I
OCCT	813	Provides structure for student to begin data collection after obtaining official approval of project by major advisor and institutional review board. Involves individual faculty contact. Fall, Spring, Summer Prerequisite: Research in Occupational Therapy II



OCCT	814	Includes completion of data collection, analysis of results, submission of approved final project in journal article format, and formal presentation of the research project. Involves individual faculty contact. Fall, Spring, Summer Prerequisite: Research in Occupational Therapy III
OCCT	823	Identifies advocacy issues relevant to occupational therapy and introduces community resources that can enhance successful and satisfying reintegration back into home, school, work, and/or community. Explores legislation and ethical issues that influence health care provision. Fall Prerequisite: Occupational Therapy Advocacy II
OCCT	824	Examines leadership, management, and supervision of occupational therapy services in a dynamic health care system. Addresses legislative, regulatory, and payment issues affecting program development. Encourages leadership development. Spring Prerequisite: Occupational Therapy Advocacy III
OCCT	834	Addresses communication with children, family members, and health care professionals; ethics and safety; and cultural diversity. Students identify Capstone Practicum sites, site mentor(s), and the faculty mentor. Encourages discussion of Level I fieldwork experiences. Fall Prerequisite: Fieldwork and Professional Development Seminar II
OCCT	835	Addresses issues of clinical supervision; Level II fieldwork policy, procedures, and documentation; and professional development. Provides a forum for discussion of fieldwork occupational analysis. Students develop a comprehensive Capstone Proposal. Includes Level I fieldwork experience (40 hours). Spring Prerequisite: Fieldwork and Professional Development Seminar IV
OCCT	836	Provides a 12-week, full-time, supervised fieldwork experience where students refine entry-level abilities to integrate occupational therapy theory, research, and practice under supervision and with collaboration of the academic institution. Summer, Fall Prerequisite: Completion of academic content except research, which may be taken concurrently
OCCT	837	Provides a 12-week, full-time, supervised fieldwork experience where students refine entry-level abilities to integrate occupational therapy theory, research, and practice under supervision and with collaboration of the academic institution. Fall Prerequisite: OCCT836 and completion of academic content except research, which may be taken concurrently



OCCT	838	Students develop skills in teaching, research, program development, advocacy or clinical practice with mentorship by faculty and on-site practitioners. This course, in combination with OCCT890 and 891 requires documentation of 640 hours. Spring Prerequisite: Level II fieldwork, competency exam, and completion of academic content except research, which may be taken concurrently. Co-requisites: Mentored Studies in Capstone Area or approved elective and Mentored Capstone Dissemination
OCCT	840	Addresses non-occupational methods including physical agent modalities and technology used with medically complex patients. Covers scientific underpinnings and regulatory guidelines for appropriate use of physical agent modalities in occupational therapy. Summer Prerequisite: Occupational Models of Practice VI
OCCT	880	Intensive study in a field of interest, including theoretical and experimental work. May be repeated for credit. Prerequisite: Admission to OTD program or consent of instructor Fall, Spring, Summer
OCCT	890	Focuses on individualized issues arising in the Capstone Practicum. Involves mentorship by site and faculty practitioners and culminates in a paper and a presentation dealing with a specific area within occupational therapy. Spring Prerequisite: Level II fieldwork and completion of academic content except research, which may be taken concurrently Co-requisites: Mentored Studies in Capstone Area or approved elective and Capstone Practicum
OCCT	891	Focuses on mastery of literature and in-depth knowledge of an area within occupational therapy through exploration of library, electronic, and clinical resources. Lends theoretical and research support to the Capstone Practicum. Spring Prerequisite: Level II fieldwork and completion of academic content except research, which may be taken concurrently Co-requisites: Mentored Capstone Dissemination and Capstone Fieldwork Practicum
OPEP	4940	Students receive intensive work experience related to their academic course work and career field.
OPMT	3310	An introduction to quantitative methods of decision making including linear programming, transportation, simulation, waiting line analysis, advanced decision theory and Markov chains. Computer packages and creative thinking will be emphasized.



OPMT	3340	Covers major aspects of managing total quality functions in manufacturing/service operations. Includes: quality assurance, reliability, SPC, inspection/testing, acceptance sampling, product liability and organization of the quality function.
OPMT	3600	The study of the design and planning of new facilities. Topics include product and process design, the application of CIM, FMS, capacity planning, facility location and layout, and job design.
OPMT	3610	Production planning, its relation to organizational/operational goals, MRP, MRP II, capacity management, JIT, scheduling of manufacturing/service systems and emerging/new concepts in the discipline will be discussed.
OPMT	3660	Relationship between materials management and firm's strategic goals, forecasting, competing through materials management, inventory management of independent demand, aggregate inventory management, joint replenishing, purchasing, state-of-the-art supplier management, distribution and control.
OPMT	3750	This course emphasizes model formulation, tests of goodness-of-fit and significance of parameters for the traditional linear regression model. Business applications/cases and computer packages will be emphasized.
OPMT	3760	A study of business applications emphasizing model formulation, identification and validation. The course includes linear programming, critical path methods, queuing and various modeling techniques using computer packages.
OPMT	4020	An introduction to statistical methods, including measures of central tendency and dispersion, probability and probability distributions, sampling theory, decision theory, regression and correlation. Specifically designed for the Administrative Services program.
OPMT	4150	Course includes projects, presentations and case analysis using operation management models and computer software. Role of emerging topics (e.g. bench-marking, reengineering, systems/technology) in operations management will also be covered.
OPMT	4210	This course covers planning, organizing and controlling projects. Topics such as project selection, scheduling, budgeting, resource management, project control, time-based competition and concurrent engineering will be discussed.
OPMT	4420	The service sector is the dominant sector of the economy. Students will study various aspects of Operations Management as applied to service industries. Services for manufacturing will be emphasized.
OPMT	4450	A study of forecasting techniques including: time series analysis, moving average, exponential smoothing, auto-regressive models and Box-Jenkins. A statistical software package is used.
OPMT	4750	Analysis of variance and related topics such as factorial design and Latin squares. Experimental designs including repeated measures, factorial and nested designs.

OPMT	4760	This course provides an introduction to modeling stochasticity in manufacturing/service systems using various techniques such as simulation, Queuing networks and other techniques using simulation software and business cases.
OPMT	4940	A prearranged work study program where students specializing in OPMT or SCM obtain on the job experience while learning and applying the basic concepts and techniques of their respective discipline.
OPMT	4980	Selected current topics in Operations Management practice, trends and technology.
OPMT	5510	The application of statistics to business problem solving. Topics include descriptive statistics, probability theory, hypothesis testing, decision making, regression and correlation analysis, and time series analysis.
OPMT	5520	Concepts, methods and strategies for designing and managing manufacturing and service systems are discussed. Topics include creating flexible and efficient systems for producing services and goods, total quality management, time-based competition, global production and sourcing, information and computer systems applications.
OPMT	5730	An introduction to model building and analysis with special reference to manufacturing and operations management issues. The students will be introduced to linear models, dynamic programming models and stochastic models.
OPMT	6100	An introduction to time series analysis and forecasting. Moving average, exponential smoothing, trend projection with and without seasonality and regression-based techniques are covered. Statistical software packages are used.
OPMT	6180	Analysis of business data using simple and multiple regression. Model building, estimation and hypothesis testing in the context of regression, and stepwise regression are covered. Statistical software packages are used.
OPMT	6240	The definition of business problems and the formulation of appropriate models for their study. Cases and readings are discussed to illustrate the use of management science modeling techniques.
OPMT	6270	Simulation will be introduced through appropriate software (e.g. SIMAN, ARENA). Fitting distributions, validation, verification, confidence intervals, experimental design, comparison with analytic models will be the topics covered.
OPMT	6510	This course deals with managing of projects in research and development, manufacturing, construction and service organizations. Students will discuss cases and use extensively project management software.
OPMT	6680	The course introduces students to the TQM philosophy, concepts and tools. Provides student with an overall approach for the design of a system to manage quality along the entire value adding chain.



OPMT	6690	Study methods such as MRP, JIT and bottleneck approaches used in managing manufacturing activities through business cases where appropriate. Tools such as scheduling, and inventory systems will be studied.
OPMT	6710	This course provides an integrative and interdisciplinary approach to managing operations. Strategic and tactical issues will be addressed primarily through business cases with focus on policy setting and problem solving.
OPMT	6720	Discusses the design and implementation of cellular and flexible manufacturing systems including the role of group technology. Describes the role of flexible manufacturing systems in the integrated and automated facility.
OPMT	6960	Master's Thesis
OPMT	7520	Concepts, methods and strategies for designing and managing manufacturing and service systems are discussed. Topics include creating flexible and efficient systems for producing services and goods, total quality management, time-based competition, global production and sourcing, information and computer systems applications.
OPMT	8270	Simulation will be introduced through appropriate software (e.g. SIMAN, ARENA). Fitting distributions, validation, verification, confidence intervals, experimental design, comparison with analytic models will be the topics covered.
OPMT	8680	The course introduces students to the TQM philosophy, concepts and tools. Provides student with an overall approach for the design of a system to manage quality along the entire value adding chain.
OPMT	8690	Study methods such as MRP, JIT and bottleneck approaches used in managing manufacturing activities through business cases where appropriate. Tools such as scheduling, and inventory systems will be studied.
OPMT	8720	Discusses the design and implementation of cellular and flexible manufacturing systems including the role of group technology. Describes the role of flexible manufacturing systems in the integrated and automated facility.
OPTH	708	
OPTH	730	
OPTH	750	
OPTH	751	
ORGD	4240	An applied course that focuses on development of communication competencies for people leading and facilitating change in organizations. Focuses on preparation for and delivery of intraorganizational and interorganizational communication programs.
ORGD	6170	Studies the behavior of individuals and small groups in organizations. Includes the behavioral science theories and research applicable to the work environment.



ORGD	6380	An analysis of the organizational design and administrative systems in different types of organizations such as business and other profit-making organization; non-profit organization - hospitals, unions, governmental and universities.
ORGD	6590	Course focuses on designing and managing innovative, continuously learning organizations in response to today's rapidly changing technological and market environment. The emphasis will be on top-down, macro perspective.
ORGD	7110	Organizational behavior (individual and small group) and organizational theory (large group and total organization). Also included is a review of the key functions of management; (1) planning, (2) organizing, (3) directing and (4) controlling.
ORTA	ARS	
ORTA	ARSH	
ORTA	ARST	
ORTB	BUS	
ORTB	BUSA	
ORTB	BUSAT	
ORTB	BUSH	
ORTB	BUST	
ORTE	EDU	
ORTE	EDUH	
ORTE	EDUT	
ORTG	ENG	
ORTG	ENGH	
ORTG	ENGT	
ORTH	560	Students will be taught to do a complete physical exam of the musculoskeletal system and how to identify common clinical pathologies. A quick review of anatomy is helpful before taking this course. May be repeated for credit.
ORTH	570	Weekly discussion of interesting and challenging clinical orthopaedic cases through X-ray conference discussion. Management and treatment options of each case presented also are discussed. May be repeated for credit.
ORTH	580	Lecture topics will include the physiology of bone fracture healing process, bone adaptation, molecular genetics of the musculoskeletal system, bone tumor process, etc. This course serves to provide the student with a good general knowledge of bone physiology and its function.
ORTH	585	This course meets several times a week, discussing elements of sports orthopaedics, sports rehabilitation and principles of orthopaedic biomechanics as seen in different clinical and field settings.



ORTH	590	Introduction to the basic biomechanics concept in orthopaedics. Lectures will include statistics and dynamics analysis of forces as applied to the musculoskeletal system. Topics to be covered will also include biomechanics of fixation devices, modeling effects of bone, stress shielding, micro- and macroscopic analysis of bone mechanics, etc.
ORTH	591	This course concentrates on the studies of body joint mechanics and the dynamics of joint motion. Lectures also will include artificial joint prosthesis designs, including new orthopaedic devices and implants.
ORTH	592	This course will cover principally motion analysis, gait, and rehabilitation biomechanics as they apply to the orthopaedic patient. Lectures will include 3-D motion analysis as well as a force plate quantification of gait and movement.
ORTH	650	Weekly lectures on various orthopaedic topics ranging from bone histology to biomechanics. The lectures focus on the basic science of orthopaedics, including the physiology, biochemistry, genetics, anatomy, etc. of the musculoskeletal system. May be repeated for credit.
ORTH	655	Orthopaedic Grand Rounds is a conference format where nationally known authorities on orthopaedic topics present a talk, followed by discussion of challenging clinical cases presented to the speaker. Usually the topics involve the latest state-of-the-art orthopaedic treatments or breakthroughs. The Journal Club meetings are seminar discussions of the latest scientific research articles from professionally recognized journals. May be repeated for credit.
ORTH	673	Students will participate in ongoing research programs of the members of the department faculty. Research could be clinical, theoretical, or experimental in nature. May be repeated for credit.
ORTH	691	Topics could include the trauma of musculoskeletal system, the pathogenesis, treatment options and clinical outcomes; may involve theoretical and/or experimental work. May be repeated for credit.
ORTH	692	Focus will be on spine mechanics, anatomy, spine fixation devices, clinical outcome of spine surgeries, etc. May involve theoretical and/or experimental work. May be repeated for credit.
ORTH	693	Topics could range from fracture mechanics to study of different fixation devices or new prosthetic implant designs; may involve theoretical and/or experimental work. May be repeated for credit.
ORTH	694	Concentration on anatomy of the musculoskeletal system with orthopaedic considerations; surgical approaches, safe zones for hardware placement, neurovascular structural compromise in different trauma situations, etc. Course may involve theoretical and/or experimental work. May be repeated for credit.
ORTH	695	Topics will include radiological studies of the musculoskeletal system with orthopaedic considerations; may involve theoretical and/or experimental work. May be repeated for credit.



ORTH	696	Topics will include (but are not limited to) study of the biomechanics of the upper extremity and hand, brachial plexus injuries, treatment options, surgical exposures, detail anatomy, etc. May involve theoretical and/or experimental work. May be repeated for credit.
ORTH	701	Students will be designated as an Acting Intern with increased responsibility for patient management & under supervision.
ORTH	702	A four-week research elective can be structured to involve investigation into most areas of orthopaedics, according to the interest of the particular student.
ORTH	710	Clinical experiences for the student can be structured to involve exposure to adult general orthopaedics, trauma, pediatric orthopaedics, sports medicine and hand surgery. Experience will be in a hospital-based clinic and the orthopaedic floor of the hospital. The elective can also be structured to include only one or two of these areas. An ambulatory experience is also available upon request, and would not involve operating room exposure. For the fourth year student interested in a career in Orthopaedics, we encourage the student to read <Essentials of Musculoskeletal Care> which is published by the American Association of Orthopaedic Surgeons.

ORTH	750
ORTH	751
ORTH	789
ORTN	ALL
ORTN	ARS
ORTN	ARSH
ORTN	ARST
ORTN	BUS
ORTN	BUSA
ORTN	BUSAT
ORTN	BUSH
ORTN	BUST
ORTN	EDU
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ORTN	ENG
ORTN	ENGH
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ORTN	HSHS
ORTN	HSHSH
ORTN	HSHST
ORTN	NUR
ORTN	NURH
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ORTN	NURT



ORTN	PHM	
ORTN	PHMH	
ORTN	PHMT	
ORTN	SHAD	
ORTN	UNV	
ORTN	UNVH	
ORTN	UNVT	
ORTP	PHM	
ORTP	PHMH	
ORTP	PHMT	
ORTR	NUR	
ORTR	NURH	
ORTR	NURT	
ORTS	HHS	
ORTS	HSHS	
ORTS	HHST	
ORTU	UNV	
ORTU	UNVH	
ORTU	UNVT	
PATH	502	
PATH	511	
PATH	511M	
PATH	512	
PATH	520	
PATH	521	
PATH	522	
PATH	540	
PATH	605	
PATH	606	Introduces students to surgical pathology and cytology including gross evaluation of tissues, tissue processing and microscopic evaluation of diseased human tissues to render a diagnosis, recommend treatment and evaluate prognosis. In addition, students will attend and/or present case materials at conferences.
PATH	607	An introductory course designed to acquaint students with the laboratory tests that are available in the clinical laboratory, prioritization of test ordering, how the tests are performed and their usefulness in clinical diagnosis and clinical investigation.
PATH	608	An introductory course designed to acquaint students with the autopsy. It consists of a series of lectures, demonstrations and readings pertaining to the human autopsy. Students will be involved in the actual performance of autopsies, the selection of appropriate tissues for microscopic examination, microscopic examination of tissues, rendering a diagnosis and completing autopsy reports. The autopsies are performed at MCO and the Lucas County Coroner's Office.



PATH	618	
PATH	620	
PATH	624	
PATH	635	Indications for and utilization of EM in diagnosis of human diseases (renal), neoplasia, infections, and neuromuscular disease.
PATH	655	A weekly report on recent advances in pathology taken from original papers to give students an opportunity to find, assess, and report on important developments in the field. May be repeated for credit.
PATH	672	A lecture and/or seminar course in topics of current interest in pathology with special emphasis on the fundamentals of mammalian, especially human, life under normal, experimental, or pathological conditions. Students and department faculty will present and moderate the discussion of original research publications. May be repeated for credit.
PATH	673	Students will participate in selected ongoing research programs of the department faculty. May be repeated for credit.
PATH	689	Intensive study in field of interest, including theoretical and experimental work. May be repeated for credit.
PATH	701	
PATH	702	
PATH	705	
PATH	712	Students are expected to spend a minimum of 4-5 hours per day in the Lucas County Coroner's Office. During that time they attend autopsies and assist in their performance, accompany investigators on field investigations, accompany pathologist to court and discuss the legal aspects of forensic pathology with pathologist and investigators.
PATH	713	Students meet daily; three clinical cases are presented by students; all students participate in discussion of cases as well as related learning issues.
PATH	714	
PATH	717	Students are expected to spend a minimum of 4-5 hours per day in the Lucas County Coroner's Office. During that time they attend autopsies and assist in their performance, accompany investigators on field investigations, accompany pathologist to court and discuss the legal aspects of forensic pathology with pathologist and investigators.
PATH	718	Students meet daily; three clinical cases are presented by students; all students participate in discussion of cases as well as related learning issues.
PATH	719	



PATH	720	Students will participate in all anatomic and clinical activities in the Department of Pathology including surgical pathology, cytology, hematology, chemistry, immunology, flow cytometry, histocompatibility & transplant immunology, and attend all departmental conferences and lectures provided during the rotation. Attend a postmortem examination and gross conferences related to cases. Attend various interdisciplinary conferences.
PATH	730	Students will participate in all anatomic and clinical activities in the Department of Pathology including surgical pathology, cytology, hematology, chemistry, immunology, flow cytometry, histocompatibility & transplant immunology, and attend all departmental conferences and lectures provided during the rotation. Attend a postmortem examination and gross conferences related to cases. Attend various interdisciplinary conferences.
PATH	750	Pre-rotation assignment will be agreed upon between Dr. Gohara and student to include review of recent literature related to student's chosen field of training and submission of a weekly manuscript related to the topic(s) agreed upon. Complete electronic submission of three clinical cases/week with full discussion of the disease processes related to the cases.
PATH	751	
PATH	789	
PATH	805	Introduces students to surgical pathology and cytology including gross evaluation of tissues, tissue processing and microscopic evaluation of diseased human tissues to render a diagnosis, recommend treatment and evaluate prognosis. In addition, students will attend and/or present case materials at conferences.
PATH	806	
PATH	807	An introductory course designed to acquaint students with the laboratory tests that are available in the clinical laboratory, prioritization of test ordering, how the tests are performed and their usefulness in clinical diagnosis and clinical investigation.
PATH	808	An introductory course designed to acquaint students with the autopsy. It consists of a series of lectures, demonstrations and readings pertaining to the human autopsy. Students will be involved in the actual performance of autopsies, the selection of appropriate tissues for microscopic examination, microscopic examination of tissues, rendering a diagnosis and completing autopsy reports. The autopsies are performed at MCO and the Lucas County Coroner's Office.
PATH	818	
PATH	821	
PATH	823	
PATH	824	
PATH	826	



PATH	835	Indications for and utilization of EM in diagnosis of human diseases (renal), neoplasia, infections, and neuromuscular disease.
PATH	855	A weekly report on recent advances in pathology taken from original papers to give students an opportunity to find, assess, and report on important developments in the field. May be repeated for credit.
PATH	872	A lecture and/or seminar course in topics of current interest in pathology with special emphasis on the fundamentals of mammalian, especially human, life under normal, experimental, or pathological conditions. Students and department faculty will present and moderate the discussion of original research publications. May be repeated for credit.
PATH	873	Students will participate in selected ongoing research programs of the department faculty. May be repeated for credit.
PATH	889	Intensive study in field of interest, including theoretical and experimental work. May be repeated for credit.
PED	1EL	
PED	2000	Includes basic fundamentals, offensive and defensive team play, conditioning techniques, and scouting.
PED	2100	Sport skill and strategy development for students who are in the physical education major sequence. Must earn minimum grade of C to pass the course.
PED	2200	Sport skill and strategy development for students who are in the physical education major sequence. Stunts and tumbling, tennis, volleyball. Must earn minimum grade of C to pass the course.
PED	2400	Emphasis on perceptual-motor programs, motor performance, physical fitness, movement activities, testing and evaluation in the K-6 curriculum. Designed for elementary education majors.
PED	2450	In this course, physical education major students will discuss the integration learned in physical education classes and teaching. Course may be repeated twice for a maximum total credit of 2 hours.
PED	2900	Developmentally appropriate activity for children in Pre-K-Grade 3. Includes fundamental motor skill development, assessment skills and evaluation techniques. Stress is on psychomotor, cognitive and affective development through movement.
PED	2950	Designed to provide students with knowledge of effective instruction, skills in systematic data collection for teacher evaluation, task and skill analysis and instructional design. Field experience included.
PED	2960	
PED	2EL	
PED	3000	Content for elementary school physical education programs including physical fitness, fundamental motor skill, manipulative skills, games, sport-related skills, educational gymnastics, movement activities, etc.
PED	3100	Methods of teaching pre-K - 5 physical education. Students will combine readings, discussions and field experience to learn about different strategies for working in the physical activity environment at these levels.



PED	3110	
PED	3120	Content for pre-school through high school education programs. Emphasis on fundamental motor skill, rhythmic activities, folk dance, square dance.
PED	3130	Techniques and concepts of team and individual sport activities in the middle and secondary school. Course will focus on teaching for understanding, game tactics, progressions, technique analysis, appropriate practice and safety procedures.
PED	3140	Methods of teaching grades 6 - 12 physical education. Students will combine readings, discussions and field experience to learn about different strategies for working in the physical activity environment at these levels.
PED	3400	Methods for teaching the atypical child. Evaluation and formulation of IEP. Exercise and activity prescription. Emphasis on disorders most prevalent within public school systems. Forty (40) hour field experience included.
PED	3740	Lecture and discussion on assessment in human performance, both authentic and traditional. Computer analysis procedures in descriptive and inferential statistics through ANOVA. Designated lab time for specialty areas.
PED	3950	Readings and discussion centering on concepts learned in the professional content sequence and their applicability to teaching in the physical education setting.
PED	3EL	
PED	4100	Procedures for development of curriculum and program design. Administrative issues, problems and concerns for organization and direction of facilities and equipment.
PED	4700	The purpose of this course is to describe the requirements of the law and sports governing bodies, potential problems, possible courses of action and ways to work with legal counsel in the administration of sports activities.
PED	4920	This course will focus on reflection and feedback on student teaching, portfolio development, interviewing and resume writing.
PED	4930	Intensive field experience in school classrooms under the direction of university supervisors and master teachers. Observation of teaching of experienced teachers accompanied by full responsibility by student teacher. Student teachers will be expected to teach in two areas.
PED	4940	
PED	4950	Workshop developed around topics of interest and concern for preservice and in-service teachers and other professionals involved in health, wellness and physical activity.
PED	4990	Directed individual study. Specialty title and seminar sheet required.
PED	4EL	
PED	5170	Study of disabling conditions as related to physical education. Assessment and consequent development of IEP. Exercise prescription analysis and technique. Program implications for inclusion.



PED	5250	Perspectives in curriculum theory and design for physical education. Procedures for development of curriculum K-12.
PED	5610	Analysis of contemporary trends and issues facing the physical educator. Content varies per semester: Children and Sport, Sport Sociology, Elementary/Secondary Teaching.
PED	5620	Procedures and methods appropriate for supervision of student teachers or in-service teachers in the area of physical education. Computer analysis, observation techniques, conferencing skills and evaluation procedures are stressed.
PED	5950	Topical workshops developed around areas of interest and concern to in-service teachers and/or exercise scientists. Credit cannot be applied towards a degree program without prior consent of adviser.
PED	6920	A research project is required for the M.Ed. program for the culminating experience.
PED	6940	A field internship designed to supplement classroom experience by providing participation in the area of exercise science through participant-observer experience.
PED	6960	Research thesis is required for M.S. and M.Ed. programs for the culminating experience.
PED	6990	The student will participate in independent readings, laboratory research, field experience and other activities not suited for class instruction. May be repeated for course credit.
PED	7170	Study of disabling conditions as related to physical education. Assessment and consequent development of IEP. Exercise prescription analysis and technique. Program implications for inclusion.
PED	7250	Perspectives in curriculum theory and design for physical education. Procedures for development of curriculum K-12.
PED	7610	Analysis of contemporary trends and issues facing the physical educator. Content varies per semester: Children and Sport, Sport Sociology, Elementary/Secondary Teaching.
PED	7620	Procedures and methods appropriate for supervision of student teachers or in-service teachers in the area of physical education. Computer analysis, observation techniques, conferencing skills and evaluation procedures are stressed.
PED	7950	Topical workshops developed around areas of interest and concern to in-service teachers and/or exercise scientists. Credit cannot be applied towards a degree program without prior consent of adviser.
PED	8940	A field internship designed to supplement classroom experience by providing participation in the area of exercise science through participant-observer experience.
PED	8990	The student will participate in independent readings, laboratory research, field experience and other activities not suited for class instruction. May be repeated for course credit.
PEDS	701	Pediatrics (6 weeks)



PEDS	703	The rotation will focus primarily on assessing adolescent health in an outpatient setting. Appropriate educational materials will be provided and discussed in didactic sessions.
PEDS	704	During this elective, the student will acquire the clinical skills to identify and initiate appropriate management of patients with allergic disorders, asthma and immunodeficiencies. Because of the high frequency of patients with these disorders in the general population, this elective should be of considerable practical value to the student planning a career in primary care (Medicine, Pediatrics, Family Practice) and select specialties (e.g., Dermatology and Otolaryngology). Patient population is 50% adult, 50% pediatric. Rotation consists of 8 to 9 hours per day, 5 days per week. Four to six half days are spent in outpatient clinical activities; inpatient consults usually average 1 per week. There is ample time for reading, small group discussion regarding patients and allergy/asthma/immunology topics of interest, and self-directed learning opportunities. Rare consults on weekends, optional.
PEDS	706	The student will be required to participate in daily activities of the Division of Pediatric Cardiology, including inpatient and outpatient clinic settings. The student will observe echocardiography and heart catheterization procedures as well as participate in various teaching conferences. They may be asked to present patients at the weekly cardiac catheterization conference. Monday - Friday participating during daytime activities are required. There are no night calls or special requirements.
PEDS	708	This elective will provide the student with an introduction to the evaluation and management of patients with endocrine and metabolic disorders. He/she should develop a general diagnostic approach to the endocrine system and gain knowledge of the use of laboratory determinations in these diseases.
PEDS	711	The student will participate actively in the inpatient and outpatient total medical and psychosocial care of pediatric general hematology and pediatric oncology patients. The student will answer consults and develop the diagnostic work-up for new patients under the mentoring of the hematology faculty.
PEDS	712	The student will acquire the clinical skills to identify, evaluate and initiate appropriate management of infectious diseases in both normal hosts and immune compromised patients. Because of the high frequency of infectious diseases in the pediatric population, this elective should be of considerable practical value to the student planning a career in primary care.
PEDS	713	Students will be designated as an Acting Intern with increased responsibility for patient management & under supervision.
PEDS	714	Students will be designated as an Acting Intern with increased responsibility for patient management & under supervision.



PEDS	715	Students will be expected to participate in all activities of the Division of Pediatric Nephrology including inpatient rounds, clinics, consultations, procedures, renal pathology seminars and case conferences. Students will also be exposed to the management of end-stage kidney disease in children (peritoneal dialysis, hemodialysis and transplantation).
PEDS	717	The pediatric pulmonary medicine elective is composed of both an outpatient and inpatient rotation. The inpatient rotation consists of the patients who are hospitalized at Mercy Children's Hospital under the primary pulmonary service or on a consultation basis. This also includes patients in the neonatal ICU. Consultations at other area hospitals are also provided. Students are encouraged to accompany the attending physician. The outpatient service at Children's Pulmonary Center and outreach clinics offer exposure to a wide variety of pediatric pulmonary problems, including asthma, BPD, GERD, pediatric sleep disorders, cystic fibrosis, infant apnea, etc. Pulmonary function tests and pulmonary physiology will be part of the daily rounds while on this elective. Monday through Friday, 7:30 a.m. to 5:00 p.m. Home call responsibility during month as arranged.
PEDS	718	Students will be designated as an Acting Intern with increased responsibility for patient management & under supervision.
PEDS	719	The student will explore various subjects involved in child abuse, including sexual abuse, physical abuse, shaken baby syndrome, and Munchausen Syndrome by Proxy. Exposure will occur through direct clinical experience, inpatient consults, one-on-one discussions, and attendance at Children Services activities. Attendance at legal proceedings may be available.
PEDS	720	The student, with the aid of the AHEC Center Director will meet with the community and school leaders to determine what school needs are pertaining to health education. The student will focus on issues deemed most important by the schools, develop an appropriate educational program using available community resources, and present the program to the targeted population.
PEDS	723	The goal of this rotation is to:1. Expose the student to various community experiences in which they have the opportunity to be an advocate for children. (elementary school, shelter for battered women, billing office, counseling services, Early Intervention office and daycare for medically fragile children)2. Prepare students to be advocates for the health of children in their own communities. Daytime hours are generally 8 am & 5 pm. There are occasional activities offered at night from 5 & 8:30 pm. These would not be more than once or twice during the rotation.



PEDS	724	We are a small town pediatric practice, and as such see a wide variety in our patient population. We give care to children of migrant families, self insured farm families, factory workers and university professors. There is diversity in the medical problems presented.
PEDS	725	The student with the aid of the AHEC Center Director will meet with the community and school leaders to determine what school needs are pertaining to health education. The student will focus on issues deemed most important by the schools, develop an appropriate educational program using available community resources, and present the program to the targeted population.
PEDS	728	The student will learn to screen for strabismus, amblyopia, congenital cataracts and congenital glaucoma in the primary care setting. The student will learn diagnostic criteria for common eye diseases of childhood.
PEDS	730	The student with the aid of the AHEC Center Director will meet with the community and school leaders to determine what school needs are pertaining to health education. The student will focus on issues deemed most important by the schools, develop an appropriate educational program using available community resources, and present the program to the targeted population.
PEDS	734	We are a small town pediatric practice, and as such see a wide variety in our patient population. We give care to children of migrant families, self insured farm families, factory workers and university professors. There is diversity in the medical problems presented.
PEDS	745	In the summer after the second year of medical school, MD/PhD students will identify a clinical mentor who will be responsible for overseeing clinical training for the student during a portion of his/her graduate school phase of the program, and will provide formative and summative feedback concerning the development of clinical skills and a foundation for subsequent clinical clerkship training. The mentor and clinical area of interest may change during the course of the student's graduate school years, but changes should occur after the end of a semester. Clinical Setting and Training: Students schedule specific hours (which may include evenings or weekends if appropriate) with their clinical mentor. Patients will be assigned to the student for evaluation, and students will be involved in all aspects of patient care, under direction of their clinical mentor or assigned Pediatrics attending. Either inpatient or outpatient experiences may be performed, though outpatient experiences will likely be easier to schedule. Students should see about one patient per hour of training. Students are expected to document their patient encounters as appropriate, and should be given feedback on these notes. Students should keep a log of their patients, their diagnoses, and any procedures performed. An electronic logging system for patient experiences will be developed. Student time commitment: Students are expected to spend 8 hours per month in clinical training. This can be divided into weekly 2 hour session, biweekly 4 hour sessions or an 8 hour day per month, as agreed between student and mentor. Students are encouraged to

discuss the most appropriate schedule with their dissertation mentor to ensure that the clinical experience does not interfere with graduate coursework or research progress. If students wish to limit their commitment to 4 hours per month, with permission of the course director, they should only sign up for one credit for that semester.

Student/Mentor Contract: The student/mentor relationship should be formalized in a brief contract in which both acknowledge their time commitment, as well as the student's research mentor (to ensure that the dissertation advisor understands that this is an essential part of the student's training). Completed contracts should be submitted to the MD/PhD Director and to Pat Munier. The clinical mentor is responsible for ensuring that the student has a high quality training experience, but need not be the attending physician for all patient experiences. The mentor is responsible for providing a grade (submitted through the clerkship director) and both formative and summative evaluations.

Credit:

MD/PhD Students enrolled in graduate school will sign up for 1 or 2 credit hours during the fall or spring term while enrolled in graduate school and 1 credit hour during the summer term, consistent with an average of 8 contact hours per month (2 per week). Students may earn a maximum of 4 credit hours per academic year. For every 6 hours of credit, 4 weeks of fourth year clinical elective credit will be granted. In the course of 3 years of graduate training, students may earn a maximum of 12 credits and thus be eligible for a maximum of 2 months of clinical elective credit. This credit should allow further flexibility in 4th elective scheduling, enabling additional research months, off site rotations, etc. If students require more than 3 years of graduate work, continued participation in the clinical training program is strongly encouraged, but no more than 2 months of elective time will be awarded.

Prerequisites: Successful completion of all preclinical coursework and passing Step I of the USMLE examination

PHCL	2220	The course conveys a general knowledge of drugs, including how and where drugs act and the general pharmacology of specific classes of drugs, e.g., central nervous system active agents, bronchodilators, etc.
PHCL	2600	A study of functional anatomy, physiology and pathophysiology to serve as background for the understanding of the action of drugs.
PHCL	2620	A continuation of PHCL 2600.
PHCL	3700	An introduction to the principles of pharmacology and the pharmacology of the autonomic nervous system."
PHCL	3720	The pharmacology of drugs acting upon the endocrine and reproductive systems will be discussed followed by a discussion of the non-steroidal anti-inflammatory agents and the drugs used to treat hypertension and hyperlipidemia.
PHCL	3730	The pharmacology of drugs acting upon the endocrine and reproductive systems as well as for the management of sleep disorders, anxiety, affective illness, schizophrenia and seizure disorders.

PHCL	3810	The course will teach undergraduate students current methods in pharmacology and toxicology with an emphasis on practical, hands-on experience. Students will learn a variety of techniques commonly used in the pharmaceutical and toxicology industries.
PHCL	4140	A course designed to emphasize the interpretation of statistical data as it appears in pharmacy literature. The fundamental concepts of statistics will be discussed. Experimental design as well as appropriateness of analytical methodology and conclusions will be emphasized.
PHCL	4150	Application of kinetic models to the processes of drug absorption, distribution, biotransformation and excretion. The influence of dosage form and physiology on these processes. Application of pharmacokinetic principles to clinical situations.
PHCL	4300	The pharmacology of selected classes of agents will be discussed. Discussions will include the pharmacology of: Drugs used to treat asthma, antihistamines, drugs used to treat migraine, drugs to manage movement disorders, local anesthetics and antineoplastic agents.
PHCL	4600	This course is intended to provide fundamental concepts of epidemiology and its basic research methods. The course is designed as a prerequisite for pharmacoepidemiology.
PHCL	4620	This course is intended to give an overview of and terminology commonly used in pharmacoepidemiology and to teach students how to review and comprehend pharmacoepidemiologic studies.
PHCL	4630	An examination of cancer as a disease, the biology of cancer and an in depth study of the drugs currently used to treat this family of diseases.
PHCL	4700	The pharmacology of central nervous system active agents such as opioid analgesics and alcohol. Continues from PHCL 3720. Agents acting on the cardiovascular and renal systems are also discussed.
PHCL	4720	The pharmacology of anti-infective chemotherapeutic agents is presented. Issues such as the mechanism of antimicrobial action, disposition, resistance and problems attending the use of antimicrobial drugs will be discussed.
PHCL	4730	A synopsis of the basic elements of toxicology including dose-response, lethal dose-50, margin of safety, mechanisms of toxicity and nature of toxic injuries including mutagenesis and carcinogenesis. Treatments for poisonings will not be treated in detail (see PHCL 4740).
PHCL	4740	An introduction to the diagnosis and treatment of human poisoning and risk assessment will be discussed utilizing the lecture and case presentation format.



PHCL	4750	This course provides the students with an overview of environmental toxicology, which emphasizes both air and water pollution. It also reviews the applications of different areas of toxicology, such as food toxicology emphasizing the safety standards of food and methods of evaluation of food safety, analytic toxicology and its applications in forensic toxicology and occupational toxicology, emphasizing the health effects of industrial chemicals on workers and also the permissible levels of these chemicals in the work place.
PHCL	4760	The theory and practice of using kinetic principles to model the time course of toxic chemicals in the body and in the environment. Relation of the chemical time course to negative outcomes and application to risk assessment. Hands-on practice with kinetic analysis methods and software.
PHCL	4770	Study of human health risk assessment based on National Research Council paradigm. Topics (pharmacokinetic/dynamic modeling, etc.) are designed to provide the student with the tools necessary to conduct quantitative risk assessment.
PHCL	4780	In this experiential course students will acquire practical knowledge and hands-on experience in the areas of pharmacology and/or toxicology by working at private or government laboratories.
PHCL	4800	This course will summarize the ways in which xenobiotics affect the human condition both in the context of therapeutic benefit and also chemically-induced diseases. Existing strategies for developing xenobiotics to control disease and for managing xenobiotics in order to limit disease will be discussed.
PHCL	4810	The pharmacology of central nervous system active agents such as opioid analgesics and alcohol and agents acting on the cardiovascular and renal systems.
PHCL	4820	The pharmacology of anti-infective chemotherapeutic agents including their mechanism of antimicrobial action, disposition, resistance and issues related to use.
PHCL	4850	The influence of host factors such as disease states, drug-drug interactions and environmental chemical exposure will be discussed within the framework of basic principles of drug absorption, distribution, metabolism and excretion.
PHCL	4900	An examination of a specific question in the context of the primary literature in pharmacology and in the context of the student's own findings based on his/her thesis research.
PHCL	4910	An examination of a specific question in pharmacology which can be answered through application of experimental work.
PHCL	4960	An examination of a specific question in pharmacology which can be answered through application of experimental work.



PHCL	5140	A course designed to emphasize the presentation, analysis and interpretation of data in the pharmaceutical sciences. The concepts of statistics will be discussed. Experimental design as well as appropriateness of analytical methodology and conclusions will be emphasized.
PHCL	5300	This course discusses the pharmacodynamics and pharmacotherapeutics of selected classes of pharmacologic agents. The pathophysiology of the disease states for which these agents are commonly employed will be described.
PHCL	5420	This course will explore in depth the anatomy, physiology and chemistry of neurological systems with emphasis on the role of the brain in behavior and the etiology of neurological disorders.
PHCL	5600	This course is intended to provide fundamental concepts of epidemiology and its basic research methods. The course is designed as a prerequisite for pharmacoepidemiology.
PHCL	5620	This course is intended to give an overview of and terminology commonly used in pharmacoepidemiology and to teach students how to review and comprehend pharmacoepidemiologic studies.
PHCL	5630	An overview of cancer as a disease and an in depth study of the drugs currently used to treat this family of diseases.
PHCL	5700	An introduction to the principles of pharmacology and the pharmacology of the autonomic system. Non-steroidal anti inflammatory agents are also discussed.
PHCL	5720	The pharmacology of drugs acting upon the endocrine and reproductive systems will be discussed, followed by a treatment of drugs used in the management of sleep disorders, anxiety, affective illness, schizophrenia and seizure disorders.
PHCL	5730	This course reviews the basic elements of toxicology. It includes those principles most frequently involved in a full understanding of toxicologic events, such as dose-response, lethal dose-50 (LD50) and margin of safety. It also identifies toxic chemicals and their systemic sites and mechanisms of action. Finally, this course provides information about the kinds of toxic injuries produces in specific organs or systems and the toxic agents that produce these effects. Information about the possible management of some cases of intoxication or poisonings by some agents will be briefly reviewed.
PHCL	5750	This course provides the students with an overview of environmental toxicology, which emphasizes both air and water pollution. It also reviews the applications of different areas of toxicology, such as food toxicology emphasizing the safety standards of food and methods of evaluation of food safety, analytic toxicology and its applications in forensic toxicology, and occupational toxicology, emphasizing the health effects of industrial chemicals on workers and also the permissible levels of these chemicals in the work place.



PHCL	5760	The theory and practice of using kinetic principles to model the time course of toxic chemicals in the body and in the environment. Relation of the chemical time course to negative outcomes and application to risk assessment. Hands-on practice with kinetic analysis methods and software.
PHCL	5900	The influence of host factors such as disease states, drug-drug interactions and environmental chemical exposure will be discussed within the framework of basic principles of drug absorption, distribution, metabolism and excretion.
PHCL	5990	Tutorial or directed individual research in pharmacology.
PHCL	6150	A study of the mathematical models describing the time course of drugs in the body and their application in the interpretation of in vivo data.
PHCL	6600	Pharmacology students will attend seminar presentations offered through the seminar/colloquia programs in the departments of Biology and Chemistry and in the College of Pharmacy, and must present at least one seminar.
PHCL	6700	The pharmacology of central nervous system active agents such as the opiod analgesics and alcohol continues from PHCL 5720. Agents acting on the cardiovascular and renal systems are discussed.
PHCL	6720	The pharmacology of anti-infective chemotherapeutic agents is presented. Issues such as the mechanism of antimicrobial action, disposition, resistance and problems attending the use of antimicrobial drugs will be discussed.
PHCL	6770	Study of human health risk assessment on NRC paradigm of: hazard identification, effects characterization, exposure characterization and risk characterization. Topics to be covered (pharmacokinetic/pharmacodynamic modeling, etc.) are designed to provide the student with the tools necessary to conduct quantitative risk assessment.
PHCL	6900	M.S. thesis research in pharmacology.
PHCL	6920	M.S. thesis research in pharmacology.
PHCL	7420	This course will explore in depth the anatomy, physiology and chemistry of neurological systems with emphasis on the role of the brain in behavior and the etiology of neurological disorders.
PHIL	1010	(not for major credit) An introduction to the symbolic analysis of argument components and structures. Topics include definition, syllogistic reasoning, semantics, sentential logic and probability.
PHIL	1020	(not for major credit) A study of principles and patterns of good reasoning and writing, including the evaluation and construction of arguments and the identification and avoidance of fallacies.
PHIL	2200	An introduction to philosophical reflection on such issues as the existence of God, free will, knowledge and objectivity, social justice and moral responsibility. Humanities core course.

PHIL	2400	A study of topics such as abortion, euthanasia, environmental responsibility, famine relief, affirmative action and sexuality. Attention is paid to moral argument and the bases of moral decisions.
PHIL	3000	A study of propositional and predicate logic, techniques used to evaluate deductive arguments. Topics may include computability, set theory, Bayesianism and other formal systems with philosophical and mathematical relevance.
PHIL	3060	A historical and critical examination of topics in the philosophy of language such as truth, reference, representation, metaphor and interpretation.
PHIL	3120	An examination of the ethical dimensions of the relationships between a business and employees, consumers, other businesses, society, government, the law and the environment.
PHIL	3140	A study of the philosophical issues computers raise which affect and reflect human values. Topics include censorship and privacy on the internet, virtual reality and the possibility of artificial intelligence.
PHIL	3180	An examination of our relation and responsibility to the natural environment. Topics include risk assessment, the value of non-human living things, resource use, economics, technology, environmental racism and ecology.
PHIL	3210	A study of ancient and medieval philosophy from the pre-Socratics to Aquinas.
PHIL	3230	A study of early modern philosophy from Descartes to Kant. Writing intensive course.
PHIL	3240	A study of existential philosophers, including Nietzsche, Kierkegaard, Sartre, Camus, Jaspers, Heidegger and others. Topics may include anxiety, meaning and meaninglessness, freedom, and human sociability.
PHIL	3250	An examination of some of the most influential developments in European thought since 1960, such as structuralism, hermeneutics, deconstruction, feminism and post-modernism.
PHIL	3300	An examination of philosophical topics raised by evolutionary biology including the relation between theory and fact, the characterization of natural kinds, teleology, reductionism and the history of human morality.
PHIL	3310	A study of twentieth-century science and its relationships with government, industry, religion and medicine, including the emergence of Big Science and the future of science education and research.
PHIL	3320	A study of philosophical writings, from Plato to the present, on the nature of mathematical objects, knowledge and progress. Topics may include form, number, proof, certainty, consistency, completeness and representation.
PHIL	3370	The application of ethics to the practice of medical professionals. Topics include authority, paternalism, truth-telling, informed consent, health care reform, genetic manipulation, abortion, infanticide and euthanasia.

PHIL	3400	A study of the moral philosophies of Aristotle, Hume, Kant, Mill and their critics, focusing on knowledge and justification, virtue, justice, happiness, conflicts of obligation and ideals of community.
PHIL	3500	An examination of major philosophies of Asia and the Far East, their specific concerns and their relevance to contemporary problems.
PHIL	3510	An intensive examination of the philosophical, literary and historical roots of Zen (Ch'an) teachings and meditative praxis as found in Madhyamika, Yogacara, Hua-yen and Taoism and an exploration of the ontological and phenomenological dimensions of Zen thought.
PHIL	3540	An examination of feminist perspectives in philosophy, exploring the relevance of gender to central questions in ethics, political theory and epistemology.
PHIL	3550	Examines the relevance of cultural differences to values and modes of thought through case studies in non-Western culture. Topics may include cultural relativism and cultural imperialism.
PHIL	3560	An analysis and evaluation of aesthetic topics such as the definition of art, truth in the arts, the role of representation, the nature of aesthetic value and the character of aesthetic experience.
PHIL	3570	A critical and philosophical analysis of topics in religion including the problem of evil, faith and reason, the existence of God and the nature of the religious experience.
PHIL	3600	An historical and contemporary inquiry into the nature and limits of knowledge and justification. Topics include truth, skepticism, objectivity and relativism.
PHIL	3630	A philosophical examination of problems concerning the nature of mind such as the relation between mind and body, self knowledge, free will and personal identity.
PHIL	3710	A study of philosophical issues raised by law such as the relation of law to morality, obligation to obey the law, paternalism, censorship and free speech.
PHIL	3750	A study of classic and contemporary treatments of justice, authority, the relations between individual and community, the meaning of freedom and equality, power and violence, and race and gender.
PHIL	3760	A philosophical study of topics such as crime, responsibility, justice and punishment. Special attention is paid to current practices in the criminal justice system.
PHIL	3900	Topics vary.
PHIL	4060	Advanced study of issues in the philosophy of language such as: realism and anti-realism, holism and normatively, externalism and individualism, skepticism and rule following, pragmatics and implicature. Course may be repeated as topics vary.
PHIL	4210	An intensive study of the texts and arguments of Presocratic philosophers, Plato, Aristotle, or Hellenistic philosophers. Course may be repeated as topics vary.



PHIL	4230	An intensive study of one or more Continental or British philosophers from the sixteenth through eighteenth centuries. Course may be repeated as topics vary.
PHIL	4240	An intensive study of European philosophy after Kant, including Hegel, Marx, Kierkegaard and Nietzsche.
PHIL	4250	An intensive study of major works from phenomenological philosophers, such as Husserl, Heidegger, Sartre, or Merleau-Ponty. Course may be repeated as topics vary.
PHIL	4260	An examination of texts and problems in the Frankfurt school, post-structuralism, deconstruction and post-modernism, or of such thinkers as Habermas, Foucault, Derrida and Lyotard. Course may be repeated as topics vary.
PHIL	4270	A study of the development of American Philosophy, or one or more of Pierce, James, Dewey, or Mead. Course may be repeated as topics vary.
PHIL	4280	Selected readings from Frege, Russell, Wittgenstein, the Vienna Circle, the Ordinary Language school, and American neo-pragmatists such as Quine, Rorty and Davidson. Course may be repeated as topics vary.
PHIL	4300	A study of scientific inquiry including the structure of scientific explanations, relations of evidence and confirmation, the metaphysics of theoretical entities, and the nature of scientific change and progress.
PHIL	4330	A study of philosophical and logical problems encountered in the social sciences: statistical vs. causal explanation, operational definition, laws and hypotheses, inductive methods, the status of social facts.
PHIL	4400	Selected topics or philosophers in ethical theory. Course may be repeated as topics vary.
PHIL	4500	An examination of significant developments in Buddhist philosophical thought including that of Abhidharmika, Madhyamika, Yogacara, Hua-yen and Ch'an (Zen).
PHIL	4550	A study of Muslim philosophers from the beginning to the modern time. Topics include: metaphysics, epistemology, reason and revelation, logic and methodology. Course may be repeated for credit as topics vary. Non-Western multicultural course.
PHIL	4600	Advanced study of issues in the theory of knowledge such as: the nature and limits of knowledge, a priori and empirical knowledge, skepticism, empiricism and pragmatism.
PHIL	4610	A study of the principles and pitfalls of contextually good reasoning as relevant to the pre-school - 12 classroom. Topics include: elements of critical thinking, its assessment, transfer and development.
PHIL	4650	Advanced study of issues in the philosophy of mind such as: intentionality and misrepresentation, rationality and interpretation, supervenience and reductionism, folk psychology and eliminative materialism. Course may be repeated as topics vary.



PHIL	4750	Selected topics or philosophers in political philosophy. Course may be repeated as topics vary.
PHIL	4900	Topics vary.
PHIL	5060	Advanced study of issues in the philosophy of language such as: realism and anti-realism, holism and normativity, externalism and individualism, skepticism and rule following, pragmatics and implicature. Course may be repeated as topics vary.
PHIL	5210	An intensive study of the texts and arguments of Presocratic philosophers, Plato, Aristotle, or Hellenistic philosophers. Course may be repeated as topics vary.
PHIL	5230	An intensive study of one or more Continental or British philosophers from the sixteenth through eighteenth centuries. Course may be repeated as topics vary.
PHIL	5240	An intensive study of European philosophy after Kant, including Hegel, Marx, Kierkegaard and Nietzsche.
PHIL	5250	An intensive study of major works from phenomenological philosophers, such as Husserl, Heidegger, Sartre, or Merleau-Ponty. Course may be repeated as topics and texts vary.
PHIL	5260	An examination of texts and problems in the Frankfurt School, post-structuralism, deconstruction, post-modernism, or of such thinkers as Habermas, Foucault, Derrida and Lyotard. Course may be repeated as topics vary.
PHIL	5270	A study of the development of American philosophy, or of one or more of Pierce, James, Dewey, or Mead. Course may be repeated as topics vary.
PHIL	5280	Selected readings from Frege, the Russell, Wittgenstein, the Vienna Circle, the Ordinary Language school and American neopragmatists such as Quine, Rorty and Davidson. Course may be repeated as topics vary.
PHIL	5300	A study of scientific inquiry including the structure of scientific explanations, relation of evidence and confirmation, the metaphysics of theoretical entities, and the nature of scientific change and progress.
PHIL	5330	A study of philosophical and logical problems encountered in the social sciences: statistical vs. causal explanation, operational definition, laws and hypotheses, inductive methods, the status of social facts.
PHIL	5400	Selected topics or philosophers in ethical theory. Course may be repeated as topics vary.
PHIL	5500	An examination of significant developments in Buddhist philosophical thought including that of Abhidharmika, Madhyamika, Yogacara, Hua-yen and Ch'an (Zen).
PHIL	5600	An advanced study of issues in the theory of knowledge, such as: the nature and limits of knowledge, a priori and empirical knowledge, skepticism, empiricism and pragmatism.



PHIL	5610	A study of the principles and pitfalls of contextually good reasoning as relevant to pre-school - 12 classroom. Topics include: the elements of critical thinking, its assessment, transfer and development.
PHIL	5650	Advanced study of issues in the philosophy of mind such as: intentionality and misrepresentation, rationality and interpretation, supervenience and reductionism, folk psychology and eliminative materialism. Course may be repeated as topics vary.
PHIL	5750	Selected topics or philosophers in political philosophy. Course may be repeated as topics vary.
PHIL	5920	Critical inquiry into selected works of a particular philosopher or a specific philosophical problem.
PHIL	5990	Directed study in philosophy under supervision of a philosophy faculty member.
PHIL	6000	A study of propositional and predicate logic, as well as examination of issues in the philosophy of logic.
PHIL	6370	Advanced level course in ethics for health care related majors. An emphasis on ethical theory and its application to ethical problems in health care practices. Not open to philosophy majors.
PHIL	6800	Participation in departmental faculty-graduate student colloquia and mentoring program. Credit will carry the grade of S or U, and will not count toward credit hour requirements for the M.A. degree.
PHIL	6930	Advanced philosophy seminar open only to graduate students.
PHPR	1000	Lectures and small group discussions include University, Freshman Orientation, FYI subjects, plus introductory elements of Pharmacy professional culture.
PHPR	2010	Introduction to the primary dimensions of the profession of pharmacy with an emphasis on the pharmacist's responsibility to assure that drug therapy is used appropriately to improve patient outcomes.
PHPR	3010	This course is intended to present the principles involved in solving any mathematical problem which may be encountered in the practice of pharmacy-logical thought processes will be used.
PHPR	3020	A lecture and laboratory introduction to the principles, theory, and processes involved in the manufacture and compounding of fundamental classes of dosage forms.
PHPR	3030	A continuation of PHPR 3020 as a lecture and laboratory to the principles, theory, and processes involved in the manufacture and compounding of fundamental classes of dosage forms.
PHPR	3070	Course considers the principles and thought processes involved in solving pharmacy-related mathematical problems and the theory and processes involved in the manufacture and extemporaneous compounding of dosage forms.
PHPR	3080	Further exploration of the principles, theory and processes involved in the development and preparation of parenteral, ophthalmic and other non-oral drug delivery systems.



PHPR	3130	Discussion of pathophysiology, clinical presentation, etiologic causes, laboratory findings, diagnosis and therapy of attention deficit hyperactivity disorder, sleep disorders, acid-base, fluid & electrolytic imbalances, pain and substance abuse.
PHPR	3140	Discussion of pathophysiology, clinical presentation, etiologic causes, laboratory findings, diagnosis and therapy of endocrine disorders and reproduction.
PHPR	3260	Description and analysis of the organization, financing and delivery of healthcare in the U.S.. Development of communication skills for pharmacists to function optimally in the system is emphasized.
PHPR	3510	Description and analysis of the organization, financing and delivery of healthcare in the U.S. Development of communication skills for pharmacists to function optimally in the system is emphasized.
PHPR	3920	First professional year course designed to enhance professional growth through an introduction to clinical skill development and direct patient care activities within institutional and community pharmacy practice settings. Prerequisite: Admission into the Pharm.D. Program.
PHPR	3940	The purpose of this course is to increase students' awareness and involvement in areas related to the contemporary practice of pharmacy. Students will participate in projects that nurture their professional growth.
PHPR	4250	Study of the design, formulation, production, packaging and manipulation of parenteral products used as for therapeutic and nutritional purposes, including the use of blood and blood-related products.
PHPR	4330	Concepts of research design, statistical analysis, literature evaluation and evidence based medicine are introduced and integrated in a manner that depicts their practical relevance to pharmacy practice.
PHPR	4400	An introduction to interpersonal communication with emphasis upon application of one-to-one communication in a variety of healthcare contexts, especially patient counseling.
PHPR	4410	Instruction in the broad dimension of professional pharmacy practice and identification of the pharmacist's responsibility for providing pharmaceutical care, including medication distribution, patient education and use of drug information resources.
PHPR	4420	Building on competencies from PHPR 4400 and 4410, this course enhances professional development to meet specific patient and health care practitioner needs. Instruction includes effective literature analysis, presentation of care plans and pharmacy jurisprudence.
PHPR	4430	An introduction to clinical practice and concepts which will be utilized in the PPT course sequence.
PHPR	4440	This course will consider current concepts and applications of immunological principles for disease prevention, for transplantation, and for treatment of cancer, autoimmune and infectious disease, using a seminar-discussion-student presentation format.



PHPR	4450	Discussion of pathophysiology, clinical presentation, etiological causes, laboratory findings, diagnosis and therapy of renal disease states.
PHPR	4520	An introduction to the theoretical concepts and applied techniques for resource management and marketing issues that affect the delivery of pharmaceutical care.
PHPR	4550	A theoretical and practical examination of the pharmaceutical environment and drug distribution system using the science of marketing as a tool for analysis.
PHPR	4590	Examination of the literature related to access and cultural competence in the US health care system. Various types of readings will be used to analyze the relationships that exist between access, cultural competence and positive health care outcomes.
PHPR	4600	This course provides a global perspective on pharmacy administration and healthcare related issues, including economic, humanistic, clinical, and other aspects of disease management. Prerequisite: Enrollment in the BSPS in Pharmacy Administration program or permission of instructor
PHPR	4610	This course emphasizes introductory concepts, methods, and practical procedures for pharmacoeconomic analysis and outcomes research. The student will understand and develop instruments for assessing patients' health status, quality of life, satisfaction and cost-effectiveness for pharmacoeconomic and health outcomes research. Prerequisite: Enrollment in the BSPS in Pharmacy Administration program or permission of instructor
PHPR	4680	The theory and technology of parenteral and ophthalmic formulation design, production, sterilization, packaging and stability.
PHPR	4690	The utilization of pharmaceutical principles and practices for the design and manufacture of modern commercial dosage forms such as tablets, aerosols, emulsions, suspensions and solutions emphasizing biopharmaceutically efficacious products.
PHPR	4700	A theoretical and practical examination of the principles of chemical equilibrium and the techniques used in their calculation. Physical and chemical concepts focus on pharmaceutical systems as well as selected areas of chemistry.
PHPR	4710	Discussion, evaluation, experimentation and production of selected dosage forms. A forum for the discussion of new dosage form technology and advances.
PHPR	4720	A theoretical and practical application of kinetic principles applied to pharmaceutical and cosmetic systems in liquid and solid state. A mathematical treatment and development of the equations which support each reaction mechanism.
PHPR	4780	Students will acquire practical knowledge and hands-on experience in the areas of pharmacy administration or industrial pharmacy/pharmaceutics by working in the pharmaceutical industry or

with health care systems.

PHPR	4810	Practical topics on financial, professional, and personal situations to better prepare students to make knowledgeable decisions that affect future security and success.
PHPR	4880	Students will acquire practical knowledge and hands-on experience in the areas of pharmacy administration or industrial pharmacy/pharmaceutics by working in the pharmaceutical industry or with health care systems.
PHPR	4900	An examination of a specific question in the context of the primary literature in pharmacy practice for advanced students.
PHPR	4910	Selected undergraduate research projects in pharmacy practice.
PHPR	4920	The purpose of this course is to increase students' awareness and involvement in areas related to the contemporary practice of pharmacy. Students will participate in projects that nurture their professional growth.
PHPR	4960	An examination of a specific research question in pharmacy practice which can be answered through application of experimental work.
PHPR	5680	The theory and technology of parenteral and ophthalmic formulation design, production, sterilization, packaging and stability.
PHPR	5690	The utilization of pharmaceutical principles and practices for the design and manufacture of modern commercial dosage forms such as tablets, aerosols, emulsions, suspensions and solutions emphasizing biopharmaceutically efficacious products.
PHPR	5700	A theoretical and practical examination of the principles of chemical equilibrium and the techniques used in their calculation. Physical and chemical concepts focus on pharmaceutical systems as well as selected areas of chemistry.
PHPR	5710	Discussion, evaluation, experimentation and production of selected dosage forms. A forum for the discussion of new dosage form technology and advances.
PHPR	5720	A theoretical and practical application of kinetic principles applied to pharmaceutical and cosmetic systems in liquid and solid state. A mathematical treatment and development of the equations which support each reaction mechanism.
PHPR	5810	Practical topics on financial, professional, and personal situation to better prepare students to make knowledgeable decisions that affect future security and success. (Prerequisites: Third Professional Year PharmD or permission of instructor.)
PHPR	5990	Tutorial or directed, individual research problems in administrative pharmacy, or other related fields.
PHPR	6160	Detailed discussion of pharmacokinetic characteristics of drugs which are commonly included in therapeutic drug monitoring including clinical application.



PHPR	6210	General overview and introduction to research process as it pertains to clinical pharmacy practice. Special emphasis given to design issues, particularly those involving human subjects.
PHPR	6230	The course will provide students with advanced experiences in applying and integrating biomedical, psychosocial and pharmacoeconomic principles to patient care. Students will present and discuss how they would identify, prevent and resolve the medication-related problems encountered by a diversity of patient populations.
PHPR	6240	The course will provide students with advanced experiences in applying and integrating biomedical, psychosocial and pharmacoeconomic principles to patient care. Students will present and discuss how they would identify, prevent and resolve the medication-related problems encountered by a diversity of patient populations.
PHPR	6250	The course will discuss issues surrounding the self-medication decision-making process. Special emphasis will be placed on how pharmacists should help patients safely and effectively treat common medical problems. The course will provide information about how pharmacists should educate and counsel patients about diagnostic tests that the public can purchase without a prescription.
PHPR	6370	An overview of the fundamental principles of nutritional support and the pharmacist's role in providing nutritional support services.
PHPR	6380	Discussion of the pathophysiology, clinical presentation, etiologic causes, laboratory findings, diagnosis and therapy of endocrine disorders.
PHPR	6420	Discussion of pathophysiology, clinical presentation, etiological causes, laboratory findings, diagnosis and therapy of cardiovascular disease states.
PHPR	6430	Discussion of pathophysiology, clinical presentation, etiological causes, laboratory findings, diagnosis and therapy of pulmonary disease states.
PHPR	6440	Discussion of pathophysiology, clinical presentation, etiological causes, laboratory findings, diagnosis and therapy of infectious disease states.
PHPR	6450	Discussion of pathophysiology, clinical presentation, etiological causes, laboratory findings, diagnosis and therapy of renal disease states.
PHPR	6490	Discussion of pathophysiology, clinical presentation, etiological causes, laboratory findings, diagnosis and therapy of hematologic and oncologic disease states.
PHPR	6510	Discussion of pathophysiology, clinical presentation, etiological causes, laboratory findings, diagnosis and therapy of poisoning and drug overdose management.
PHPR	6520	A theoretical and practical examination of the pharmaceutical environment and drug distribution system using administrative pharmacy sciences as a tool for analysis.
PHPR	6530	An introduction to research methods and principles used in designing, planning, implementing, analyzing and interpreting research projects in pharmacy practice.



PHPR	6550	Description of nature of management, basic management concepts and tools and environmental concerns pertinent to pharmacy practice in all of its practice settings.
PHPR	6600	A critical analysis of current problems in pharmacy practice with individual case presentations.
PHPR	6610	Instruction on preparation and presentation of clinical and/or scientific seminars.
PHPR	6800	An introduction to medical terminology and procedures with reference to physical exam, patient history, common diagnostic procedures and applications to drug and disease state monitoring.
PHPR	6810	An examination of the administrative and supervisory aspects of hospital pharmacy practice. Emphasis is placed on management techniques rather than functions performed.
PHPR	6820	A treatment of contemporary trends which influence the practice of hospital pharmacy such as drug distribution systems. Emphasis is placed upon these concepts in light of the resources present.
PHPR	6830	An advanced analysis of concepts, practices and issues related to retail pharmacy management.
PHPR	6840	Examination of contemporary trends influencing community pharmacy, such as home healthcare and prescription drug programs. Emphasis is placed on the impact of these trends on community pharmacy management.
PHPR	6850	A study of various stages of development of pharmaceutical products. The student will develop formulations, using stability data and production technology for three products.
PHPR	6890	Development of a practical project in the pharmacy environment on a practicum basis. A written, bound report and oral presentation are required.
PHPR	6920	Third professional year course designed to enhance professional growth through application of skills and knowledge gained in IPPE-1 and IPPE-2 to various areas of pharmacy practice to provide the best possible patient care.
PHPR	6940	Supervised instruction and participation in pharmacy practice at actual practice sites such as community, hospital, managed care, long-term care and nuclear pharmacies.
PHPR	6950	A seminar course composed of graduate student presentations on their research and special topics as well as outside speakers from both the community and pharmaceutical industry.
PHPR	6960	Advanced and in-depth study of an issue pertinent to contemporary pharmacy practice. Part of degree requirement for M.S. in Pharmaceutical Sciences.
PHPR	6980	Selected study of topics in Pharmacy Practice. New pharmacy and healthcare strategies are examined in detail.



PHPR	8260	Discussion of federal, state and local laws affecting the profession and practice of pharmacy. Ethical principles involved in patient care will be reviewed and applied.
PHPR	8390	Discussion of the pathophysiology, clinical presentation, etiologic causes, laboratory findings, diagnosis and therapy of gastrointestinal disorders.
PHPR	8470	Discussion of the pathophysiology, clinical presentation, etiologic causes, laboratory findings, diagnosis and therapy of rheumatologic disease states.
PHPR	8480	Discussion of pathophysiology, clinical presentation, etiological causes, laboratory findings, diagnosis and therapy of neurologic and psychiatric disease states.
PHPR	8500	Discussion of pathophysiology, clinical presentation, etiological causes, laboratory findings, diagnosis and therapy of geriatric and pediatric disease states.
PHPR	8540	Application of didactic geriatric drug therapy principles in a geriatric patient care environment. Emphasis will be placed on geriatric drug monitoring skills.
PHPR	8620	Discussion of current topics relating to pharmacy practice.
PHPR	8630	Presentation of clinical and/or scientific seminar and completion of in-depth pharmacy practice related paper.
PHPR	8640	Advanced experiences in applying and integrating biomedical, psychosocial and pharmacoeconomic principles to drug literature evaluation and patient care.
PHPR	8940	Advanced clinical experience in various specialties of medicine and pharmacy. This course will consist of 340 practicum/internship hours for each section (2 months).
PHPR	8980	Selected study of topics in Pharmacy Practice. New Pharmacy and healthcare strategies are examined in detail.
PHRM	525	The first part of the course consists of a series of lectures covering the fundamental principles of drug action which are the basis for understanding the use of drugs in modern medicine. In the second half, students will choose a class of drugs to review and, using the principles previously taught, prepare a written review of that class of drug.
PHRM	607	An introduction to drug receptors and the diverse signal mechanisms by which drugs initiate cellular responses. Topics to be covered include: macro-molecular structure of receptors dose-response relationships and principles of signal transduction. The core of the course will be devoted to an in-depth examination of the following types of signal transduction mechanisms; Nuclear (steroid) receptors, G-protein-linked receptors, transmembrane kinase receptors and ion-channels.
PHRM	620	The properties of hormone receptors and the biochemical consequences of hormone-receptor interactions. May be repeated for credit.



PHRM	631	Research-oriented presentation of the pharmacology of cardiovascular drugs with special emphasis on antiarrhythmic agents and cardiac glycosides. May be repeated for credit.
PHRM	633	The neurochemical and neurophysiological basis of tolerance and dependence on drugs of abuse. Some laboratory work may be required. May be repeated for credit.
PHRM	640	Function of membranes and drug action on membranes. May be repeated for credit
PHRM	642	Designed to integrate the mitochondrial membrane processes of energy conservation. Included are detailed discussions of respiration-linked H ⁺ flux, coupled oxidative phosphorylation, ion diffusion and carrier mediated transport of cations, substrate anions, phosphate and adenine nucleotides. The differential effects of drugs and ionophores on each of these processes will be discussed. May be repeated for credit.
PHRM	643	Advanced readings in current problems in energy conservation and mitochondrial ion transport. Theoretical and experimental aspects of bioenergetics will be discussed. May be repeated for credit.
PHRM	655	A weekly report on recent advances in pharmacology taken from original papers to give students an opportunity to find, assess, and report on important developments in the field. May be repeated for credit.
PHRM	656	Library research project on special topics in the biochemical interactions between drugs and biological systems. May be repeated for credit.
PHRM	658	Discussion of mechanism of action of drugs acting on the CNS based on reading original research articles. May be repeated for credit.
PHRM	660	Discussion of mechanism of action of drugs acting on the CNS based on reading original research articles. May be repeated for credit.
PHRM	661	Introduction to laboratory research on a selected research topic. May be repeated for credit.
PHRM	672	A lecture and/or seminar course on topics of current interest in pharmacology with special emphasis on the fundamentals of mammalian, especially human, life under normal, experimental, or pathological conditions. Students and department faculty will present and moderate the discussion of original research publications. May be repeated for credit.
PHRM	673	Students will participate in selected ongoing research programs of members of the department faculty. May be repeated for credit.
PHRM	725	The first part of the course consists of a series of lectures covering the fundamental principles of drug action which are the basis for understanding the use of drugs in modern medicine. In the second half, students will choose a class of drugs to review and, using the principles previously taught, prepare a written review of that class of drug.

PHRM	807	An introduction to drug receptors and the diverse signal mechanisms by which drugs initiate cellular responses. Topics to be covered include: macro-molecular structure of receptors dose-response relationships and principles of signal transduction. The core of the course will be devoted to an in-depth examination of the following types of signal transduction mechanisms; Nuclear (steroid) receptors, G-protein-linked receptors, transmembrane kinase receptors and ion-channels.
PHRM	820	The properties of hormone receptors and the biochemical consequences of hormone-receptor interactions. May be repeated for credit.
PHRM	831	Research-oriented presentation of the pharmacology of cardiovascular drugs with special emphasis on antiarrhythmic agents and cardiac glycosides. May be repeated for credit.
PHRM	833	The neurochemical and neurophysiological basis of tolerance and dependence on drugs of abuse. Some laboratory work may be required. May be repeated for credit.
PHRM	840	Function of membranes and drug action on membranes. May be repeated for credit
PHRM	842	Designed to integrate the mitochondrial membrane processes of energy conservation. Included are detailed discussions of respiration-linked H ⁺ flux, coupled oxidative phosphorylation, ion diffusion and carrier mediated transport of cations, substrate anions, phosphate and adenine nucleotides. The differential effects of drugs and ionophores on each of these processes will be discussed. May be repeated for credit.
PHRM	843	Advanced readings in current problems in energy conservation and mitochondrial ion transport. Theoretical and experimental aspects of bioenergetics will be discussed. May be repeated for credit.
PHRM	855	A weekly report on recent advances in pharmacology taken from original papers to give students an opportunity to find, assess, and report on important developments in the field. May be repeated for credit.
PHRM	856	Library research project on special topics in the biochemical interactions between drugs and biological systems. May be repeated for credit.
PHRM	858	Discussion of mechanism of action of drugs acting on the CNS based on reading original research articles. May be repeated for credit.
PHRM	860	Discussion of mechanism of action of drugs acting on the CNS based on reading original research articles. May be repeated for credit.
PHRM	861	Introduction to laboratory research on a selected research topic. May be repeated for credit.
PHRM	872	A lecture and/or seminar course on topics of current interest in pharmacology with special emphasis on the fundamentals of mammalian, especially human, life under normal, experimental, or pathological conditions. Students and department faculty will present and moderate the discussion of original research publications. May be repeated for credit.



PHRM	873	Students will participate in selected ongoing research programs of members of the department faculty. May be repeated for credit.
PHSL	505	This course addresses cellular, regulatory and organ system physiology including blood and immune system, cardiovascular, respiratory, gastrointestinal, renal reproductive and endocrine physiology
PHSL	510	A basic course on the fundamental concept and techniques employed to study nucleus, chromosomes, cell cycle, DNA, DNA damage and repair, gene expression, genetic analysis of complex traits, and functional genomics.
PHSL	620	This course will address the basic and advanced topics on cardiovascular, respiratory, renal, gastrointestinal, endocrine and reproductive physiology. The students will acquire fundamental knowledge in human system physiology. This course is intended primarily for students in the MSBS program, but also is open to others.
PHSL	657	Readings in theory, physiological basis and applications of behavioral medicine.
PHSL	672	A lecture and/or seminar course on topics of current interest in physiology with special emphasis on the fundamentals of mammalian, especially human, life under normal, experimental, or pathological conditions. Students and department faculty members will present and moderate the discussion of original research publications. May be repeated for credit.
PHSL	689	Intensive study in field of interest including theoretical and experimental work. May be repeated for credit.
PHSL	872	A lecture and/or seminar course on topics of current interest in physiology with special emphasis on the fundamentals of mammalian, especially human, life under normal, experimental, or pathological conditions. Students and department faculty members will present and moderate the discussion of original research publications. May be repeated for credit.
PHSL	889	Intensive study in field of interest including theoretical and experimental work. May be repeated for credit.
PHYA	501	An overview of the history and philosophy of the physician assistant profession. Includes a review of current professional issues relevant to the PA profession.
PHYA	510	An introduction to the art of patient/practitioner communication and effective interviewing for the purpose of establishing a health database and follow-up care.
PHYA	513	Students will develop the knowledge and skills to competently perform a complete physical examination, recognizing normal and abnormal findings and communicating their findings verbally and in written form.
PHYA	514	Introduction to issues and systems related to the delivery of health care in the U.S. to include settings, costs, and reimbursement issues and the evaluation of health care quality.

PHYA	521	Introduction to the use and interpretation of commonly used diagnostic and therapeutic tools, including laboratory studies, radiographic studies, and electrocardiography.
PHYA	522	Introduction to the use and interpretation of commonly used diagnostic and therapeutic tools, including laboratory studies, radiographic studies, and electrocardiography.
PHYA	523	Introduction to the use and interpretation of commonly used diagnostic and therapeutic tools, including laboratory studies, radiographic studies, and electrocardiography.
PHYA	531	An intensive, three semester sequence of study which examines human diseases and disorders from the perspectives of etiology, epidemiology, clinical manifestations, diagnosis, management, potential complications and prognosis.
PHYA	532	An intensive, three semester sequence of study which examines human diseases and disorders from the perspectives of etiology, epidemiology, clinical manifestations, diagnosis, management, potential complications and prognosis.
PHYA	533	An intensive, three semester sequence of study which examines human diseases and disorders from the perspectives of etiology, epidemiology, clinical manifestations, diagnosis, management, potential complications, and prognosis.
PHYA	534	An intensive, three semester sequence of study which examines human diseases and disorders from the perspectives of etiology, epidemiology, clinical manifestations, diagnosis, management, potential complications and prognosis.
PHYA	540	An overview of physiological and pathologic processes that influence the human organism at the cellular, organ and systemic levels.
PHYA	541	An overview of physiological and pathologic processes that influence the human organism at the cellular, organ and systemic levels.
PHYA	542	An overview of physiological and pathologic processes that influence the human organism at the cellular, organ and systemic levels.
PHYA	551	A study of the general principles of pharmacotherapeutics and the rational use of drugs for the diagnosis, prevention and treatment of diseases.
PHYA	551M	
PHYA	552	A study of the general principles of pharmacotherapeutics and the rational use of drugs for the diagnosis, prevention and treatment of diseases.
PHYA	553	A study of the general principles of pharmacotherapeutics and the rational use of drugs for the diagnosis, prevention and treatment of diseases.
PHYA	600	Statistical analysis of data collected by students.
PHYA	602	Clinical experience introducing the student to medical and non-medical care to people who have a chronic illness or disability.



PHYA	605	This course provides the foundation for ethics in the primary care clinical setting. Analyze common bioethical issues confronting physician assistants, and give the student the opportunity to share their experiences with peers.
PHYA	611	An introduction to basic concepts of health promotion and disease prevention, analysis of risk factors for disease, and an emphasis on strategies to modify lifestyles to promote health in the individual and community.
PHYA	613	Presentation of methods of research and their application to clinical research in clinical practice. Present useful knowledge and understanding of the basic language, logic and methods of research design and statistical analysis.
PHYA	615	Study of concepts and practices related to evaluation and management of psychiatric diseases and conditions as well as behavioral issues which impact upon the health and well-being of patients.
PHYA	641	To provide the students with the opportunity to gain medical knowledge, develop proficiency and directed practical experience working directly with patients and health care personnel.
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PHYA	648	To provide the students with the opportunity to gain medical knowledge, develop proficiency and directed practical experience working directly with patients and health care personnel.
PHYA	650	Students will review history taking and patient interview skills and patient evaluation skills. Clinical orientation will consist of clinical assignments and review of clinical manual. Students will acquire ACLS certification.



PHYA	651	Provides supervised inpatient and ambulatory primary care clinical experiences for PA students. Students will demonstrate ability to integrate knowledge and skills in the evaluation and treatment of patients and their families.
PHYA	652	Provides supervised inpatient and ambulatory primary care clinical experiences for PA students. Students will demonstrate ability to integrate knowledge and skills in the evaluation and treatment of patients and their families.
PHYA	653	Provides supervised inpatient and ambulatory primary care clinical experiences for PA students. Students will demonstrate ability to integrate knowledge and skills in the evaluation and treatment of patients and their families.
PHYA	660	Students will develop and implement a scholarly project under the supervision of the student's major advisor.
PHYA	661	Students will develop and implement a scholarly project related to their professional goals. The project is negotiated between the student and the student's advisory committee.
PHYA	662	Students will develop and implement a scholarly project related to their professional goals. The project is negotiated between the student and the student's advisory committee.
PHYA	663	Students will develop and implement a scholarly project related to their professional goals. The project is negotiated between the student and the student's advisory committee.
PHYA	670	Explores current topics relevant to the physician assistant profession and health care; develops leadership, problem solving and clinical reasoning skills and prepares the student to enter professional practice.
PHYA	671	Explores current topics relevant to the physician assistant profession and health care; develops leadership, problem solving and clinical reasoning skills and prepares the student to enter professional practice.
PHYA	672	Explores current topics relevant to the physician assistant profession and health care; develops leadership, problem solving and clinical reasoning skills and prepares the student to enter professional practice.
PHYA	675	Final clinical experience designed to provide physician assistant students the opportunity to fully integrate and apply in clinical practice the relevant and advanced concepts from the discipline's studies.
PHYA	689	The student and instructor will agree on a program of study that will enable the student to achieve his/her objectives. Requires approval of the Program Director. May be repeated for credit.
PHYS	1050	The atomic structure of matter and the ideas of quantum physics. The sizes of objects from galaxies to nucleons. Molecules, solids, the wave nature of the electron, quarks and gluons.
PHYS	1300	Not for major credit. Selected subjects of current interest, with their relation to the principles and concepts of physics. Content may vary from year to year. No special science or mathematics background needed.



PHYS	1310	Not for major credit. Physics of waves and vibration. Human sound perception. Physics principles of wind, string and percussion instruments. Analog and digital reproduction of sound.
PHYS	1320	Not for major credit. Mechanics, energy, sound and thermodynamics of dinosaurs. The physics of vision and hearing. Fluids and flight. Radioactivity. Climate and the effects of an asteroid collision with the Earth.
PHYS	1330	Not for major credit. Physics of light and human vision. Atmospheric phenomena, images, depth perception, color analysis, pigments and dyes, color perception, the physics of art, the reproduction of color, thin film interference and holography.
PHYS	1340	An interdisciplinary course that discusses major scientific discoveries, the role of hypothesis testing in science, the use of mathematics in science; data presentation; and moral and ethical issues that stem from science.
PHYS	1750	Not for major credit. High school mathematics including plane geometry, trigonometry and two years of algebra is strongly recommended. Fundamental laws of nature pertaining to mechanics, thermodynamics, waves, electricity, magnetism, optics, atoms and particles.
PHYS	1910	An examination of our current understanding of the physical world at the conceptual level. Topics may include the ultimate structure of matter, quantum theory, relativity, astrophysics, cosmology and contemporary applications.
PHYS	2010	Topics include measurement, statics, Newton's laws, friction, work, energy, power, impulse and momentum, and simple machines. Includes integrated laboratory.
PHYS	2020	Topics include thermodynamics, electricity, and magnetism, electromagnetic radiation, optics, atomic and nuclear physics. Includes integrated laboratory.
PHYS	2070	Calculus not required. Mechanics of energy and motion, gravitation, harmonic motion, fluids, heat, entropy and the laws of thermodynamics. Four hours lecture and discussion, two hours laboratory per week.
PHYS	2080	Calculus not required. Electricity and magnetism, capacitors and inductors, electromagnetic waves, optics, atomic physics, nuclear physics, and elementary particles. Four hours lecture and discussion, two hours laboratory per week.
PHYS	2100	A bridge course for students wishing to continue in physics after taking PHYS 2070-2080. The application of calculus and elementary differential equations in various physical contexts. No credit for students who take PHYS 2130-2140.
PHYS	2130	Calculus based general physics. Mechanics of motion and energy, rotation, gravitation, harmonic motion, waves, fluids and the laws of thermodynamics. Five hours lecture and discussion, two hours laboratory per week.



PHYS	2140	Calculus based general physics. Electricity and magnetism, capacitors and inductors, electromagnetic oscillations, Maxwell's equations and electromagnetic radiation, optics, images, interference, and diffraction. Five hours lecture and discussion, two hours laboratory per week.
PHYS	2330	Descriptive discussion of the theory of general relativity, the final states of stellar evolution, black holes, and history of the universe from the big bang through the formation of the solar system. May be offered as writing intensive.
PHYS	3070	The physics of electrons, photons, atoms and nuclei, with emphasis on topics of importance for engineering.
PHYS	3150	Basic theoretical methods of physics. Topics include mechanical oscillations, wave propagation, electromagnetic fields, symm and eigenfunctions. Emphasis is on techniques that are common to many areas of physics and astrophysics.
PHYS	3180	Physical measurements laboratory related to the development of modern physics, emphasizing techniques such as electronics, computer-aided experimental control and data acquisition, and data analysis. May be offered as writing intensive.
PHYS	3310	Quantum mechanics: atomic and molecular structure and spectra.
PHYS	3320	Quantum statistics, applications of quantum mechanics and quantum statistics in laser physics and solid state physics, nuclear physics.
PHYS	3400	This course will involve the study of various conventional and unconventional sources of energy for human consumption. Past, present, and future energy sources will be examined on scientifically established principles and data.
PHYS	3410	Statistical mechanics, kinetic theory and thermodynamics from a unified microscopic point of view, with applications to a variety of topics from different areas of physics.
PHYS	3610	Electromagnetic theory, ray and wave optics including matrix methods, polarization, interference, diffraction, basic laser physics and survey of current laser systems.
PHYS	4130	Working knowledge of computer operations and programming required. Numerical accuracy, advanced programming, graphics and spreadsheet packages, numerical techniques for differentiation, integration, matrices, solving differential equations and eigenvalue problems.
PHYS	4210	Statics and dynamics of particles, work, energy, Lagrange equations of motion, small oscillations, dynamics of rigid bodies.
PHYS	4230	Mathematical formulation of electrostatic and magnetostatic fields, potential theory solution of boundary value problems, method of images, dielectric and magnetic materials.
PHYS	4240	Maxwell's field equations, production and propagation of electromagnetic waves, solution of boundary value problems with application to the laws of optics and guided waves.



PHYS	4310	Formalism and applications of quantum mechanics: Hilbert space, time-independent and time-dependent perturbation theories, atomic and molecular structure and spectra, and scattering theory.
PHYS	4400	Types and extent of solar energy used in human society including photosynthesis, photovoltaic, solar thermal, and concentrating solar electric; scope of the necessary energy storage and long distance electricity transmission.
PHYS	4430	Physical concepts as applied to medicine including: mechanics, exponential growth, statistical physics, fluid transport, and electricity and magnetism. This is a companion course to PHYS 4440.
PHYS	4440	Physical concepts as applied to medicine including: detectors, feedback and control, signal analysis, atomic physics, high energy particles, nuclear medicine, treatment and imaging devices. Prerequisite: PHYS 4430.
PHYS	4510	Crystal lattices and structures, reciprocal lattice and kinematical diffraction theory, binding in crystals, lattice dynamics and phonons, thermodynamic, electronic, and optical properties of insulators, semiconductors, metals and alloys.
PHYS	4580	Experiments in molecular and condensed matter physics such as Raman scattering and photoluminescence X-ray diffraction, Mossbauer effect, Hall effect, NMR and scanning tunneling microscopy. One 4 hour lab and 1 hour lecture per week. May be offered as writing intensive.
PHYS	4620	Longitudinal and transverse coherence, stimulated emission, optical pumping, resonator structures, Q-switching, mode-locking and laser systems (gas, dye, diode, doped insulator and free electron lasers).
PHYS	4780	Detectors and electronics, beta, gamma, and X-ray spectroscopy, grating and interferometric spectroscopy, laser applications, solar spectroscopy. One 4 hour lab and 1 hour lecture per week. May be offered as writing intensive.
PHYS	4910	Individual experimental or theoretical projects selected with the approval of the department.
PHYS	4940	Experiential learning in an advisor-approved business, non-profit, or academic organization. Maximum of three hours may count toward minor. Credit hours 1-4; may be repeated once for credit
PHYS	4980	Individual or small group study of selected topics not covered in regular undergraduate courses.
PHYS	5130	Numerical accuracy, advanced programming, graphics and spreadsheet packages, numerical techniques for differentiation, integration, matrices, solving differential equations and eigenvalue problems.
PHYS	5210	Kinematics and dynamics of particles and rigid bodies. Lagrangian and Hamiltonian equations of motion.
PHYS	5230	Electrostatics: the equations of Laplace and Poisson-Maxwell's equations and their solutions.
PHYS	5240	Maxwell's equations and their solutions; electromagnetic radiation.



PHYS	5310	Formalism and applications of quantum mechanics: Hilbert space, time independent and time-dependent perturbation theories, atomic and molecular structure and spectra, and scattering theory.
PHYS	5430	Physical concepts as applied to medicine including; mechanics, exponential growth, statistical physics, fluid transport, and electricity and magnetism. This is a companion course to PHYS5440.
PHYS	5440	Physical concepts as applied to medicine including: detectors, feedback and control, signal analysis, atomic physics, high energy particles, nuclear medicine, treatment and imaging devices. Prerequisite: PHYS 5430.
PHYS	5510	Crystal lattices and structures, reciprocal lattice and kinematical diffraction theory. Survey of binding in crystals. Lattice dynamics and phonons. Thermodynamic, electronic, and optical properties of insulators, semiconductors, metals and alloys.
PHYS	5620	Longitudinal and transverse coherence, stimulated emission, optical pumping, resonator structures, Q-switching, mode-locking and laser systems (gas, dye, diode, doped insulator and free electron lasers).
PHYS	5800	Theory and practice of astronomical outreach programming. Sky and calendar, mythology, constellations, astrophysics, buying and using small telescopes, operating and maintaining planetarium projectors, sky simulation software, projects and program production.
PHYS	5810	Spherical coordinate systems, astronomical time, celestial mechanics, the solar system and planetary physics, photometry, radiative transfer, stellar spectra and classification, binary stars and stellar masses.
PHYS	5820	Stellar structure and evolution, close binaries, origin of the elements, the sun, variable stars, star clusters, the interstellar medium, the Milky Way Galaxy, stellar statistics, galaxy structure and evolution, cosmology.
PHYS	5880	Astronomical, optical and electronic principles of operation of a modern astronomical observatory. Observing with the 1-meter telescope of Ritter Observatory, reduction, analysis and interpretation of astronomical spectra, Six hours laboratory per week.
PHYS	5900	Research work under the guidance of a member of the graduate faculty. Designed to prepare the student to propose and carry out the thesis research required for the M.S. degree.
PHYS	5950	For teachers in grades K-12. Introduction to modern physical science concepts suitable for classroom use; lecture and laboratory. Not acceptable for physics degree program.
PHYS	6010	Topical lectures by visiting and local professionals.
PHYS	6020	Literature review seminar.
PHYS	6030	Review of key concepts of physics and teaching strategies useful in introductory courses and laboratories.
PHYS	6130	Software packages for display and analytic manipulation, numerical methods for linear and non-linear systems of differential equations, matrix algebra, and the Schrodinger equation. Vector and parallel processing.

PHYS	6140	An intensive course which reviews the fundamentals of atomic, statistical and condensed matter physics. Provides a common foundation for entering graduate students for succeeding courses in physics and astronomy.
PHYS	6180	Experiments in atomic, condensed matter and nuclear physics, such as Zeeman, Raman, Mossbauer and Hall Effects, Doppler shifts, X-ray diffraction, NMR, STM, and alpha, beta and gamma ray spectroscopies.
PHYS	6220	Advanced classical mechanics, including the variational principles, Lagrange and Hamilton mechanics, and linear and nonlinear systems.
PHYS	6250	Solutions to Poisson's equation in Cartesian, spherical and cylindrical coordinates with Dirichlet, Neuman and mixed boundary conditions. Maxwell's equations and their solutions applied to waveguides and nonlinear materials.
PHYS	6260	Solutions to the wave equation with time dependent source terms, energy loss from high energy charged particles in dense materials, special relativity, classical field theory, invariant Lagrangians and conserved quantities.
PHYS	6290	Content may vary, covering topics such as fusion, plasmas in astrophysics, microdischarges, plasma display devices.
PHYS	6320	Quantum theory and its application to physical problems. Topics include dynamics in the Schrodinger and Heisenberg pictures, invariance principles and angular momentum theory, perturbation theory, the variational method.
PHYS	6330	The quantum theory of scattering, electromagnetic interactions, quantization of the electromagnetic field and introduction to the Dirac equation.
PHYS	6390	Physical principles of living processes, structural and dynamical properties of nucleic acids, proteins, polysaccharides, and lipids, intermolecular interactions of biomolecules, statistical mechanics of macromolecules, interactions of ionizing radiation with tissue.
PHYS	6450	A fundamental quantum-mechanical development of statistical thermodynamics. Non-interacting and weakly interacting many-particle systems in the classical and quantum regimes, with applications to various fields of physics.
PHYS	6490	Problems in theory relative to the research programs pursued at the University.
PHYS	6520	A study of the electromagnetic, thermal and elastic properties of condensed matter through the quantum-mechanical treatment of the electrons and elementary excitations.
PHYS	6530	A survey of condensed matter phenomena of interest to experimentalists, as elucidated by theory.
PHYS	6540	A generic materials science approach to the study of crystalline structure, defects (point, line and planar) in crystalline materials, and the mechanisms and kinetics of diffusion in the condensed state.

PHYS	6550	A materials science approach to the thermodynamics of condensed state equilibria and phase transformation kinetics.
PHYS	6590	A survey of various areas in the physics of condensed matter and materials. Content will vary with instructor and from year to year.
PHYS	6630	Review of modern theory of solids. Semiconducting and metallic materials. Semiconductor devices including p-n junctions and solar cells.
PHYS	6640	Worldwide status of Photovoltaics, Semiconductors. P-n junction diodes. Ideal solar cells. Efficiency losses. Single crystals and thin films technologies. PV systems.
PHYS	6690	Current research in optics and the optical excitation of material modes.
PHYS	6710	A study of the fundamental properties of atoms, their theoretical description and experimental measurement. Topics include atomic structure, radiative transitions, external field interactions and atomic collisions.
PHYS	6720	Theory and experimental methods of atomic and molecular spectroscopy. Topics include the theory of interpretation of atomic and molecular spectra and the experimental means to measure the spectra.
PHYS	6730	The study of particles and their interactions: conserved quantum numbers, symmetries and invariance principles, the standard model and beyond, accelerator/non-accelerator experiments, detectors and particle astrophysics.
PHYS	6740	Properties of the atomic nucleus and the nucleon-nucleon interaction, models for the structure of the nucleus, analysis of nuclear decay and nuclear reactions with applications to interdisciplinary areas.
PHYS	6770	Basic electrodynamic functioning of charged-particle accelerators, particle dynamics of non-relativistic and relativistic accelerators, accelerator applications, static field and dynamic field accelerator designs.
PHYS	6790	Current research in atomic and molecular physics theory and experiment.
PHYS	6810	Stellar atmospheres and their emergent spectra. Physics of radiation, matter and their interaction. Radiative transfer, hydrostatic and radiative equilibrium, convection, line formation and spectral signatures of atmospheric physics.
PHYS	6820	Stellar structure and evolution. Equation of state, nuclear reactions and nucleosynthesis, stellar formation, evolution and death, enrichment of the interstellar medium, formation of planetary systems, solar physics and helioseismology.
PHYS	6830	Stellar spectra, colors, compositions and ages; star clusters; pulsating stars; calibration of distance indicators. Interstellar dust, interstellar extinction, interstellar gas, nebulae; structure of the interstellar medium.
PHYS	6840	Structure and dynamics of the Galaxy, shocks and explosions, stellar kinematics, galactic rotation, and dynamical and chemical evolution.
PHYS	6890	Current research in solar, solar system, stellar, interstellar matter, galactic and/or cosmological physics.
PHYS	6960	Thesis research required for the M.S. degree.

PHYS	6980	Course reserved for visiting lecturers and topics not covered otherwise.
PHYS	7030	Review of key concepts of physics and teaching strategies useful in introductory courses and laboratories.
PHYS	7130	Software packages for display and analytic manipulation, numerical methods for linear and non-linear systems of differential equations, matrix algebra, and the Schrodinger equation. Vector and parallel processing.
PHYS	7140	An intensive course which reviews the fundamentals of atomic, statistical and condensed matter physics. Provides a common foundation for entering graduate students for succeeding courses in physics and astronomy.
PHYS	7180	Experiments in atomic, condensed matter and nuclear physics, such as Zeeman, Raman, Mossbauer, and Hall Effects, Doppler shifts, X-ray diffraction, NMR, STM, and alpha, beta and gamma ray spectroscopies.
PHYS	7220	Advanced classical mechanics, including the variational principles, Lagrange and Hamilton mechanics, and linear and nonlinear systems.
PHYS	7250	Solutions to Poisson's equation in Cartesian, spherical and cylindrical coordinates with Dirichlet, Neuman and mixed boundary conditions. Maxwell's equations and their solutions applied to waveguides and nonlinear materials.
PHYS	7260	Solutions to the wave equation with time dependent source terms, energy loss from high energy charged particles in dense materials, special relativity, classical field theory, invariant Lagrangians and conserved quantities.
PHYS	7320	Quantum theory and its application to physical problems. Topics include dynamics in the Schrodinger and Heisenberg pictures, invariance principles and angular momentum theory, perturbation theory, the variational method.
PHYS	7330	The quantum theory of scattering, electromagnetic interactions, quantization of the electromagnetic field and introduction to the Dirac equation.
PHYS	7450	A fundamental quantum-mechanical development of statistical thermodynamics. Non-interacting and weakly interacting many-particle systems in the classical and quantum regimes, with applications to various fields of physics.
PHYS	7520	A study of the electromagnetic, thermal and elastic properties of condensed matter through the quantum-mechanical treatment of the electrons and elementary excitations.
PHYS	7530	A survey of condensed matter phenomena of interest to experimentalists, as elucidated by theory.
PHYS	7710	A study of the fundamental properties of atoms, their theoretical description and experimental measurement. Topics include atomic structure, radiative transitions, external field interactions and atomic collisions.



PHYS	7720	Theory and experimental methods of atomic and molecular spectroscopy. Topics include the theory of interpretation of atomic and molecular spectra and the experimental means to measure the spectra.
PHYS	7730	The study of particles and their interactions: conserved quantum numbers, symmetries and invariance principles, the standard model and beyond, accelerator/non-accelerator experiments, detectors, and particle astrophysics.
PHYS	7740	Properties of the atomic nucleus and the nucleon-nucleon interaction, models for the structure of the nucleus, analysis of nuclear decay and nuclear reactions with applications to interdisciplinary areas.
PHYS	7770	Basic electrodynamic functioning of charged-particle accelerators, particle dynamics of non-relativistic and relativistic accelerators, accelerator applications, static field and dynamic field accelerator designs.
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PHYS	7820	Stellar structure and evolution. Equation of state, nuclear reactions and nucleosynthesis, stellar formation, evolution and death, enrichment of the interstellar medium, formation of planetary systems, solar physics and helioseismology.
PHYS	7830	Stellar spectra, colors, compositions, and ages; star clusters; pulsating stars; calibration of distance indicators. Interstellar dust, interstellar extinction, interstellar gas, nebulae; structure of the interstellar medium.
PHYS	7840	Structure and dynamics of the Galaxy, shocks and explosions, stellar kinematics, galactic rotation, and dynamical and chemical evolution.
PHYS	7910	Research work under the guidance of a member of the graduate faculty. Designed to prepare the student to propose and carry out the thesis research required for the Ph.D. degree.
PHYS	7950	For teachers in grades K-12. Introduction to modern physical science concepts suitable for classroom use; lecture and laboratory. Not acceptable for physics degree program.
PHYS	8010	Topical lectures by visiting and local professionals.
PHYS	8020	Literature review seminar.
PHYS	8290	Content may vary, covering topics such as fusion, plasmas in astrophysics, microdischarges, plasma display devices.
PHYS	8340	A general approach to relativistic quantum mechanics. Detailed study of Klein-Gordon and Dirac equations. Bilinear covariants and trace theorems.
PHYS	8350	Quantum mechanics of multiparticle systems. Essentials of quantum field theory and quantum scattering theory. Interactions, scattering matrix and Feynman approach to perturbation theory.

PHYS	8390	Physical principles of living processes, structural and dynamical properties of nucleic acids, proteins, polysaccharides and lipids, intermolecular interactions of biomolecules, statistical mechanics of macromolecules, interactions of ionizing radiation with tissue.
PHYS	8490	Problems in theory relative to the research programs pursued at the University.
PHYS	8540	A generic materials science approach to the study of crystalline structure, defects (point, line and planar) in crystalline materials, and the mechanisms and kinetics of diffusion in the condensed state.
PHYS	8550	A materials science approach to the thermodynamics of condensed state equilibria and phase transformation kinetics.
PHYS	8590	A survey of various areas in the physics of condensed matter and materials. Content will vary with instructor and from year to year.
PHYS	8630	Review of modern theory of solids. Semiconducting and metallic materials. Semiconductor devices including p-n junctions and solar cells.
PHYS	8640	Worldwide status of Photovoltaics, Semiconductors. P-n junction diodes. Ideal solar cells. Efficiency losses. Single crystals and thin films technologies. PV systems.
PHYS	8690	Current research in optics and the optical excitation of material modes.
PHYS	8790	Current research in atomic and molecular physics theory and experiment.
PHYS	8860	Differential geometry, exterior calculus of tensors, the stress-energy tensor and Einstein field equation, stellar evolution and black holes, gravitational lensing, tests of the theory, and gravitational wave detection.
PHYS	8870	Cosmological solutions for Einstein's field equation, the standard cosmological model, particle physics, nucleosynthesis and the cosmic background radiation. Inflation, dark matter and mass distribution, gravitational evolution, and formation of galaxies.
PHYS	8890	Current research in solar, solar system, stellar, interstellar matter, galactic and/or cosmological physics.
PHYS	8960	Thesis research required for the Ph.D. degree.
PHYS	8980	Course reserved for visiting lecturers and topics not covered otherwise.
PHYT	500	Students will study the structure of the human body using the structure-function relationship as the course paradigm. Musculoskeletal, vascular, and peripheral nervous system anatomy will be emphasized, as will the coordinated role of these structures, both locally and regionally, in producing movement of the axial skeleton and extremities. Competencies serve as a foundation for clinical science coursework, particularly in the musculoskeletal and neuromuscular areas of practice.
PHYT	501	Examination of typical lifespan development from conception to adolescence. Emphasis on physical therapy assessment, gross motor development and movement analysis. Includes overview of fine motor development, cognition, public laws, child abuse, maternal wellness issues, and interaction with families.



PHYT	502	The first of two, this course examines typical lifespan development from birth to adolescence. Emphasis is on theoretical constructs, gross motor development, physical therapy examination, diagnosis, prognosis and evaluation of findings. Also includes an overview of fine motor development, cognitive development, reflex development, interaction with families, public laws and child abuse.
PHYT	504	This course will familiarize students with various health care delivery systems in use and how they influence the practice of physical therapy. Attention is given to the role of government and regulatory policy and practices and how they influence decision-making and strategies. Strategic and operative role of managed care will be explored.
PHYT	505	The first of two, this course is an integrated study of kinesiology through the application of the concepts of biomechanics, and neuromusculoskeletal anatomy as they relate to human movement. As the student develops skill in understanding normal movement, emphasis will be placed on generating hypotheses involving impaired movement and the identification of examination data necessary for effective clinical reasoning.
PHYT	506	Second of two, this is an integrated study of applied kinesiology in the study of human gait, and the neuromuscular control of simple and complex movement. Observational skills are emphasized in analyzing gait and neuromuscular control (normal and pathological), including the use of various evaluation tools such as EMG, motion analysis, videography, and observation. Focuses on generating hypotheses in pathological conditions and identification of exam data necessary for effective clinical reasoning.
PHYT	507	An integrated study of structure-function relationship in the central and peripheral nervous systems, emphasizing the neuromuscular control of movement. Content serves as the foundation for discussion in PHYT508.
PHYT	508	Principles of neurophysiological and neuropathological sensory and motor function will be applied to clinical manifestations of neurological impairments commonly seen in PT settings. Procurement of basic assessment skills for clients with neuromuscular impairments will provide the clinical focus for integration of foundation neuroscience information with clinical practice.
PHYT	510	Using scientific inquiry as a foundation, the student will formulate a relevant research question and design a research proposal as the first step in completing the required scholarly project.
PHYT	511	Integrated study of physiological and pathophysiological processes that influence the human body at the cellular, organ and systemic levels. Emphasis on mechanisms of and clinical manifestations of common diseases with discussion of potential impact on the delivery of PT services. Content to serve as the basis for discussion of pharmacology in subsequent courses.



PHYT	515	The student will initiate the formal research proposal through refinement of a scholarly project proposal and submission of the proposal to the Institutional Review Board for Human Subjects (IRB) for approval.
PHYT	516	Includes completion of data collection, analysis of the data, and preparation of a scholarly project.
PHYT	517	Introduction to scientific inquiry and research design. Content focuses on developing research skills to search, retrieve and organize scientific evidence. Various Evidence Based Practice perspectives will guide review and critique of research methodology. Students will be introduced to psychometrics and principles of sound measurement in healthcare; and will work with peers to summarize literature toward development of a clinical practice guideline.
PHYT	518	Builds on PHTY517. Topics include descriptives, correlation, linear regression, comparison of means, and categorical data analysis (chi-square and logistic regression). Statistics for comparison of results across studies will be discussed (e.g., effect size, odds ratio). Knowledge and skills gained from completion of a clinical practice guideline will assist students in choosing a focus for a scholarly project.
PHYT	520	Discussion and application of the elements of health and wellness as described by Healthy People 2010. Emphasis on health assessment, obesity, physical activity, nutrition, complementary/alternative management, and behavior modification strategies.
PHYT	521	Treatment planning throughout the continuum of care focusing on concepts of acute care. Integration of theoretical basis for application techniques of patient positioning and mobility and thermal modalities as they relate to inflammation, tissue repair, pain.
PHYT	522	An integrated study of the theoretical basis for and the application of mechanical and electrical modalities used for the evaluation and management of clients. Current scientific literature will be used to determine the efficacy of these modalities.
PHYT	525	Continued exploration of principles of exercise physiology as applied to physical therapy settings and promotion of clients' health and wellness. Emphasis on client assessment, identification of needs, design of exercise programs.
PHYT	526	Explore impact of cardiovascular-pulmonary disease/dysfunction on health and functional status. Emphasis on role of physical therapy in interdisciplinary management of clients with cardiopulmonary dysfunction across the lifespan and continuum of care. Physical therapy assessment and management of clients with cardiovascular-pulmonary dysfunction.
PHYT	527	Exploration of exercise physiology principles as related to promotion of PT patients/clients' health and wellness. Emphasizes physiological and biochemical changes with exercise/training and exercise testing and prescription for PT patients/clients.



PHYT	528	The theory and practice of physical therapy in the acute care setting as it relates to improvement of functional mobility, prevention of complications, and preparation for next level of care.
PHYT	530	Application of scientific principles in anatomy, applied biomechanics, and exercise physiology to develop sound therapeutic exercise procedures. Emphasis on development of skills associated with therapeutic exercise for patients with musculoskeletal and/or general movement dysfunction. Students will learn how to use and apply a variety of common fitness and rehabilitation exercise apparatus and develop appropriate PT treatment plans that include exercise for a given patient problem.
PHYT	531	Application of sciences of exercise physiology, anatomy, and applied biomechanics to develop sound therapeutic exercise procedures. Emphasis is on musculoskeletal systems and movement dysfunction. Focuses on empirical evidence of validity for exercise prescription.
PHYT	535	Introduction to the physical examination process, including history-taking, systems review and screening. Emphasis on basic PT examination skills of the cardiovascular, musculoskeletal, and integumentary systems. Skills include: assessment of tolerance to functional activity (vital signs), posture, pain, peripheral pulses and edema; goniometry; and strength testing.
PHYT	540	Presentation of selected case studies with an emphasis placed on clinical decision-making based on advanced evaluation skills, integrated assessment and treatment planning, and one's individual problem-solving process.
PHYT	545	Addresses the professional socialization process. Professional codes and guides of behavior will be discussed in relation to delivery of competent, ethical, legal and compassionate PT services. Topics include: therapeutic communication, cultural competency, stress management and conflict resolution. Introduction to basic principles of teaching and learning for the role of educator is included.
PHYT	550	Theories and principles of pathophysiology and musculoskeletal screening. This course will emphasize pertinent examination, evaluation, assessment (physical therapy diagnosis and prognosis), and intervention principles. Focus will be on the extremities.
PHYT	551	Continuation of theories and principles of pathophysiology and musculoskeletal screening. Emphasizes pertinent examination, evaluation, assessment, and intervention principles. Focuses on spine (cervical, thoracic, pelvic) and lower quarter biomechanical evaluation as it relates to lumbar/pelvic spine dysfunction.
PHYT	560	Theories and principles of therapeutic exercise related to the client with neuromuscular impairment across the lifespan. Emphasizes motor control, motor learning, neurofacilitation, analysis of abnormal movement and client assessment and treatment.



PHYT	561	An integrated study of the principles of the rehabilitation process for clients with long-term disability. Theories, philosophies, and evaluation treatment strategies will be explored as well as the complex psychodynamics associated with disability/chronic illness.
PHYT	565	Integrated study of pharmacology that presents the pharmacodynamics and pharmacotherapeutics of common classes of drugs. Drugs covered include: anti-inflammatory, analgesic, muscle relaxant, psychotropic, anti-microbial, and diabetic medications. Emphasis on indications, contraindications, adverse drug reactions, and the implications for physical therapy care.
PHYT	572	Intensive exploration of a topic influencing the delivery of physical therapy services, which is designed to meet the student's special interest and professional goals. Subject matter will vary upon demand. Current topics: Manual Therapy - Diagnosis and Treatment of the Lumbar Spine and Pelvis, and Women's Health. May be repeated for credit.
PHYT	575	Introduction to basic concepts of problem solving and critical thinking used in PT, including evidence-based practice. Includes an overview of professional decision-making models and an examination of the steps associated with the student's method of decision-making. Introduction to the Guide to Physical Therapist Practice (APTA) as a tool for enhancing clinical reasoning. Models of documentation will be explored as a means to enhance the student's clinical reasoning abilities.
PHYT	580	Clinical observation and supervised application of appropriate assessment and treatment skills/procedures. An emphasis is placed on professional socialization, basic examination skills and basic treatment planning/progression skills. 160 hours/4 weeks.
PHYT	581	Clinical observation and supervised application of appropriate assessment and treatment skills/procedures. Emphasis is placed on further professional socialization, integrative evaluation skills, and treatment planning progression. 320 hours/8 weeks.
PHYT	585	Clinical observation and supervised application of appropriate examination and intervention skills/procedures. An emphasis is placed on professional socialization, demonstration of further development of the generic abilities of the profession, and self-assessment of one's professional development in the clinical setting.
PHYT	586	Clinical observation and supervised application of advancing physical therapy skills at the same clinical facility as Clinical Practicum I. An emphasis will be on continued progression in the generic abilities and a more focused approach toward the development of specific technical, cognitive or affective areas in need of improvement as identified during Clinical Practicum I.
PHYT	599	In-depth study of clinically related problems or topic of interest. May be repeated for credit.



PHYT	601	Principles of aging with emphasis on the developmental, physiological, functional, and psychosocial changes manifested in the transition from middle age to old age. Integrating previous course work, the student will analyze and synthesize complex evaluation findings of older adults and develop a comprehensive physical therapy plan of care.
PHYT	602	The principles of normal aging including the physiological, functional, and psychosocial changes associated with aging, and a review of diseases and disorders common to the aging population.
PHYT	604	Examination of management and supervisory issues encountered in a contemporary physical therapy practice. Topics include: organizational structure and behavior, human resources, finance and operations management, and marketing.
PHYT	605	Overview of the origins and components of the American health care system and major policy initiatives that influence it. Access, cost, and quality factors in health care delivery will be explored. Serves as a starting point for the student's study of the continuously expanding sector of the American economy in which they will practice.
PHYT	615	Includes completion of data collection, analysis of the data, and preparation of a scholarly project. The student will present the scholarly project.
PHYT	617	The student will initiate the formal research process through refinement of a research/scholarly project proposal and, if necessary, submission of the proposal to the Institutional Review Board for human subjects for approval.
PHYT	618	Includes completion of data collection, analysis of the data, and initial preparation of a scholarly paper, in accordance with specific manuscript guidelines.
PHYT	619	Includes the final preparation of a scholarly paper which must meet the guidelines established by the College of Graduate Studies, and the oral defense/presentation of the scholarly project as required by the College of Graduate Studies.
PHYT	625	Further exploration of the physical therapy examination and evaluation process, with emphasis on differential diagnosis. Emphasis on dysfunctions that mimic neuro-musculoskeletal dysfunction. Determination of need for referral to another member of the health care team will be emphasized.
PHYT	626	Integrative study of the role of PT in interdisciplinary management of patients with cardiovascular and/or pulmonary dysfunction. Application of skills associated with PT examination, evaluation, diagnosis, prognosis and interventions for patients with CV-P dysfunction.



PHYT	628	Study of the theoretical basis for, and the application of thermal, mechanical, and electrical modalities used for the PT management of clients. Emphasis is on evidence-based practice, critical thinking, and clinical decision-making using a case-based format, and review of the scientific literature will be used in determining the most appropriate use of modalities within a comprehensive PT plan of care.
PHYT	645	Continued exploration of the principles of patient education, group differences, and development of appropriate educational materials. An emphasis will be placed on health promotion, in-service education and instruction of client and families.
PHYT	646	Study of a physical therapist's role as educator of peers, patients and families, community members, and students in the clinical setting. Emphasis on instructional design, instructional strategies, teaching methods, and evaluation of learning.
PHYT	650	First of two courses, focused on the synthesis of principles of pathophysiology and screening and examination of musculoskeletal system. Emphasis on pertinent special examination techniques, principles of evaluation, PT diagnosis and prognosis, and intervention for the upper and lower extremities. Case-based discussion of role of common M-S pharmacological management, radiographic procedures and findings, and interpretation of special tests for diagnostic purposes.
PHYT	651	Second of two courses, continued discussion of the principles of pathophysiology and musculoskeletal examination, evaluation, PT diagnosis and prognosis, and intervention. Emphasis on spine and lower quarter biomechanical examination and evaluation as it relates to lumbopelvic dysfunction. Includes discussion of: pharmacological management of inflammation and pain, and synthesis of radiological findings (radiographs, MRI, CT scans), as they relate to rendering PT diagnosis and prognosis.
PHYT	660	Theories and principles of client examination, evaluation, PT diagnosis, prognosis, and therapeutic intervention for clients with stroke and spinal cord injury. Historic and modern evidence-based treatment approaches for the neurologic patient, in general, will be discussed with emphasis on the approach's influence in the design of a PT plan of care.
PHYT	661	Principles of rehabilitation for clients with chronic neuromuscular impairments and long-term disability. Emphasis on theories, philosophies, and the PT plan of care including examination, evaluation, and intervention strategies. Includes pediatric module.
PHYT	670	Prerequisite: PHYT685 Discussion of current events and issues faced by the profession of physical therapy as identified by the APTA and other pertinent sources, and as encountered during clinical education experiences.



PHYT	672	Intensive exploration of a topic related to the profession of physical therapy and designed to meet the student's special interest and professional goals. Subject matter will vary depending upon student interest.
PHYT	675	Second of two, emphasizes the application of problem solving and critical thinking for a variety of diagnoses and practice settings using complex patient scenarios. An emphasis is placed on evidence-based decision-making, comprehensive evaluation, progressive intervention planning, and evaluation of one's own clinical reasoning processes and skills.
PHYT	685	Clinical observation and supervised application of basic and comprehensive PT examination, evaluation, and intervention skills. An emphasis is placed on further professional socialization, integrative evaluation skills, and treatment planning/progression and documentation of care.
PHYT	689	Orientation to physical therapy practices including supervised examination, evaluation, assessment and treatment procedures. Development of entry-level physical therapy skills and competency will be emphasized. 640 hours/16 weeks.
PHYT	690	Addresses current professional issues in the practice of physical therapy. Students will be responsible for presenting the pros and cons of each issue and facilitating discussion of these issues. Will serve as Capstone experience.
PHYT	699	In-depth exploration and study of clinically related problems or topic of interest. May be repeated for credit.
PHYT	705	Examination of management and supervisory issues encountered in contemporary physical therapy practice. Discussion will include identification, analysis, and resolution of issues that compromise the delivery of effective and efficient PT services in a variety of practice settings. Topics include: organizational structure and behavior, human resources, finance and operations management, and marketing.
PHYT	708	Serves to further integrate the concepts of neuroscience, biomechanics, muscle function, and motor control for the multidimensional understanding of skilled movement. Emphasis will be on analyzing current information regarding "normal" control of simple and complex movements used in functional activities and the role of PT intervention in maximizing function.
PHYT	721	Emphasizes advanced concepts in determining a prognosis and PT interventions for patients with complex movement dysfunction involving impairments in multiple body systems. Scientific principles from earlier coursework are used as the basis for chosen interventions, particularly when practice guidelines and literature provide limited data regarding the efficacy of a given intervention. Student's ability to manage clinical ambiguity is emphasized throughout the course.



PHYT	735	Further exploration of the PT examination and evaluation process, emphasizing PT differential diagnosis. Foci on systemic dysfunction mimicking neuromusculoskeletal dysfunction, applied pharmacology, and introduction to principles of radiological-nuclear imaging. Discusses the procedures necessary for evaluating the quality and utility (reliability and validity) of medical diagnostic tests. Determination of need for referral to another health care team member will be emphasized.
PHYT	762	Integrated study of the principles of rehabilitation for clients who have sustained substantial trauma including, but not limited to: TBI, multiple fractures and burns. Students will be asked to integrate previous coursework in making decisions regarding the role of PT in the interdisciplinary management throughout the continuum of care for clients who have multi-system impairments due to physical trauma.
PHYT	789	Clinical observation and supervised application of comprehensive PT examination, evaluation, and intervention skills/procedures. An emphasis is placed on further professional socialization and development of entry-level PT skills and competency.
PHYT	790	Clinical observation and supervised application of comprehensive PT examination, evaluation, and intervention skills/procedures. An emphasis is placed on further professional socialization and development of entry-level PT skills and competency.
PHYT	799	Extended period of supervised, advanced clinical practice and/or formal experience in administrative or professional organizational environments, which is designed to meet the student's special interests and professional goals.
PMED	1000	Supervised independent study designed to provide pre-medical students with volunteer experiences in a health care institution. To receive 1 hr credit, students must complete 4 hrs of volunteer work per week. May be taken only as PS/NC.
PMNR	701	The PM&R clinical elective focuses on the impairments and disabilities which may accompany a variety of illnesses. The student in a two-week rotation may choose to focus in musculoskeletal or neurological rehabilitation. Students in the 4-week rotation will have the opportunity to experience the breadth of physical medicine and rehabilitation. The educational experience will occur Monday through Friday. The hours each day for training will average 8, but may be more depending upon the attending, clinic schedules, and student interest. The student will be assigned to a specific faculty member as their primary teaching attending, but will also interact with PM&R residents and other PM&R faculty. Faculty contact will average six hours per day. At the end of the rotation, with the help of their teaching attending, students will give a brief presentation on a rehab topic of interest.

PMNR	705	The PM&R clinical elective focuses on the impairments and disabilities which may accompany a variety of illnesses. The student in a two-week rotation may choose to focus in musculoskeletal or neurological rehabilitation. Students in the 4-week rotation will have the opportunity to experience the breadth of physical medicine and rehabilitation. The educational experience will occur Monday through Friday. The hours each day for training will average 8, but may be more depending upon the attending, clinic schedules, and student interest. The student will be assigned to a specific faculty member as their primary teaching attending, but will also interact with PM&R residents and other PM&R faculty. Faculty contact will average six hours per day. At the end of the rotation, with the help of their teaching attending, students will give a brief presentation on a rehab topic of interest.
PSC	1200	An introductory survey of the institutions, processes and politics of the government of the United States and its relationship to state governments. (not for major credit)
PSC	1300	Studies the history and institutions of US government emphasizing the dynamics of difference, including race, class and gender, amongst the governed and governing groups.
PSC	1400	A course designed to introduce the student to the policy process in the United States through an examination of current social, social, economic and political issues facing local, state and national governments.
PSC	1710	A course designed to give the student a perspective on world affairs through an examination of some contemporary international problems.
PSC	2210	An exploration of women and gender relations in US political life. Special attention is paid to differences among women, their socializing experiences, political power bases, and legal status. Multicultural course.
PSC	2300	A study of the political processes and institutions of American state and local governments, with attention given to selected areas of public policy and intergovernmental relations.
PSC	2400	Examination of current topics in Political Science. Area and topic to be determined by instructor.
PSC	2610	An analysis of British parliamentary democracy and an examination of modern British politics. Recommended: PSC 1200 or 1400.
PSC	2620	A comparative analysis of the politics of continental Europe focusing on the French and German political systems. Recommended: PSC 1200 or 1400.
PSC	2660	The character and development of African political institutions and processes with a special emphasis on patterns in the post-independence period and prospects for the future.
PSC	2680	An examination of culture, political institutions, and political processes and problems of development of selected Asian countries.



PSC	2700	An examination of such basic forces as nationalism, ideology and power that promote conflict and cooperation among states in the international community.
PSC	2790	An examination of topics in political science or public administration requiring study and travel in other countries. Topics vary.
PSC	2800	An investigation of important themes in classical and contemporary political theory, including: justice, liberty and democracy. These issues are approached through discussion of a number of original works by political theorists.
PSC	3110	Descriptive statistics, introduction to inferential statistics, data processing and computer applications in the social sciences.
PSC	3210	An analysis of the theory, organization, techniques and dynamics of the American party system.
PSC	3240	A study of the many ways blacks has involved themselves in American politics; examines African-American participation in the political and governmental process.
PSC	3250	A study of American public opinion with attention to polling and voting data and analysis.
PSC	3260	An examination of the politics of the American economic system including the role of government in both the public and private sectors of the economy.
PSC	3310	A survey of urban government and politics, including the philosophy of local government, urban political processes, structural problems and relations with other units of government.
PSC	3420	An overview of public administration including organization theory, decision making, budgeting, public policy and the changing role of public institutions.
PSC	3500	An overview of law, legal procedures and the legal professions.
PSC	3510	The development of the American legal system and the implications of judicial decisions affecting the institutions and powers of government, the federal system and the relationship of the individual to government.
PSC	3520	Prerequisite(s): 6 hours in PSC or 9 hours in social sciences, or permission of instructor Catalog Description: Examines the role of the Supreme Court in the US system of civil liberties, the relationship between judicial decisions and state actions affecting rights such as free speech, religion, and privacy, and the underlying theories of civil liberty in a democratic society.
PSC	3730	An examination of the American foreign policy-making process as well as an analysis of the major problems facing the United States in its interaction with the international environment.
PSC	3800	This course examines sexual politics through studying canonical literature of Western political theory, feminism and postmodern theory.



PSC	3820	Surveys trends in 20th century political and social thought, including critical theory, post-structuralist theory, feminism and anti-racist politics. Particular issues addressed include bureaucracy, mass society, state and civil violence, and identity politics.
PSC	3900	Seminar focused on timely topics in political science chosen by rotating faculty in the department.
PSC	3990	Individual reading and research in selected topics for honors students.
PSC	4180	Applications of spreadsheet, database and statistical software to policy and administrative problems in the public sector.
PSC	4210	A study of the political ideas and the psychological and sociological motivations underlying voting and other types of political behavior in the United States.
PSC	4230	The nomination, election, responsibilities and performance of the American president. The course includes decision making, policy making, personality, and relations with Congress, the courts, news media and interest groups.
PSC	4250	A study of the relationships among the various types and levels of government in the United States with an examination of the fields in which the major governmental contacts occur.
PSC	4280	An intensive study of the development, functions, committees, party and factional organizations of the U.S. Congress and state legislatures.
PSC	4320	An examination of the policy process in modern cities, focusing on the interactions between the principal political and administrative organizations in formulating and implementing policy.
PSC	4330	An examination of United States health care policy and its progression to the current era of cost controls. In addition, the principal actors and theories influencing health care policy are analyzed.
PSC	4340	Policy for air and water pollution control, hazardous wastes, nuclear wastes. Examination of EPA, Congressional committees, state and city agencies. Some international issues.
PSC	4350	An overview of the United States health care delivery system. The roles, responsibilities and relationships of various components are discussed and analyzed, with emphasis on interrelationships between government, providers and institutions.
PSC	4360	Examination of values and principles which influence public policy and public administration. Applications to policy problems and responsibilities of public administrators will be emphasized.
PSC	4370	Individual and group behavior in public organizations from the perspective of alternative management strategies. Occasionally offered as a writing intensive course.
PSC	4410	Examination of forces that influence management of nonprofit organizations in the United States, and their roles and responsibilities. Consideration of organizational structures, leadership, fiscal administration, and relations with citizens and other organizations.



PSC	4430	The organization, operation and problems of public personnel systems in the functions of selection, training, classification and employee relations.
PSC	4440	An examination of the institutions and techniques of financial administration, including government accounting, budgeting, financial management and governmental choice.
PSC	4460	The relationship of national administration to the formulation of policy by the Executive Branch and Congress and the exercise of controls over the bureaucracy by the Executive Branch, Congress and the Judiciary.
PSC	4470	A systematic consideration of theories of political organization and administration, including institutional, behavioral, sociological, psychological and political theories, with emphasis on decision-making in governmental organizations.
PSC	4490	Examination of selected current problems in public policy and administration. Topics vary and are listed in each term's schedule of classes.
PSC	4530	Prerequisite(s): 6 hours in PSC or 9 hours in social sciences, or permission of instructor. Catalog Description: A study of judicial policy-making and administrative implementation involving issues related to race, gender and sexual orientation.
PSC	4540	This course examines theories of race relations and applies these theories to select public policy issues, such as affirmative action, welfare, criminal justice and others.
PSC	4550	Examines current controversies in US law and politics drawing on recent research in political theory, constitutional history, and legal doctrine. Includes issues such as freedom of speech, presidential war powers, and religious freedom.
PSC	4560	The impact of law on public administration with emphasis on judicial review, agency rule making and procedures.
PSC	4570	A study of the politics and practices of judges and courts, including judicial reasoning.
PSC	4580	An examination of the legal status of nation states and dependencies and of the rules concerning international diplomacy, treatment of persons and peaceful settlement of disputes. Recommended: PSC 1710 or PSC 2700
PSC	4610	A study of political functions such as elections, political parties, interest groups, executive-legislative relations and centralization of powers in various nations. Recommended: PSC 2610 or PSC 2620
PSC	4620	Politics and government of Russia, especially since 1989. Discussion of other former Soviet republics will also be included.
PSC	4630	The government and politics of Canada with particular emphasis on federalism and the operation of parliamentary government in a changing party system. Recommended: PSC 1200 or 1400.



PSC	4640	An analysis of the evolution, institutional structure and operation of the European Union.
PSC	4650	An examination of the relationship between political and economic structures, organizations and events, including such issues as the politics of trade, foreign aid and economic development.
PSC	4660	An examination of political behavior in selected African states using a case method to examine alternative courses of action available to decision makers.
PSC	4670	A survey of the institutions of government, political processes, parties and interest groups and problems of development in the Middle East. Recommended: PSC 1710 or PSC 2610 or PSC 2620.
PSC	4690	A study of the development of Chinese governmental institutions and political process, interest groups, political culture, political participation, economic development, national defense and foreign relations.
PSC	4700	An examination of factors affecting foreign policy processes in Africa, emphasizing the relations between Africa, the Big Powers and the United Nations.
PSC	4710	An analysis of the major concepts of international politics that attempt to construct a general theory of behavior in world affairs. Recommended PSC 2800.
PSC	4720	A study of the background, general concepts and problems of international organizations including the United Nations, historical models, regional organizations and non-governmental organizations. Recommended: PSC 2700
PSC	4730	An investigation of the origins, organization, political practices, administrative activities and problems of the United Nations and its related agencies. Recommended: PSC 1710 or PSC 2700
PSC	4740	An examination of political, economic and geographic actors affecting international relations of the Middle East, including the role of the major world and regional powers. Recommended: PSC 1710 or PSC 2700
PSC	4800	A theoretical and comparative study of the patterns of foreign policy. It emphasizes the evaluation of analytical models and conceptual frameworks, and the examination of the foreign policy of key states as case material.
PSC	4860	An analysis and discussion of contemporary feminist political theory.
PSC	4880	The course will focus on close readings of influential critical theories about particular issues relevant to contemporary political life. The themes of the course will vary and may include questions of liberalism and power, the politics of violence, identity and difference, or post-structuralism.
PSC	4900	An interdisciplinary and comparative study of the major issues in Asia with special emphasis on political and economic development and international relations in Asia.



PSC	4940	A study of electoral politics, public decision-making or policy implementation through internships with candidates, political parties, public officials or governmental or nonprofit agencies.
PSC	4960	Supervised research and writing for honors students only.
PSC	4980	Timely examination of emerging issues within the various segments of the discipline of political science.
PSC	4990	Individual study in selected topic.
PSC	5110	A course covering descriptive statistics and providing an introduction to inferential statistics, data processing and computer applications specifically tailored for the needs of the social sciences.
PSC	5140	An approach to regression analysis designed for social scientists. Development of a common conceptual basis for correlation and regression analysis and analyses of variance and covariance.
PSC	5180	Use of software with an emphasis on data-base, spreadsheet, statistical and desktop publishing programs for microcomputers. Application to analysis of administrative and policy problems in the public sector.
PSC	5210	A study of American voting and political behavior. Emphasis is placed on the ideological, psychological and sociological parameters which affect the political behavior and voting of Americans.
PSC	5230	The nomination, election, responsibilities and performance of the American president. The course includes decision making, policy making, personality, and relations with Congress, the Courts, news media and interest groups.
PSC	5250	National, state and local governmental relationships are examined with emphasis on grant-in-aid, formal and informal cooperative devices, and current problems of the federal system in the United States.
PSC	5280	An intensive study of the development, functions, committees, party and factional organizations of the U.S. Congress, state legislatures and non-American legislative bodies.
PSC	5320	An examination of the policy process in modern cities, focusing on the interactions between the principal political and administrative organizations in formulating and implementing policy.
PSC	5330	An examination of United States health care policy and its progression to the current era of cost controls. In addition, the principal actors and theories influencing health care policy are analyzed.
PSC	5340	Policy for air and water pollution control, hazardous wastes, nuclear wastes. Examination of EPA, Congressional committees, state and city agencies as well as some international issues.
PSC	5350	An overview of the United States health care delivery system. The roles, responsibilities and relationships of various components are discussed and analyzed with emphasis on interrelationships between government, providers and institutions.



PSC	5360	Examination of values and principles which guide public policy formation and public administration. Applications of philosophical concepts to policy problems and the responsibilities of public administrators will be emphasized.
PSC	5370	Individual and group behavior in public organizations from the perspective of alternative management strategies.
PSC	5390	A study of electoral politics, public decision-making or policy implementation through internships with candidates, political parties, public officials or governmental or nonprofit agencies.
PSC	5410	Examination of social, cultural, organizational, economic and political forces that influence management of nonprofit organizations in the United States. Historical and theoretical origins of their roles and responsibilities.
PSC	5430	A study of developments and problems in the recruitment and management of public employees.
PSC	5440	An examination of the institutions and techniques of financial administration, including government accounting, budgeting, financial management and governmental choice.
PSC	5470	Relates a diverse body of literature known as "organization theory" to the behavior of public organizations in their political setting.
PSC	5490	Examination and analysis of a current policy or administrative issue. Topics vary and are listed in each term's schedule of courses.
PSC	5530	A study of policy-making and implementation related to issues of race, gender and sexual orientation.
PSC	5540	This course examines theories of race relations and applies these theories to select public policy issues, such as affirmative action, welfare, criminal justice and others.
PSC	5550	Examines current controversies in U.S. law and politics, drawing on recent research in political theory, constitutional history, and legal doctrine. Includes issues such as freedom of speech, presidential powers, and religious freedom.
PSC	5560	Reading, research and discourse on the impact of law on public administration, including judicial review.
PSC	5570	A research-oriented course providing a broad theoretical context for the study of decision making, reasoning and politics in the process of court adjudication.
PSC	5580	A study of the legal system governing interstate relations. Cases will be reviewed. State jurisdiction and responsibilities will be examined, emphasizing the rules of war.
PSC	5610	An examination of selected topics in comparative politics, with special emphasis on the problems of advanced industrial democracies.
PSC	5620	An examination of government and politics in Russia and the former Soviet Republics.

PSC	5630	An examination of the political institutions and parties of Canada with special attention to the effect of federalism on a parliamentary system of government.
PSC	5640	An analysis of the evolution, institutional structure and operation of the European Unions.
PSC	5650	An analysis of the interaction of the international political and economic systems with focus on the political aspects of the international economy. Topics include economic development, interdependence, trade and multilateral institutions.
PSC	5660	A study of political decision making in selected African states using a case method to examine alternative types of political behavior and their practical consequences.
PSC	5670	A survey within a historical context of the states in the Middle East. Study of political processes and structures. Conferences with the instructor and a paper are required.
PSC	5690	A study of the development of Chinese governmental institutions and political process, interest groups, political culture, political participation, economic development, national defense and foreign relations.
PSC	5700	An examination of factors affecting foreign policy processes in Africa, emphasizing the relations between Africa, the Big Powers and the United Nations.
PSC	5710	An analysis of the leading approaches to the study of international politics that contribute to the construction of a general theory.
PSC	5720	A study of the background, aims, purposes and problems of international organizations. An examination of the functions of the specialized agencies and other organizations of the United Nations system.
PSC	5730	An investigation of the origins of the United Nations. Study of the relevant articles of the charter of the United Nations, emphasizing problems of the United Nations through case study.
PSC	5740	A survey of geopolitical, economic and sociocultural factors affecting foreign policy processes; an examination of the role of the Big Powers and the United Nations. Conferences with the instructor are required.
PSC	5750	This course traces the genesis and evolution of genocide and crimes against humanity as distinct categories of international criminality.
PSC	5800	A theoretical and comparative study of the patterns of foreign policy. It emphasizes the evaluation of analytical models and conceptual frameworks, and the examination of the foreign policy of key states as case material.
PSC	5860	An analysis and discussion of contemporary feminist political theory.
PSC	5880	This course will focus on close readings of influential critical theories about particular issues relevant to contemporary political life. The themes of the course will vary and may include questions of liberalism and power, the politics of violence, identity and difference, or post-structuralism.



PSC	5920	An interdisciplinary and comparative study of the major issues in Asia with special emphasis on political and economic development and international relations in Asia.
PSC	5950	Independent research, under the direction of a faculty adviser, analyzing experience as a public official.
PSC	5980	Examination of emerging issues within the various segments and subfields of the discipline of political science.
PSC	5990	Individual study in selected topic.
PSC	6100	A seminar in selected topics of methodology.
PSC	6110	An examination of the development, fields of study and methodological approaches of political science and of research techniques and the process of thesis writing.
PSC	6200	A seminar in selected topics of American political behavior.
PSC	6300	A seminar in selected problems of state and local political issues.
PSC	6400	A seminar in selected problems and issues of public administration.
PSC	6410	An extensive examination of the field of public administration designed to acquaint advanced students with the major academic literature of the major subfields.
PSC	6420	Examination of analytical techniques appropriate for public sector decision making and applications to specific problems. Decision analysis, cost benefit analysis and tools for evaluating public policies will be considered.
PSC	6430	Models, theories, approaches and techniques used to analyze public policy with application to policy areas such as discrimination, welfare, mental health or the environment.
PSC	6440	An overview of the management process and the opportunity to develop skills to apply the process of health-related settings. Emphasis is placed on the premise that an effective manager must be a leader.
PSC	6460	An in-depth examination of major problems in the administration of public policies. Topics will vary from year to year.
PSC	6470	The course will acquaint students with the structure of international organizations, personnel policies and problems, and budgeting. Emphasis is placed on the concept of international civil service, management and programming.
PSC	6500	A seminar in selected topics of constitutional administrative or international law.
PSC	6600	A seminar in selected topics of comparative political processes or area of studies.
PSC	6700	A seminar in selected topics of international politics or national foreign policies.
PSC	6710	A seminar on selected topics of the United Nations and other international organizations within the United Nations system.
PSC	6800	A seminar in selected political theorists or political ideas.
PSC	6940	Internship in public or nonprofit agency and preparation of an internship paper analyzing the internship experience.



PSC	6960	Supervision of master's thesis writing.
PSCH	681	This course begins by presenting basic principles and theories of human behavior, then traces the sequence of development using standard models of emotional, social, cognitive and moral development from infancy to old age. Lectures on the elements of diagnosis of mental illness begin the section on psychopathology. Psychotherapeutic interventions are emphasized, with less time spent on psychopharmacology. The major emotional illnesses are discussed as they appear in children, adolescents, adults and older adults. Etiology, diagnosis, and the basics of treatment are presented for each category of illness.
PSCH	704	Provides opportunity for the student a) to function as student ethicist; b) to participate in ethics consultations and teaching conferences, and c) to participate in limited research which may lead to an abstract and/or participation in regional or national meeting.
PSCH	708	The student participating in this acting internship will be working primarily on NBH-Toledo Unit A-400, an acute care unit for psychiatric stabilization of individuals with serious psychiatric illness. Initial evaluations of individuals to be admitted to A-400 will be completed in the admitting unit under the supervision of various attending physicians. Dr. Bellian will supervise the student in all aspects of clinical management once individuals are admitted to A-400. The student will help in the preparation for Probate Court proceedings, which occur on-site, when involuntary hospitalization or involuntary treatment of the individual is deemed necessary. In addition to the clinical aspects of psychiatric management, the systems of care and cross-systems collaboration will be emphasized. It is expected that the student will take significant responsibility in the daily management of individuals assigned to him/her, and close collaboration with other members of the multi-disciplinary team will be expected. Each acting intern must complete two on-line modules to prepare the acting intern for his/her role as a teacher of junior medical students.
PSCH	712	The student will meet with the director of the elective at least two months prior to the start of the elective so that a schedule of activities incorporating the student's special interests can be arranged. The student will travel to a number of sites throughout the community mental health, substance use disorder, criminal justice, and social service systems and will participate in programs at these sites and elsewhere in the community via outreach activities. The schedule will vary according to the particular activities and the day but will be limited to five days per week. There will be no scheduled activities on the weekends. The student must have successfully completed the required clerkship in psychiatry prior to requesting this elective.



PSCH 720 The student will meet with the director of the elective at least two months prior to the start of the elective so that a schedule of activities incorporating the student's special interests can be arranged. The student will travel to a number of sites throughout the community mental health, substance use disorder, criminal justice, and social service systems and will participate in programs at these sites and elsewhere in the community via outreach activities. The schedule will vary according to the particular activities and the day but will be limited to five days per week. There will be no scheduled activities on the weekends.

The student must have successfully completed the required clerkship in psychiatry prior to requesting this elective.

PSCH 735
PSCH 740
PSCH 750
PSCH 751
PSCH 789
PSLS 3000

This course is designed to provide an overview of careers in professional selling. This course will also deal with resume writing, interviewing, business etiquette and dressing for success.

PSLS 3080

This course looks at the purchasing function from a strategic and behavioral perspective, using role plays, simulations, exercises and cases to investigate issues relating to negotiation, relationship management and other strategic purchasing issues.

PSLS 3440

Techniques for prospecting and qualifying potential customers and making presentations and demonstrations are considered, as well as personal management of the selling function. Analyzes the role of selling in Marketing.

PSLS 3450

Introduction to activities involved in supporting buyer-seller interactions. Exposes students to software and analysis skills needed for prospecting, sales paperwork, technology, time and territory management, and customer follow-up.

PSLS 4710

The role and functions of the first line sales manager will be examined, including sales force size and organization, and management of the sales force. Issues related to hiring, training, supervising, compensating and evaluating salespersons are also emphasized.

PSLS 4740

The course provides in-depth study of advanced sales concepts including relationship management, negotiation, proposal writing and account management. Course involves presentations by business, field work, video-taped role-playing.

PSLS 4940

Receive practical business experience working in an organization.

PSRG 711

PSRG 750

PSRG 751



PSRG	789	
PSY	1010	A survey of the branches of psychology and the scientific approach to the study of behavior.
PSY	1EL	
PSY	1EU	
PSY	2100	Descriptive and inferential statistics as applied to research in basic behavioral science and to clinical application.
PSY	2200	Disordered human behavior; its etiology, classification and treatment. Consideration of different theories.
PSY	2400	Theoretical and empirical approaches to the role of pattern recognition, attention, memory, language, problem solving and decision making in human thinking.
PSY	2500	Emphasizes change and continuity in development, with a focus on research and theory during infancy, childhood and adolescence.
PSY	2510	Emphasizes research and theory from conception through old age, and integrates important developmental issues within a lifespan approach.
PSY	2600	The neural bases of behavior; topics include organization of the nervous system, perception and movement, learning and memory, emotion and motivation, drugs, language, and mental disorders.
PSY	2610	Extended treatment of learning, conditioning and motivation including operant learning, reinforcement schedules, symbolic reward, generalization and related theoretical developments.
PSY	2700	Theoretical and empirical treatment of socially-based perception and cognition, interpersonal influence, small group processes and interpersonal relations.
PSY	2EL	
PSY	2EU	
PSY	3000	An historical treatment of the development of modern psychology, starting in the mid 19th century, with some consideration of earlier approaches. Theoretical developments are emphasized.
PSY	3010	Theoretical and empirical examination of the generality of psychological concepts across cultural and ethnic groups. A cultural analysis of key topics in clinical, cognitive, developmental and social psychology.
PSY	3020	Explore and critique theories and research related to the psychology of women. Life span development in women, the validity of the study of gender differences and selected topics relevant to women's mental health will be addressed.
PSY	3110	Design, execution, analysis and reporting of research in psychology. Lecture and laboratory.
PSY	3120	Emphasis on the interpretation (as opposed to execution) of psychological research. Features overview of statistical methods and experimental design principles. Required for Psychology majors on liberal Arts track.



PSY	3200	Overview of major theoretical ideas and empirical research in personality and individual differences.
PSY	3210	An overview of the field of Clinical Psychology including clinical assessment, psychotherapy, community intervention methods and professional/ethical issues.
PSY	3220	Clinical and experimental perspectives on behavioral, developmental and emotional disturbances in childhood.
PSY	3230	History and purpose of psychological testing, review of statistics, reliability and validity, test development, measures of intelligence, personality, and clinical assessment
PSY	3400	Analysis of the neural basis of higher level mental functions (e.g., perception, language, emotion), with an emphasis on anatomic and functional differences between the left and right cerebral hemispheres.
PSY	3410	Examination of the cognitive processes involved in language. Topics include neural bases of language, speech production and perception, syntax, semantics, language acquisition and comprehension.
PSY	3500	Views the biological and psychosocial changes during adolescence from a systems perspective. Emphasizes issues of identity and cognitive growth.
PSY	3510	Emphasizes growth and change throughout adulthood. Issues of personality and cognitive change are investigated, and theory and research are highlighted.
PSY	3520	Emphasizes both theory and research in perceptual and cognitive development, with a focus on infants, children and adolescents.
PSY	3610	In-depth treatment of the structure and function of neurons and their mediation of behavior, both normal and abnormal: circadian rhythms, eating, emotions, sexual behavior, memory, language and mental disorders. The scientific study of the brain and methods of neuroscience are emphasized.
PSY	3620	In-depth treatment of the neural organization of the sensory and motor systems. A comparative and evolutionary approach to the study of perception is emphasized.
PSY	3630	Application of learning and motivation in the home, classroom and workplace. Covers how to define and measure behavior principles of positive and negative reinforcement, and the effects of aversive control.
PSY	3700	An examination of the psychological processes within small groups.
PSY	3710	Emphasizes the utilization of theoretical and empirical notions of psychological science as they apply to both civil and criminal law.
PSY	3730	This course will examine issues of and related to stereotyping, prejudice, and discrimination from a social psychological perspective with a special emphasis on racism and sexism.



PSY	3800	Literature review and design of an experiment that will form the basis for an Honors Thesis; a formal written proposal will be prepared in conjunction with, and approved by, the thesis advisor and must be submitted to the departmental honors advisor.
PSY	3820	Topics include advanced research tools, research design, practical approach to experiments, ethics in research and career planning. Admission to Psychology Honors and consent of instructor.
PSY	3910	Data collection for research that will form the basis for the Honors Thesis. Admission to Psychology Honors and consent of instructor.
PSY	3940	Supervised work experience in Psychology-related employment settings.
PSY	3EL	
PSY	3EU	
PSY	4100	Directed by experience in empirical psychological research by students participating in faculty laboratories. Section number denotes field of research. :030-Developmental psychology :040-Social psychology :060-Cognitive and biological psychology :070-Clinical psychology
PSY	4110	Study and training in systematic, open-ended, nonquantitative methods for studying human beings, with an emphasis on grounded theory and phenomenological research methods.
PSY	4200	Experience in designing and analyzing research in clinical psychology.
PSY	4400	Experience in designing, conducting and interpreting research on cognitive processes.
PSY	4500	Study and analysis of research methods, as applied to the development of perception, learning, socialization, cognition and language. Experience in designing and carrying out research in some of these areas.
PSY	4600	Experience in designing and carrying out research in learning and motivation with animals.
PSY	4700	Experience in designing research in social psychology, including a research project.
PSY	4800	Intensive reading and discussion of some aspect of psychology. Content varies.
PSY	4820	Topics include scientific graphics and visualizing data, professional publishing, scientific oral and poster presentations.
PSY	4910	This course will be offered every semester and will fill the requirement for an advanced research course. A student will carry out an empirical research project of his or her own design under the guidance of a member of the faculty.
PSY	4950	In-depth reading and evaluation of a topic in psychology by a student near the end of the undergraduate career, under the guidance of an individual faculty member. Topic must be approved in advance.
PSY	4960	Analysis, interpretation and reporting of research aimed at understanding some aspect of behavior or its underlying mechanisms. The reports include a formal written thesis, a scientific poster and an oral presentation.



PSY	4980	Seminar discussion of selected topics in psychology to allow for a more comprehensive treatment than possible in other available courses; or technical laboratory course in neuroanatomical techniques. Topics will vary depending on student demand and availability of instructors.
PSY	4990	This course is a tutorial consisting of directed independent reading, conferences with the instructor to discuss the readings and assess the student's understanding of their significance, and a paper in which the student summarizes the read material, integrates the material and discusses its significance for understanding some aspect of behavior.
PSY	4EL	
PSY	6000	Intensive historical treatment of the development of modern psychology from the 19th century. Theoretical psychological and related philosophical positions are emphasized.
PSY	6010	Section 001 Practical electronics and programming with logic modules. Section 002 - Computer programming.
PSY	6020	All aspects of the psychology of women will be addressed in this seminar. In particular a lifespan approach will be taken to an exploration of how social context (violence, economic conditions, etc.) impacts women's psychological growth.
PSY	6030	Developing, conducting, analyzing and preparing reports of research projects under faculty supervision. May be repeated.
PSY	6040	Supervised experience in the teaching of psychology. May be repeated for credit.
PSY	6050	A theoretical and empirical analysis of the systematic functioning of culture in psychological phenomena, with a focus on key concepts in clinical, cognitive, developmental and social psychology.
PSY	6060	Seminar examining the responsibilities of scientists including: protecting human and animal subjects, data collection and publication, authorship, reviewing, conflict of interest, mentoring, and misconduct.
PSY	6100	Probability theory, descriptive and inferential statistics, hypothesis testing, correlation.
PSY	6110	Analysis of variance, regression analyses, non-parametric analyses.
PSY	6130	Readings and discussion of problems of research design and analysis.
PSY	6140	Overview of inquiry methods for applied research, including relevant philosophy of science; qualitative and quantitative data collection and analysis; common research designs; and specialized analysis methods (e.g., meta-analysis).
PSY	6150	Procedures for developing and examining the reliability and validity of test scales, including theories of measurement, item analysis, factor analysis, and diagnostic efficiency statistics.
PSY	6200	Advanced historical overview of the main systems for understanding human beings: sources of motivation, coping, dysfunction, strengths/virtues. Emphasizes philosophical understandings of personality systems, analysis of major contributions and multi-perspective critiques.



PSY	6210	Critical analysis of diagnostic classification models, etiological conceptualizations and therapeutic interventions form mental disorders.
PSY	6220	Assessment of cognitive functioning, utilizing tests of cognitive abilities and achievement.
PSY	6230	Assessment of personality functioning utilizing objective tests.
PSY	6250	Advanced seminar focusing on selected topics from the general area of clinical psychology. -001 Clinical neuropsychology -002 Child psychopathology -003 Child Clinical Intervention -004 Marital & Family Therapy -005 Psychotherapy research & program evaluation.
PSY	6260	Exploration of ethical and professional issues faced by clinical psychologists. Detailed analysis of the American Psychological Association's Ethical Principles of Psychologists and Code of Conduct.
PSY	6270	Advanced study of the psychopathology and treatment of behavioral, developmental and emotional disturbances in childhood.
PSY	6310	Presentation and explanation of techniques of psychotherapy with children and adolescents.
PSY	6320	Presentation of theory and practice of experiential psychotherapy, including practice with clients and optional experiential training workshop.
PSY	6330	Didactic course covering psychoanalytic/psychodynamic theories, case conceptualization, therapy techniques, and relevant empirical research.
PSY	6340	Presentation and exploration of the theory and techniques of cognitive-behavioral assessment and therapy. Emphasis on understanding the theoretical and empirical base for cognitive-behavioral interventions and implications for application in clinical and clinical-research settings.
PSY	6350	Presentation and exploration of family and couple therapy as a discipline, theoretical perspectives and empirical research on couple/family interaction and therapeutic techniques used with families and couples.
PSY	6390	Clinical interviewing, diagnostic assessment, case conceptualization and oral presentation of clinical cases. Diagnostic, therapeutic and professional issues are addressed via didactic coursework and practicum work with clients in the Psychology Clinic.
PSY	6400	An intensive examination of human information processing. Topics include neural bases of cognition, perceptual and attentional processing, mental imagery, memory, problem solving and reasoning.
PSY	6410	An advanced seminar focusing on selected topics from the general area of Cognitive Psychology.
PSY	6420	An advanced seminar focusing on selected topics concerned with the psychology of language.
PSY	6500	Advanced treatment of the theoretical and empirical literature in developmental psychology, and of the major issues of the field.
PSY	6510	Readings and evaluative discussions of the primary research literature in developmental psychology.



PSY	6600	Structure and function of neurons and the neural mediation of behavior, both normal and abnormal.
PSY	6610	Readings and evaluative discussions of the primary research literature in psychobiology, behavioral neuroscience, neuroanatomy, learning, motivation and perception.
PSY	6620	-001 Laboratory; identification of structures in all of the major functional systems in histological brain sections of at least three different species. -002 Laboratory; neurohistological techniques including sectioning and staining.
PSY	6630	In-depth treatment of the neural organization of the sensory and motor systems. A comparative and evolutionary approach to the study of perception is emphasized.
PSY	6700	Social cognition and behavior, interpersonal influence and social relations will be addressed.
PSY	6710	In-depth treatment of selected topics in Social Psychology.
PSY	6810	Supervision of psychotherapy with children and adolescents seen through the University of Toledo Psychology Clinic.
PSY	6820	Group and Individual supervision of experiential psychotherapy with adults seen through the University of Toledo Clinic and elsewhere.
PSY	6830	Supervision of students' psychodynamic psychotherapy cases seen through The Psychology Clinic.
PSY	6840	Supervision of cognitive-behavior therapy with children, adolescents, and adults seen through The University of Toledo Psychology Clinic.
PSY	6850	Supervision of psychotherapy with families and couples seen through The University of Toledo Psychology Clinic.
PSY	6860	Clinical supervision of psychological assessments using multiple methods of assessment with clients seen through The University of Toledo Psychology Clinic.
PSY	6930	Readings and evaluative discussions of the primary research literature in psychology.
PSY	6940	Supervised applied assessment, therapeutic and consultative experience in community settings.
PSY	6960	Developing, conducting and analyzing the thesis research project, writing the thesis.
PSY	6980	Professional issues in academic and scientific psychology.
PSY	6990	Directed reading and/or experimentation on a topic selected by the study in conjunction with a faculty mentor.
PSY	7000	Intensive historical treatment of the development of modern psychology from the 19th century. Theoretical psychological and related philosophical positions are emphasized.
PSY	7010	Section 001 Practical electronics and programming with logic modules. Section 002 - Computer programming.



PSY	7020	All aspects of the psychology of women will be addressed in this seminar. In particular a lifespan approach will be taken to an exploration of how social context (violence, economic conditions, etc.) impacts women's psychological growth.
PSY	7030	Developing, conducting, analyzing and preparing reports of research projects under faculty supervision. May be repeated.
PSY	7040	Supervised experience in the teaching of psychology. May be repeated for credit.
PSY	7050	A theoretical and empirical analysis of the systematic functioning of culture in psychological phenomena, with a focus on key concepts in clinical, cognitive, developmental and social psychology.
PSY	7100	Probability theory, descriptive and inferential statistics, hypothesis testing, correlation.
PSY	7110	Analysis of variance, regression analyses, non-parametric analyses.
PSY	7130	Readings and discussion of problems of research design and analysis.
PSY	7140	Overview of inquiry methods for applied research, including relevant philosophy of science; qualitative and quantitative data collection and analysis; common research designs; and specialized analysis methods (e.g., meta-analysis).
PSY	7150	Procedures for developing and examining the reliability and validity of test scales, including theories of measurement, item analysis, factor analysis, and diagnostic efficiency statistics.
PSY	7200	Advanced historical overview of the main systems for understanding human beings: sources of motivation, coping, dysfunction, strengths/virtues. Emphasizes philosophical understandings of personality systems, analysis of major contributions and multi-perspective critiques.
PSY	7210	Critical analysis of diagnostic classification models, etiological conceptualizations and therapeutic interventions form mental disorders.
PSY	7220	Assessment of cognitive functioning, utilizing tests of cognitive abilities and achievement.
PSY	7230	Assessment of personality functioning utilizing objective tests.
PSY	7250	Advanced seminar focusing on selected topics from the general area of clinical psychology. -001 Clinical neuropsychology -002 Child psychopathology -003 Child Clinical Intervention -004 Marital & Family Therapy -005 Psychotherapy research & program evaluation.
PSY	7260	Exploration of ethical and professional issues faced by clinical psychologists. Detailed analysis of the American Psychological Association's Ethical Principles of Psychologists and Code of Conduct.
PSY	7270	Advanced study of the psychopathology and treatment of behavioral, developmental and emotional disturbances in childhood.
PSY	7310	Presentation and explanation of techniques of psychotherapy with children and adolescents.
PSY	7320	Presentation of theory and practice of experiential psychotherapy, including practice with clients and optional experiential training

workshop.

PSY	7330	Didactic course covering psychoanalytic/psychodynamic theories, case conceptualization, therapy techniques, and relevant empirical research.
PSY	7340	Presentation and exploration of the theory and techniques of cognitive-behavioral assessment and therapy. Emphasis on understanding the theoretical and empirical base for cognitive-behavioral interventions and implications for application in clinical and clinical-research settings.
PSY	7350	Presentation and exploration of family and couple therapy as a discipline, theoretical perspectives and empirical research on couple/family interaction and therapeutic techniques used with families and couples.
PSY	7390	Clinical interviewing, diagnostic assessment, case conceptualization and oral presentation of clinical cases. Diagnostic, therapeutic and professional issues are addressed via didactic coursework and practicum work with clients in the Psychology Clinic.
PSY	7400	An intensive examination of human information processing. Topics include neural bases of cognition, perceptual and attentional processing, mental imagery, memory, problem solving and reasoning.
PSY	7410	An advanced seminar focusing on selected topics from the general area of Cognitive Psychology.
PSY	7420	An advanced seminar focusing on selected topics concerned with the psychology of language.
PSY	7500	Advanced treatment of the theoretical and empirical literature in developmental psychology, and of the major issues of the field.
PSY	7510	Readings and evaluative discussions of the primary research literature in developmental psychology.
PSY	7600	Structure and function of neurons and the neural mediation of behavior, both normal and abnormal.
PSY	7610	Readings and evaluative discussions of the primary research literature in psychobiology, behavioral neuroscience, neuroanatomy, learning, motivation and perception.
PSY	7620	-001 Laboratory; identification of structures in all of the major functional systems in histological brain sections of at least three different species. -002 Laboratory; neurohistological techniques including sectioning and staining.
PSY	7630	In-depth treatment of the neural organization of the sensory and motor systems. A comparative and evolutionary approach to the study of perception is emphasized.
PSY	7700	Social cognition and behavior, interpersonal influence and social relations will be addressed.
PSY	7710	In depth treatment of selected topics in Social Psychology.
PSY	7810	Supervision of psychotherapy with children and adolescents seen through the University of Toledo Psychology Clinic.



PSY	7820	Group and Individual supervision of experiential psychotherapy with adults seen through the University of Toledo Psychology Clinic and elsewhere.
PSY	7830	Supervision of students' psychodynamic psychotherapy cases seen through The University of Psychology Clinic.
PSY	7840	Supervision of cognitive-behavior therapy with children, adolescents, and adults seen through The University of Toledo Psychology Clinic.
PSY	7850	Supervision of psychotherapy with families and couples seen through The University of Toledo Psychology Clinic.
PSY	7860	Clinical supervision of psychological assessments using multiple methods of assessment with clients seen through The University of Toledo Psychology Clinic.
PSY	7930	Readings and evaluative discussions of the primary research literature in psychology.
PSY	7940	Supervised applied assessment, therapeutic and consultative experience in community settings.
PSY	7960	Developing, conducting and analyzing the thesis research project, writing the thesis.
PSY	7980	Professional issues in academic and scientific psychology.
PSY	7990	Directed reading and/or experimentation on a topic selected by the study in conjunction with a faculty mentor.
PSY	8060	Seminar examining the responsibilities of scientists including: protecting human and animal subjects, data collection and publication, authorship, reviewing, conflict of interest, mentoring, and misconduct.
PSY	8960	Developing, conducting and analyzing the dissertation research project; writing the dissertation.
PSY	WAC	
PUBH	401	
PUBH	411	This course introduces the Spanish language in a medical context. Through development of oral and aural skills, enables more effective communication with Spanish speaking patients.
PUBH	412	Prerequisites: Previous experience in Spanish language and/or completion of PUBH411 Builds upon previous Spanish in a medical context and development of oral and aural skills for more effective communication, improving interaction with Spanish speaking patients.
PUBH	501	
PUBH	502	Scientific, regulatory and management principles applicable to the anticipation, recognition, evaluation and control of physical, chemical, and biological agents and ergonomic and psychological factors associated with illnesses in occupational environments.



PUBH	503	Course examines current issues and trends that affect international health, including delivery systems in other countries, and examines a variety of environmental, economic, and political factors that play a role in the transmission and treatment of human diseases.
PUBH	506	Scientific, regulatory and management principles applicable to anticipation, identification, investigation and control of mechanical hazards, unsafe work practices, and ergonomic and behavioral factors associated with accidents and injuries in occupational environments.
PUBH	515	
PUBH	516	Scientific, regulatory and management principles applicable to human disease associated with food, water, air and soil contamination. Focuses on biology and chemistry of contamination and transformation, exposure monitoring and contaminant control.
PUBH	526	Scientific, regulatory and managerial principles applicable to characteristics, exposure control, storage, transport and disposal of chemical, biological and radiological agents; accidental and intentional (terrorism) disaster preparedness and emergency response; and, personnel protective equipment and site assessment/monitoring.
PUBH	531	Scientific principles and practices applicable to the toxicology, evaluation, and control of chemical agents associated with human diseases resulting from various environmental exposures. Content includes normal/abnormal human physiology, exposure assessment, and exposure control.
PUBH	532	Introduction to statistical methods with emphasis on problems in the biomedical sciences. Included are descriptive statistics, probability theory, statistical inference, experimental design and simple statistical tests.
PUBH	541	
PUBH	550	The course is designed so students can achieve a broad knowledge and understanding of microorganisms, especially those involved in human disease. Topics include the body's defenses, the organism's capabilities for spreading and for virulence; important sources of infection and modes of transmission from such sources, and methods of detecting, preventing and controlling infections.
PUBH	552	Scientific principles and practices applicable to the pathogenicity, evaluation and control of microbiological agents, parasitic agents, and some biological vectors associated with human diseases resulting from various environmental exposures. Content includes normal/abnormal human physiology relative to exposure, exposure assessment, and exposure control.
PUBH	562	



PUBH	570	Scientific and mathematical principles of quantitative human health risk assessment including hazard identification, dose-response assessment, human exposure assessment and risk characterization. Emphasis on practice of risk assessment, management and communication relative to public, environmental, and occupational health and safety.
PUBH	600	An introduction to descriptive statistics including measurement of central tendency, dispersion, relative position, correlation, and regression. Inferential statistical theory, selected nonparametric methods, application of computers, and also occupational exposure assessment will be discussed.
PUBH	601	The course will present principles of the epidemiology method including problem solving. Various study designs will be discussed, including prospective and retrospective studies, analytic, and experimental methods.
PUBH	603	This course covers principles and methods of epidemiology in depth. The topics include causal inference, risk and effect, confounding, interaction, randomization, and matching. Special emphasis is given to design and interpretation of epidemiological studies.
PUBH	604	This course provides a basic understanding of the nature of public health administration, focusing on fundamentals, the recent changes, associated administrative and organizational arrangements that have been developed and the roles and responsibilities of public health administrators.
PUBH	605	A survey of the major environmental issues facing global society and their relationship to personal, public and ecological health. Issues encompass the developing and developed worlds, current conditions and future trends, and all major settings where environmental degradation may be a problem.
PUBH	606	Advanced statistical techniques with particular emphasis on problems in public health. Multiple regression, methods of analysis of variance, categorical data analysis including logistic regression, non parametric and survival analysis. Problems whose solution involves using a statistical program (e.g., SPSS).
PUBH	607	Introduces genetic epidemiology methods, principles of population genetics including linkage and association studies used in assessing familial aggregation, and transmission patterns for identifying the genetic basis of common diseases.
PUBH	610	The course focuses on the application of epidemiological techniques to the study of effects of occupational and environmental exposures. Prerequisite: PUBH600 and 601.



PUBH	611	This course introduces the theory and application of methods for categorical data, with emphasis on biomedical and public health applications. Topics include contingency tables, log-linear, logistic regression and Raush models, multivariate methods for matched pairs and longitudinal data. The methods are illustrated with SAS and/or SPSS, R.
PUBH	612	Provides an overview of major infectious diseases affecting public health in the U.S. and worldwide; introducing the basic epidemiologic methods for surveillance and investigation of infectious disease outbreaks.
PUBH	613	The course focuses on the application of epidemiological techniques to the study of effects of occupational and environmental exposures.
PUBH	615	This course focuses on epidemiologic concepts and methods in clinical medicine. Topics include clinical measurements and outcomes, risk, prognostic factors, clinical diagnosis, study design, decision analysis, clinical research and meta-analysis.
PUBH	617	Presents concepts and methods of molecular and genetic epidemiology relevant to the study of prevalent diseases in the population. Topics include biomarkers, polymorphism and gene-environment interaction. The evolution and function of the genomics and a synopsis of epidemiological design and analysis are included.
PUBH	618	Focuses on a number of cancers, including the most incident cancers in the United States. Provides a broad overview of cancer epidemiology and basic substantive knowledge regarding many cancers and their risk factors, prevention, and biology and pathogenesis.
PUBH	621	Management of Public Health Agencies (3). Students develop a deeper understanding of the principles of management and their application in directing a public health agency. While the primary focus is on human resource management, strategic management, strategic planning, organizational positioning and related topics are also discussed (BGSU). Prerequisite: PUBH 604.
PUBH	622	An examination of the basic components of budgeting and fiscal management as applied to public health organizations. Prerequisite: PUBH 604.
PUBH	625	
PUBH	630	Focuses on techniques to bring about change in a community's health status through assessment, public advocacy, coalition building, decision-making, planning, policy development, and political influence. Applications will be emphasized.
PUBH	633	Examines public health and aging issues in contemporary society. Introduces physical, cognitive and affective function from a public health perspective. Prevention and health promotion models are included.



PUBH	635	Development of knowledge necessary for functioning as a health care professional; includes an introduction to our legal system in contexts that are important for public health, as well as a detailed analysis of the law related to issues of primary concern to public health professionals.
PUBH	637	Focuses on a number of cancers, including the most incident cancers in the United States. Provides a broad overview of cancer epidemiology and basic substantive knowledge regarding many cancers and their risk factors, prevention, and biology and pathogenesis.
PUBH	640	This course is intended to address a particular area of epidemiology not covered by a regular course offering and provides students knowledge and experience in that area. Course content, assignments, meeting times and grade requirements are arranged with epidemiology faculty. May be repeated for credit.
PUBH	646	Epidemiology of selected chronic diseases and non-infectious conditions: cancer, cardiovascular diseases, musculoskeletal diseases and other chronic diseases. Emphasis on classification, rates, associations, etiology, prevention and control.
PUBH	6520	
PUBH	655	
PUBH	656	Examines the role of behaviors on health status and how to influence and understand behavior through use of cognitive models and change theory.
PUBH	660	
PUBH	664	Examination of various contemporary issues in public health. Includes social, economic, political, and community problems in the provision of health services, health manpower, and payment for health care.
PUBH	673	Students will participate in selected ongoing research programs of members of the faculty. May be repeated for credit.
PUBH	679	This course addresses areas of biostatistics not covered by a regular course offering. It is intended to provide students the knowledge and experience needed in that area. This course is designed for public health students and could be beneficial to Ph.D. students, specifically those who need advanced statistical techniques for their dissertation. Topics include survival analysis, statistical models in carcinogenesis, statistical genetics, nonparametric statistics and multivariate techniques. May be repeated for credit.
PUBH	680	An exploration of types of program evaluation, evaluation models, data collection, types of data, data quality, evaluation reports, standard data collection instruments and ethical issues in health program evaluation (UT-Main). Prerequisites: HEAL 6460/HEAL 8460; co-requisite: HEAL 6750.
PUBH	681	Supervised internship in public health. May be repeated for credit. Internship for all PHA and some PHN majors. (BGSU).
PUBH	683	



PUBH	684	Supervised practicum experience in public health or completion of a project related to public health. Scholarly project for all PHA and some PHN majors.
PUBH	685	Integrative Seminar in Public Health (3). Systematic study of chosen topics in public health (BGSU).
PUBH	689	The student and instructor will agree on a program of study that will enable the student to achieve specific learning objectives in environmental health. May be repeated for credit.
PUBH	696	Comprehensive or focused practical training in environmental and occupational health at a designated agency, organization, or company.
PUBH	697	Independent development by a student with approval and guidance by a Major Advisor, of a paper, manual, software, etc. applicable to a specific area of environmental and occupational health.
PUBH	698	A systematic study of selected topics in public health. Course meets for three consecutive semesters. Students may begin any semester, but must complete in sequence. Students register for one credit each term for a cumulative total of three consecutive semesters. May be repeated for credit.
PUBH	699	Introduction to statistical methods with emphasis on problems in the biomedical sciences. Included are descriptive statistics, probability theory, statistical inference, experimental design and simple statistical tests.
PUBH	732	
PUBH	800	This course will present principles of the epidemiology method including problem solving. Various study designs will be discussed, including prospective and retrospective studies, analytical, and experimental methods.
PUBH	801	
PUBH	803	The course covers principles and methods of epidemiology in depth. The topics include causal inference, risk and effect, confounding, interaction, randomization, and matching. Special emphasis is given to design and interpretation of epidemiological studies.
PUBH	806	Provides an overview of major infectious diseases affecting public health in the U.S. and worldwide; introducing the basic epidemiologic methods for surveillance and investigation of infectious disease outbreaks.
PUBH	811	
PUBH	812	
PUBH	815	This course focuses on epidemiologic concepts and methods in clinical medicine. Topics include clinical measurements and outcomes, risk, prognostic factors, clinical diagnosis, study design, decision analysis, clinical research and meta-analysis.
PUBH	817	



PUBH	818	Focuses on a number of cancers, including the most incident cancers in the United States. Provides a broad overview of cancer epidemiology and basic substantive knowledge regarding many cancers and their risk factors, prevention, and biology and pathogenesis.
PUBH	855	Epidemiology of selected chronic diseases and non-infectious conditions: cancer, cardiovascular diseases, musculoskeletal diseases and other chronic diseases. Emphasis on classification, rates, associations, etiology, prevention and control.
PUBH	864	Examination of various contemporary issues in public health. Included are social, economic, political and community problems in the provision of health services, health manpower and payment for health care.
RADI	610	
RADI	625	
RADI	661	
RADI	663	
RADI	664	
RADI	666	
RADI	667	
RADI	668	
RADI	669	
RADI	671	
RADI	680	
RADI	699	
RADI	702	Four one week blocks covering all imaging modalities dealing with the Central and Spinal Nervous System, the Musculoskeletal System including vascular, the Cardio-Pulmonary System, and the Gastro-Intestinal and Genito-Urinary System. Lectures on the basic physics of imaging, from x-ray to magnetic resonance. Instruction and use of the Picture Archiving and Communication System (PACS). An understanding of how images and interventions are performed.
RADI	705	This clerkship will offer the student a two-week rotation spent with the physician in the Radiology Department at Defiance Clinic or Fulton County Health Center. The student will study the diagnosis and treatment of diseases with the use of radiologic techniques, including contrast studies and radiation therapy.
RADI	750	
RADI	751	
RADI	789	
RADI	805	
RADI	810	
RADI	811	
RADI	825	
RADI	861	
RADI	862	



RADI	863	
RADI	864	
RADI	865	
RADI	866	
RADI	867	
RADI	868	
RADI	869	
RADI	871	
RADI	880	
RADI	889	
RCA	1010	Basic instruction in rules, knowledge and skill development and strategy in designated sport or activity. Physical Education majors must take six different classes.
RCA	1020	Different sections of the course will offer a variety of aquatic activities: beginning-intermediate-advanced swimming techniques, emergency water safety, lifeguard training and water safety instructor.
RCA	1030	Study of and participation in the skills and knowledge of various outdoor recreational activities in natural settings. Two weekend trips usually required. Courses are graded P/NC. Lab fee may be required.
RCBS	3010	A study of the anatomy and physiology of the respiratory and cardiovascular systems, including the physics of gas exchange, ventilation, and blood flow.
RCBS	3020	An introductory experience in the basic assessment and care of the patient with cardiopulmonary disease. Ethical issues, interpersonal communication, and infection control in the healthcare setting will also be covered.
RCBS	3110	Etiology, pathophysiology, clinical manifestations, and treatment of selected diseases of pulmonary and cardiovascular systems with emphasis on pharmacologic principles and agents used in the treatment of those diseases.
RCBS	3120	Didactic, laboratory, and introductory clinical experiences with a variety of equipment and procedures that are used to establish and maintain a patent airway, and to monitor and treat patients with cardiopulmonary diseases.
RCBS	3130	Discussion of the theory and selected techniques used in cardiopulmonary diagnostics, including analysis of blood gases, cardiac rhythms, hemodynamic monitoring values, spirometry results, and chest x-rays.
RCBS	3210	Continuation of RCBS 3110 with consideration of disease states of the pulmonary and cardiovascular systems not previously considered. Emphasis on analysis of assessment, diagnosis and treatment of individual patients by students.



RCBS	3220	Theoretical principles involved in the initiation, maintenance, and discontinuance of mechanical ventilation. Laboratory experiences with a variety of adult mechanical ventilators. Clinical experiences providing respiratory care for patients requiring mechanical ventilation.
RCBS	3230	Classroom and laboratory experiences in the theory and practice of selected cardiopulmonary diagnostic procedures including measures of pulmonary volumes, flows, gas distribution, and gas diffusion. Capnography, exercise testing, and specialized test regimens will also be covered.
RCBS	3300	American Heart Association Advanced Cardiac Life Support course designed to aid in the management of cardiopulmonary emergencies. Students must have previous knowledge of cardiac pharmacology and rhythms, and current CPR certification.
RCBS	4140	Clinical experiences in the acute care setting that requires the application of theory related to the diagnosis, treatment and management of adult, neonatal and pediatric patients with cardiopulmonary disease.
RCBS	4150	A discussion of the etiology, pathophysiology and treatment of neonatal and pediatric disorders. Laboratory exercises designed to familiarize student with neonatal and pediatric resuscitation and ventilation.
RCBS	4160	This course will provide the students with knowledge and enhance their critical thinking skills related to patient assessment and the development and modification of patient respiratory care plans.
RCBS	4240	Clinical experiences with a primary focus on advanced skills used in the management of cardiopulmonary patients of all ages in the acute and sub acute care settings.
RCBS	4510	The delivery of care to cardiopulmonary patients outside of the acute care facility will be discussed. Standards of care in addition to the funding of this care will be investigated. Special procedures in respiratory care will be presented.
RCBS	4700	Review of appropriate statistical knowledge required to analyze applied/clinical and basic published research. Includes a review of the elements of basic research design, reliability and validity, and critical review of cardiopulmonary research literature.
RCBS	4740	Examination of the physical and physiologic/neuromuscular basis for sleep disorders, including sleep apnea syndrome and obstructive sleep apnea syndrome. Practical application of overnight diagnostic screening, emergency procedures, patient safety, equipment setup, calibration and safety.
RCBS	4760	Examination of the pathology and morbidity associated with sleep dysfunction and sleep disorders. Continued practical application of overnight testing procedures and specialized treatment procedures, i.e., continuous positive airway pressure, supplemental oxygen administration, multiple sleep latency testing, nocturnal penile tumescence, infant/pediatric studies.



RCBS	4800	A capstone course designed to prepare the senior student for professional practice. Decision-making skills in complex clinical situations are developed through the use of clinical simulations and student case presentations.
RCBS	4810	This laboratory course is designed to complement the co requisite RCBS 4800 lecture course. Emphasis on enhancing the students' ability to integrate complex cognitive and psychomotor skills in preparation for professional practice.
RCBS	4990	Independent study of specific topics and issues under the supervision of a faculty member of the department of health promotion and human performance. The student will participate in independent reading, clinical/laboratory research, field experience and other similar activities. Independent study course must have a specialty; seminar sheet required.
RCRT	1300	A general introductory course which gives an overview of recreation and leisure in educational, governmental, institutional and professional settings. Explores historical, social and economic implications from personal and professional perspectives.
RCRT	1310	Theories and principles of programming, preparation of materials and resources, and practical experiences in organization and development of exemplary programs and scheduling.
RCRT	1400	Major areas covered include: equipment, nutrition, first aid, planning, ethics and conservation. Overnight trip and lab fee required. Includes discussions on economics, land planning, understanding conservation problems, trends and projections.
RCRT	2300	The concepts of recreation leadership will be introduced. These concepts will emphasize group dynamics, group behavior and development creativity in recreational leadership, and problem solving as related to recreation.
RCRT	2310	Volunteerism addresses the history, value, recruitment, training, evaluation, and recognition of volunteers. It also requires volunteer participation and reporting.
RCRT	3310	An introductory course into mainstreaming as applied to the delivery of recreation services to individuals with disabilities. Thirty hour volunteer component required.
RCRT	3710	An introduction to theory and techniques of adventure programming as a treatment protocol and/or leisure education tool.
RCRT	3940	The student will gain personal experience in the field of parks and recreation at an appropriate agency. The student will participate in a wide range of agency activities.
RCRT	4330	The political and economic policy and decision making in recreation and recreational therapy are investigated. Content includes the investigation of financial resources, management and marketing of recreation and recreational therapy from an administrative perspective.



RCRT	4340	This course provides a study of leisure and recreation activities for the older adult by investigating the aging process and the impact of leisure and recreation programming in the process.
RCRT	4430	Lectures and laboratory exercises to analyze the role and the skills of the park naturalist, including outdoor education techniques. In addition, students will identify appropriate means of interpreting park features and facilities to the public.
RCRT	4440	An integration of landscape architecture, facility design and location, as well as the functional aesthetic considerations of park and recreational facility planning. Emphasis will be on plan-formulation procedures.
RCRT	4450	A critical study of the problems relating to the evaluation of park and recreation programs. Students will conduct assigned field studies to become familiar with current recreation program research practices.
RCRT	4520	Social inquiry of United States wildlife, their habitat and implications for management on the federal, state and local level, including urban parks set aside as natural preserves.
RCRT	4530	An extended field trip to major wilderness areas and national parks and forests of the United States and Canada. Includes a comprehensive analysis of major resource areas and small group dynamics, as well as practical exercises in survival, rescue techniques and orienteering. Lab fee is required.
RCRT	4600	Provides the student with fundamental skills needed to implement therapeutic outcomes using crafts.
RCRT	4610	Provides the student with fundamental skills needed to implement therapeutic outcomes using plants.
RCRT	4620	Provides the student with fundamental skills needed to implement therapeutic outcomes using animals.
RCRT	4630	Provides the student with fundamental skills needed to implement therapeutic outcomes using games, humor and play activities.
RCRT	4640	Provides the student with fundamental skills needed to implement therapeutic outcomes using groups.
RCRT	4660	Provides the student with fundamental skills needed to implement therapeutic outcomes using relaxation and stress management techniques.
RCRT	4670	Provides the student with fundamental skills needed to implement therapeutic outcomes using leisure education activities, including social skills, values clarification and leisure: awareness, resources and knowledge.
RCRT	4680	Provides the student with fundamental skills needed to implement therapeutic outcomes using assistive technology and techniques.
RCRT	4690	Provides the student with fundamental skills needed to implement therapeutic outcomes using swimming and aquatic programming.



RCRT	4720	Theories, principles and the history of therapeutic recreation will be discussed. Using lectures, discussions and self-directed learning activities, the course will examine the structure and function of therapeutic recreation for individuals with limitations.
RCRT	4730	This course was designed to give students an in-depth knowledge of the medical aspects relating to impairments and their implications for therapeutic recreation practice.
RCRT	4740	This course was designed to introduce the student to documentation and assessment skills needed for therapeutic recreation practice including: initial evaluation, treatment plan, progress note and discharge summary.
RCRT	4750	The concepts and theories of therapeutic group process applied to Recreational Therapy group dynamics. These concepts will emphasize group goals, communications, decision making and leadership.
RCRT	4760	Course will focus on current issues and techniques relating to comprehensive research program design, implementation and evaluation relating to the practice of therapeutic recreation.
RCRT	4770	This course is designed to give the student an opportunity to design a research project in affiliation with his/her full-time internship in recreation or recreational therapy.
RCRT	4780	This course is designed to give the student an opportunity to implement and evaluate a research project in affiliation with his/her full-time internship in recreation or recreational therapy.
RCRT	4790	This course is designed to introduce students to those conditions or disabilities that would typically be related to mental retardation/developmental disability, pediatrics and psychiatry. Students will gain an in-depth knowledge of the medical aspects relating to impairments and their implications for therapeutic recreation.
RCRT	4800	Provides the students with a structured environment to practice assessment, documentation and treatment interventions in a physical rehabilitation or subacute rehabilitation facility.
RCRT	4810	Provides the student with a structured environment to practice assessment, documentation and treatment interventions in a psychiatric rehabilitation facility.
RCRT	4820	Provides the student with a structured environment to practice assessment, documentation and habilitation interventions in a mental retardation/developmental disability facility.
RCRT	4830	Provides the student with a structured environment to practice assessment, documentation, and habilitation and maintenance interventions in a geriatric facility.
RCRT	4840	Provides the student with a structured environment to practice assessment, documentation, and treatment and education interventions in a pediatric facility.



RCRT	4850	This course is designed to introduce and explain the project design, project evaluation, internship requirements and the National Council on Therapeutic Recreation certification and/or Certified Park and Recreation Professional requirements.
RCRT	4860	Provides the student with fundamental skills needed to implement therapeutic outcomes using exercise, weightlifting fitness techniques.
RCRT	4870	Application of the Recreation Therapy process (assessment, planning, implementation, evaluation) to design comprehensive treatment programs, protocols and discharge plans.
RCRT	4900	This course was designed to provide a consideration of problems and provide advanced study in recreation and leisure education not offered as part of the current curriculum.
RCRT	4930	An opportunity for the student to become totally involved as an intern in functionally related tasks which will help prepare for an appropriate role as a professional in the field. Not available for therapeutic recreation students. This course may be taken twice in the same semester.
RCRT	4940	This course is designed to give the student a comprehensive full-time experience in recreational therapy. The student will complete 40 hours per week per credit hour. This course may be taken twice in the same semester.
RCRT	4990	Designed to provide students with the opportunity to work individually on professional problems under the direction of faculty of the department of health promotion and human performance. All individual studies must have a specialty title. Seminar sheet required.
RCRT	5300	An introductory course into mainstreaming as applied to the delivery of recreation services to individuals with disabilities. Thirty hour volunteer component required.
RCRT	5310	This course provides a comprehensive study of leisure and culture. The course consists of three areas: history of leisure, leisure and its association with culture, and leisure philosophy.
RCRT	5320	The political and economic policy and decision making in recreation and recreational therapy are investigated. Content includes the investigation of financial resources, management and marketing of recreation and recreational therapy from an administration prospective.
RCRT	5340	This course provides a study of leisure and recreation activities for the older adult by investigating the aging process and the impact of leisure and recreation programming in the process.
RCRT	5400	Lectures and laboratory exercises to analyze the role and the skills of the park naturalist including outdoor education techniques. Additionally, students will identify appropriate means of interpreting park features and facilities to the public.
RCRT	5410	An integration of landscape architecture, facility design and location, as well as the functional aesthetic consideration of park and recreational facility planning. Emphasis will be on plan-formulation procedures.



RCRT	5420	A critical study of the research problems relating to the evaluation of park and recreation programs. Students will conduct assigned field studies to become familiar with current recreation program research practices.
RCRT	5500	Social inquiry of United States wildlife, their habitat and implications for management. State and national wildlife areas, endangered species, recreational safari areas and the behavior aspects of the hunter, fisherman and naturalist will be investigated.
RCRT	5510	An extended field trip to major wilderness areas and national parks and forests of the United States and Canada. Includes a comprehensive analysis of major resource areas and small group dynamics, as well as practical exercises in survival, rescue techniques and orienteering.
RCRT	5610	An introduction to the philosophy, theory and historical foundations of adventure therapy as a treatment protocol. Therapeutic uses of outdoor/challenge activities for various special population groups will be explored.
RCRT	5620	Provides the student with fundamental skills needed to implement therapeutic outcomes using animals.
RCRT	5630	Provides the student with fundamental skills needed to implement therapeutic outcomes using games, humor and play activities.
RCRT	5640	Provides the student with fundamental skills needed to implement therapeutic outcomes using groups.
RCRT	5660	Provides the student with fundamental skills needed to implement therapeutic outcomes using relaxation and stress management techniques.
RCRT	5670	Provides the student with fundamental skills needed to implement therapeutic outcomes using leisure education activities, including social skills, values clarification and leisure: awareness, resources and knowledge.
RCRT	5680	Provides the student with fundamental skills needed to implement therapeutic outcomes using assistive technology and techniques.
RCRT	5690	Provides the student with fundamental skills needed to implement therapeutic outcomes using swimming and aquatic programming.
RCRT	5720	Theories, principles and the history of therapeutic recreation will be discussed. Using lectures, discussions and self-directed learning activities, the course will examine the structure and function of therapeutic recreation for individuals with limitations.
RCRT	5730	This course is designed to give students an in-depth knowledge of the medical aspects relating to physical rehabilitation and geriatric impairments and their implications for therapeutic recreation practice.
RCRT	5750	The concepts and theories of therapeutic group process applied to recreational therapy dynamics. The concepts will emphasize group goals, communications, decision making and leadership.



RCRT	5790	This course is designed to introduce student to those conditions or disabilities that would typically be related to Mental Retardation/Developmental Disability, pediatrics and psychiatry. Students will gain an in-depth knowledge of the medical aspects relating to impairments and their implications for therapeutic recreation.
RCRT	5800	Provides the student with a structured environment to practice assessment, documentation and treatment interventions in a physical rehabilitation or subacute rehabilitation facility.
RCRT	5810	Provides the student with a structured environment to practice assessment, documentation and treatment interventions in a psychiatric rehabilitation facility.
RCRT	5820	Provides the student with a structured environment to practice assessment, documentation and habilitation interventions in a mental retardation/developmental disability facility.
RCRT	5830	Provides the student with a structured environment to practice assessment, documentation and habilitation and maintenance interventions in a geriatric facility.
RCRT	5860	Provides the student with fundamental skills needed to implement therapeutic outcomes using exercise, weightlifting fitness techniques.
RCRT	5870	Application of the Recreational Therapy process (assessment, planning, implementation, evaluation) to design comprehensive treatment programs, protocols and discharge plans.
RCRT	5900	Provides the student with fundamental skills needed to implement therapeutic outcomes using crafts.
RCRT	5910	Provides the student with fundamental skills needed to implement therapeutic outcomes using plants.
RCRT	5940	An opportunity for the student specializing in Outdoor Recreation, National Parks and Community Recreation Programs to work in an internship experience under the supervision of a recreation specialist.
RCRT	6000	Provides the advanced student with an in-depth analysis of the trends and issues related to the practice of recreation and recreational therapy.
RCRT	6020	Provides the advanced student with an in-depth analysis of the financial management concepts related to the practice of recreation and recreational therapy.
RCRT	6920	Master's Research Project in Recreation. Open to graduate students who elect the completion of a research project to fulfill the research requirements of the master's degree program.
RCRT	6930	This course is designed to provide a consideration of problems and provide advanced study in recreation and leisure education not offered as part of the current curriculum.
RCRT	6940	Course will incorporate advanced recreational therapy programming skills within an internship environment using expressive techniques.



RCRT	6960	Master's Research Thesis in Recreation. Open to graduate students who elect the completion of a master's thesis to fulfill the research requirements of the master's degree program.
RCRT	6990	Independent study of specific problems under the supervision of a Recreation and Leisure Studies faculty member. The student should obtain the consent of the faculty member who will supervise the study.
RDON	701	Students will participate or observe inpatient/outpatient functions including clinical and surgical procedures. Clinic hours are 8:00 a.m. to 4:30 p.m., Monday through Friday without exception. Absence from the clinic must be pre-authorized by the Chairman. Students are provided one-on-one instruction throughout their clinical rotation. Attendance at weekly Tumor Conference is expected. Students are also expected to accompany one of the radiation oncologists at the weekly St. Luke's Hospital Tumor Conference and the monthly Tumor Conference at Fulton County Health Center in Wauseon, Ohio. Reference and research materials are available for the students and specific readings may be assigned by the physician to enhance the learning experience. Students are always invited to visit the clinic and seek further information prior to registering for the rotation. At least one week prior to the beginning of the rotation, the student will receive a letter outlining the activities for the month, the expectations, and where to report for their clinical experience.
RDON	750	
RDON	751	
RDON	789	
REL	1220	A study of the major religions of the world, with an emphasis on non-Western religions.
REL	1EL	
REL	1EN	
REL	1EU	
REL	2000	Critical and thematic study of the concepts, values, practices and world-views intrinsic to the religious life.
REL	2070	Institutions, culture and religion from the earliest times through the Biblical period to the Medieval period.
REL	2090	Institutions, culture and religion from the Medieval period to the present, including ghetto, emancipation, Zionism, Holocaust and third Jewish commonwealth Israel.
REL	2300	A study of the similarities as well as the differences between Judaism, Christianity and Islam.
REL	2310	An examination of the history and ideas of Jewish scriptures, emphasizing the Jewish interpretations, with some reference to Christian appropriations of those scriptures.
REL	2330	Examination of the history and ideas of the New Testament.



REL	2350	This course will explore issues related to the sources and exercise of religious authority within Christianity, with an extended consideration given to a particular Christian tradition determined by the instructor.
REL	2380	Critical examination of selected topics in contemporary Catholic thought and life, offered by the visiting professor of Catholic thought.
REL	2410	This course will introduce students to the fundamental creedal commitments of Christianity, with an extended consideration given to a particular Christian tradition determined by the instructor.
REL	2500	An introduction to the academic understanding of Islam. Topics may include; faith, rituals, law (Shari'h), jurisprudence (Figh), theology (Kalam), and stories from the Islamic heritage. Non-Western multicultural course.
REL	2600	Cross listings with 2000-level courses offered in the visual and performing arts departments. Specific topics vary, and course may be repeated for credit as topics vary. Check course schedules for specific subject and prerequisites.
REL	2610	Cross-listings with 2000-level courses offered in the humanities departments. Specific topics vary, and course may be repeated for credit as topics vary. Check course schedules for specific subject and prerequisites.
REL	2620	Cross listings with 2000-level courses offered in the social sciences departments. Specific topics vary, and course may be repeated for credit as topics vary. Check course schedules for specific subject and prerequisites.
REL	2980	Special topics courses. Course may be repeated for credit as topics vary.
REL	2EL	
REL	2EN	
REL	2EU	
REL	3080	An examination of the texts and methods of historical and contemporary Jewish scriptural studies.
REL	3100	
REL	3110	A survey of Greek and Roman mythology in classical literature, sculpture and art.
REL	3130	The history of Western Europe from its beginnings to the eve of the First Crusade.
REL	3140	Europe from the First Crusade to the late 13th century.
REL	3210	A study of ancient and medieval philosophy from the pre-Socratics to Aquinas.
REL	3350	A study of the two main texts for Islamic belief and practice: Qur'an and the Hadith (the tradition of the Prophet Muhammad). Topics include their thematic structure, methods of interpretation, and their unique authority within Islam.



REL	3420	This course will study fundamental ethical concerns in Christian thought, with an extended consideration given to a particular Christian tradition determined by the instructor.
REL	3500	An examination of major philosophies of Asia and the Far East, their specific concerns and their relevance to contemporary problems.
REL	3510	Study of the major attitudes toward life, human existence and the world embodied in such major religions of the world as Buddhism, Confucianism, Hinduism, Islam and Taoism.
REL	3520	A study of the thought and practice of historical and contemporary Zen philosophy.
REL	3570	A critical and philosophical analysis of topics in religion including the problem of evil, faith and reason the existence of God and the nature of religious experience.
REL	3580	An examination of some contemporary issues of Islamic thought or culture, such as modernization, bio-medical ethics, aesthetics, art, literature, philosophy of spirituality, or the role of women. Course may be repeated for credit as topics vary. Non-Western multicultural course.
REL	3600	Cross listings with 3000-level courses offered in the visual and performing arts departments. Specific topics vary, and course may be repeated for credit as topics vary. Check course schedules for specific subject and prerequisites.
REL	3610	Cross listings with 3000-level courses offered in the humanities departments. Specific topics vary, and course may be repeated for credit as topics vary. Check course schedules for specific subject and prerequisites.
REL	3620	Cross listings with 3000-level courses offered in the social sciences departments. Specific topics vary, and course may be repeated for credit as topics vary. Check course schedules for specific subject and prerequisites.
REL	3670	This course will explore the history of both Christian ritual practice and the diverse theological understandings of that practice, with a focus on a particular Christian tradition determined by the instructor.
REL	3710	A study of the Old Testament from the literary point of view, including ancient poetry, history, romance, short story, hymn, prophecy and wisdom writing. Recommended: ENGL 2700 or 2800.
REL	3720	Study of classical and biblical mythologies in modern Western literature, private mythologies and literary adaptations of patterns from legend and folklore. Recommended: ENGL 2700 or 2800.
REL	3760	The literary European heritage from its biblical and classical origins to the 16th century. Includes (in English translation) such writers as Homer, Virgil and Dante. Recommended: ENGL 2700, 2800 or 3790.
REL	3900	A critical examination of selected topics in the area of religion.
REL	3980	Special topics courses. Course may be repeated for credit as topics vary.



REL	3EL	
REL	3EN	
REL	3EU	
REL	4030	The waning of the Middle Ages and the development of the Renaissance in Western Europe with emphasis on Italy.
REL	4040	Society, culture and politics in early modern Europe with emphasis on culture north of the Alps, the Reformation and the nation-state.
REL	4310	History of Native American religious movements as a response to European colonization and Indian dispossession.
REL	4490	Witchcraft, religion and magic in western Europe from the 12th through 17th centuries, focusing on the origins of witchcraft belief, diabolic magic, the witch craze and its decline.
REL	4500	An examination of significant developments of Buddhist philosophical thought, including that of Abhidharmika, Madhyamika, Yogacara, Hua-Yen and Ch'an (Zen).
REL	4520	A survey of Middle East history from the emergence of Islam and the formation of Islamic states until the establishment of the Ottoman and Persian empires in the 15th-16th centuries.
REL	4600	Cross listings with 4000-level courses offered in the visual and performing arts departments. Specific topics vary, and course may be repeated for credit as topics vary. Check course schedules for specific subject and prerequisites.
REL	4610	Cross listings with 4000-level courses offered in the humanities departments. Specific topics vary, and course may be repeated for credit as topics vary. Check course schedules for specific subject and prerequisites.
REL	4620	Cross listings with 4000-level courses offered in the social sciences departments. Specific topics vary, and course may be repeated for credit as topics vary. Check course schedules for specific subject and prerequisites.
REL	4820	A cross-cultural approach to the description and analyses of magical and religious beliefs and practices in Asia, Africa, Latin America and Indigenous North America.
REL	4900	Topics vary. Course may be repeated for credit as topics vary. See adviser for Seminar Request Form.
REL	4920	Critical inquiry of selected works under the guidance of an instructor on a topic not offered as a regular course.
REL	4930	Fieldwork involving the student in meaningful research under the direction of an instructor. The student is introduced to methods and problems related to fieldwork in religious studies.
REL	4940	A professional experience in a related organization, during which the student integrates classroom learning with the professional experience.
REL	4960	
REL	4980	Topics vary. Course may be repeated for credit as topics vary.



REL	4990	Directed study in religious studies under the supervision of a religious studies instructor.
REL	4EL	
REL	4EN	
REL	4EU	
REL	5930	Advanced academic study of a thinker or topic in religion.
RESM	4100	Introduction to major concepts of statistical description; central tendency, dispersion, and relative position and relationship. Inferential methods such as t-tests, one-way analysis of variance and multiple comparisons are also presented.
RESM	4200	Familiarizes preservice teachers with concepts and principles of classroom assessment. Examines formal and informal strategies for assessing student achievement and explores conceptual and practical issues in assessment and grading.
RESM	4990	The study of a current topic in educational research, measurement, statistics, or program evaluation. The student meets with the instructor at arranged intervals without formal classes.
RESM	4EL	
RESM	5110	Introduction to major concepts of statistical description; central tendency, dispersion, and relative position and relationship. Inferential methods such as t-tests, one-way analysis of variance, and multiple comparisons are also presented.
RESM	5210	Development, administration and interpretation of teacher-made tests and other pupil assessments; basic principles underlying norm- and criterion-referenced tests; problems and issues in grading systems and assigning grades.
RESM	5310	This course offers an introduction to the history and foundations of research processes. It incorporates the purposes and strengths of both qualitative and quantitative approaches for understanding research problems.
RESM	5330	Introduction to history and theoretical underpinnings of qualitative research. Students then learn and practice fundamental methods of participant-observation, field notes, interviewing, and transcription, and explore common models of qualitative research.
RESM	5950	Each workshop is developed around a topic of interest and concern to in-service teachers and other educational personnel. Practical application of workshop topics will be emphasized.
RESM	6120	Course covers the major inferential statistical techniques common to the behavioral sciences. Correlation, analysis of variance, linear regression and analysis of covariance are major topics. Computer applications are included.
RESM	6130	Study of multivariate analysis of variance, canonical correlation, discriminant analysis, repeated measures and factor analysis. Computer applications are included.



RESM	6140	The study of various experimental designs such as complete and fractional factorial designs, repeated measures designs, and nested designs. Both the conceptual rationale and the computational procedures are covered.
RESM	6150	Structural equation modeling serves as a statistical method to assess the strengths of a priori relations among variables. Topics include path analysis and confirmatory factor analysis. Computer applications with LISREL.
RESM	6160	Study of classical nonparametric statistical techniques and recent developments in this field. Coverage includes contingency tables, binomial distribution tests, several rank tests and other distribution-free statistics.
RESM	6220	Introduction to psychometric theories, with emphasis on classical test theory; reliability theory, including generalizability theory; approaches to validation; practical applications such as standard setting.
RESM	6230	Primary focus on Item Response Theory, with emphasis on 1- 2- and 3-parameter logistic models. Also covers applied issues such as test equating, scaling, item/test bias detection methods and current issues.
RESM	6320	The study of research approaches that are used in theses and dissertations. Competing designs for addressing research questions are compared. The purpose is to prepare students for their dissertation experience.
RESM	6340	Students design, conduct and write up a qualitative study. Topics include theoretical frameworks and research design; managing, analyzing and interpreting data; collaboration between researcher and researched; using computers in analysis.
RESM	6350	The design of large scale surveys with emphasis on sampling. Methods for telephone surveys, face-to-face interviews and mail surveys are included.
RESM	6360	An overview of prominent human services program evaluation methods including objectives-based, experimental, statistical and economic approaches. Evaluation criteria, issues, ethics and politics are considered.
RESM	6370	This seminar will teach participants about fundamentals of grant writing. Topics covered will include: locating sources of funding, writing grants, designing evaluation instruments and administering grants.
RESM	6940	Supervised field experiences in measurement, evaluation, research design, or statistics in a variety of settings.
RESM	6960	Open to a graduate student who elects the completion of a research thesis in fulfilling the research requirement of the master's degree.
RESM	6980	A formal independent project applying principles of research and/or measurement to solve a particular problem and culminating in a written discourse.



RESM	6990	The study of a current topic in educational research, measurement, statistics, or program evaluation. The student meets with the instructor at arranged intervals without formal classes.
RESM	7110	Introduction to major concepts of statistical description; central tendency, dispersion, and relative position and relationship. Inferential methods such as t-tests, one-way analysis of variance, and multiple comparisons are also presented.
RESM	7210	Development, administration and interpretation of teacher-made tests and other pupil assessments; basic principles underlying norm- and criterion-referenced tests; problems and issues in grading systems and assigning grades.
RESM	7310	This course offers an introduction to the history and foundations of research processes. It incorporates the purposes and strengths of both qualitative and quantitative approaches for understanding research problems.
RESM	7330	Introduction to history and theoretical underpinnings of qualitative research. Students then learn and practice fundamental methods of participant-observation, field notes, interviewing, and transcription, and explore common models of qualitative research.
RESM	7950	Each workshop is developed around a topic of interest and concern to in-service teachers and other educational personnel. Practical application of workshop topics will be emphasized.
RESM	7980	The study of a current topic or set of related topics in educational research, measurement, statistics, or program evaluation. The course is typically taught as a seminar.
RESM	8120	Course covers the major inferential statistical techniques common to the behavioral sciences. Correlation, analysis of variance, linear regression and analysis of covariance are major topics. Computer applications are included.
RESM	8130	Study of multivariate analysis of variance, canonical correlation, discriminant analysis, repeated measures and factor analysis. Computer applications are included.
RESM	8140	The study of various experimental designs such as complete and fractional factorial designs, repeated measures designs and nested designs. Both the conceptual rationale and the computational procedures are covered.
RESM	8150	Structural equation modeling serves as a statistical method to assess the strengths of a priori relations among variables. Topics include path analysis and confirmatory factor analysis. Computer applications with LISREL.
RESM	8160	Study of classical nonparametric statistical techniques and recent developments in this field. Coverage includes contingency tables, binomial distribution tests, several rank tests and other distribution-free statistics.



RESM	8180	The proseminar will enable doctoral students to improve their understanding of the research process. Students will learn to ask research questions, choose alternative methodologies and interpret the validity of conclusions.
RESM	8220	Introduction to psychometric theories, with emphasis on classical test theory; reliability theory, including generalizability theory; approaches to validation; practical applications such as standard setting.
RESM	8230	Primary focus on Item Response Theory, with emphasis on 1- 2- and 3-parameter logistic models. Also covers applied issues such as test equating, scaling, item/test bias detection methods and current issues.
RESM	8320	The study of research approaches that are used in theses and dissertations. Competing designs for addressing research questions are compared. The purpose is to prepare students for their dissertation experience.
RESM	8340	Students design, conduct and write up a qualitative study. Topics include theoretical frameworks and research design; managing, analyzing and interpreting data; collaboration between researcher and researched; using computers in analysis.
RESM	8350	The design of large scale surveys with emphasis on sampling. Methods for telephone surveys, face-to-face interviews and mail surveys are included.
RESM	8360	An overview of prominent human services program evaluation methods including objectives-based, experimental, statistical and economic approaches. Evaluation criteria, issues, ethics and politics are included.
RESM	8370	This seminar will teach participants about fundamentals of grant writing. Topics covered will include: locating sources of funding, writing grants, designing evaluation instruments and administering grants.
RESM	8940	Supervised field experiences in measurement, evaluation, research design, or statistics in a variety of settings.
RESM	8960	A formal independent study culminating in a written discourse central to the advancement of knowledge in educational research design, statistics, measurement, or evaluation.
RESM	8990	The study of a current topic in educational research, measurement, statistics, or program evaluation. The student meets with the instructor at arranged intervals without formal classes.
RPCP	601	This course provides in-depth readings on problems of emotionally and behaviorally disturbed/disordered children and youth. Intense study on two levels: (1) theoretical considerations and (2) treatments pertinent to diverse educational settings.
RPCP	602	
RPCP	603	
SBS	6410	



SBS	6420	This course provides supervised practice in classroom participation with students identified as Emotionally Behaviorally Disturbed/Disordered. Public school settings include: self-contained, resource, transition, mainstreamed and consultative-collaborative teaching roles.
SBS	6430	This course provides supervised practice in classroom participation with students identified as Emotionally Behaviorally Disturbed/Disordered. The alternative school setting includes: self-contained, transition-mainstreamed and consultative-collaborative teaching roles.
SBS	6440	This course provides evaluation and application techniques of research based methodologies for teaching students with emotional behavioral disorders/disturbances. Psychosocial educational best practices within the least restrictive environment are presented.
SBS	6450	This course provides supervised practice in classroom with children and youth identified as Emotionally Behaviorally Disturbed/Disordered. The adjudicated-locked setting includes: self-contained, remedial plus consultative-collaborative teaching roles.
SBS	6460	This course provides supervised practice teaching children and youth identified as Emotionally Behaviorally Disturbed/Disordered. Hospital setting include: self-contained, individualized and group tutoring, and consultative-collaborative teaching roles.
SBS	6470	This course provides in-depth readings in the field of autism. The course includes intense study on two levels: (1) theoretical considerations and (2) treatment approaches pertinent to populations with autism.
SBS	6480	This course provides research based methodologies for understanding and teaching children and youth with autism. Psychosocial educational best practices within the least restrictive environment are presented.
SBS	6510	Managing severe behaviors of incarcerated children and youth, including learning knowledge, skills and a solid dispositional commitment to empower cognitive-behavioral change through emotional, neurological, biophysical, sociological and cultural barriers.
SBS	6520	The Child Study Institute, Lucas County Juvenile Detention Center, offers frontline knowledge-to-skill practicing in the management of incarcerated children and youth with severe, chronic and potentially violent behaviors.
SBS	6990	Provides advanced graduate students with opportunities to study severe behavior related issues. Individual meetings with sponsoring faculty are scheduled.
SBS	8410	This course provides in-depth readings on problems of emotionally and behaviorally disturbed/disordered children and youth. Intense study on two levels: (1) theoretical considerations and (2) treatments pertinent to diverse educational settings.
SBS	8420	This course provides supervised practice in classroom participation with students identified as Emotionally Behaviorally Disturbed/Disordered. Public school settings include: self-contained, resource, transition, transition, mainstreamed and consultative-collaborative teaching roles.



SBS	8430	This course provides supervised practice in classroom participation with students identified as Emotionally Behaviorally Disturbed/Disordered. The alternative school setting includes: self-contained, transition-mainstreamed and consultative-collaborative teaching roles.
SBS	8440	This course provides evaluation and application techniques of research based methodologies for teaching students with emotional behavioral disorders/disturbances. Psychosocial educational best practices within the least restrictive environment are presented.
SBS	8450	This course provides supervised practice in classroom with children and youth identified as Emotionally Behaviorally Disturbed/Disordered. The adjudicated-locked setting includes: self-contained, remedial plus consultative-collaborative teaching roles.
SBS	8460	This course provides supervised practice teaching children and youth identified as Emotionally Behaviorally Disturbed/Disordered. Hospital setting include: self-contained, individualized and group tutoring, and consultative-collaborative teaching roles.
SBS	8470	This course provides in-depth readings in the field of autism. The course includes intense study on two levels: (1) theoretical considerations and (2) treatment approaches pertinent to populations with autism.
SBS	8480	This course provides research based methodologies for understanding and teaching children and youth with autism. Psychosocial educational best practices within the least restrictive environment are presented.
SBS	8510	Managing severe behaviors of incarcerated children and youth, including learning knowledge, skills and a solid dispositional commitment to empower cognitive-behavioral change through emotional, neurological, biophysical, sociological and cultural barriers.
SBS	8520	The Child Study Institute, Lucas County Juvenile Detention Center, offers frontline knowledge-to-skill practicing in the management of incarcerated children and youth with severe, chronic and potentially violent behaviors.
SBS	8990	Provides advanced graduate students with opportunities to study severe behavior related issues. Individual meetings with sponsoring faculty are scheduled.
SISS	7010	The course deals with statistical theory and applied statistical techniques for spatial data analysis. Topics include descriptive statistics, statistical modeling and hypothesis testing for spatial dependence and spatial heterogeneity.
SISS	7020	The course emphasizes the fundamental elements of cartography, geodesy, statistics, mathematics and geo-computational methods that form the foundation for the development of GIS and spatial analysis tools.
SISS	8010	This course will examine the historical development of the social sciences, their philosophical and methodological approaches to research, and the emergence of the spatial perspective in social science research.



SISS	8020	Advanced study of SISS requiring preparedness in theoretical and methodological aspects of spatial analysis in social sciences focusing on the spatial organization of society and spatial human and social dynamics.
SISS	8030	Examination of spatial processes: spatial autoregressive models, Gaussian Markov random field models, auto-logistic models, spatial discrete choice models. The topics include spatial panel data models, their applications and estimation methods.
SISS	8940	Discussion of the major advances in Spatially Integrated Social Science as presented in the primary research in a selected topic or set of topics.
SKLS	0500	The course is offered to Toledo Public High School juniors. It is intended to prepare students to achieve higher scores on the ACT exam and for successful transition to college. The course will focus on three main areas: building and strengthening study strategies relevant to college and the ACT, preparing to take the ACT exam itself and preparing students for successful college entry.
SKLS	0750	
SKLS	0960	
SKLS	0980	Prepares students for success in academic course of study by upgrading textbook comprehension strategies, developing critical reading strategies and expanding academic reading vocabulary through the textbook and other academic reading materials. Grades do not apply to the student's GPA.
SKLS	0990	Coursework introduces students to college-level writing strategies, as well as self-evaluative assessment tools essential for introductory intellectual work. Students who pass SKLS 0990 progress to ENGL 1100 (or ENGL 1110 as determined by placement). Grades do not apply to the student's GPA.
SKLS	1100	Essentials of delivering oral technical presentations. Awareness of audience, purpose and presentation techniques are emphasized through required weekly presentations.
SKLS	1130	
SKLS	1140	
SKLS	1150	Acquaints students with the services, policies, procedures and layout of the University, along with relevant study skills and student learning services available campus-wide. Required of all pre-major students; optional for others.
SKLS	1160	This course will assist students in planning, organizing, researching and revising papers assigned in social science and humanities courses. Students may work on papers assigned for a class in which they are currently enrolled. Course is offered as a 7-1/2 week module.
SKLS	1940	Students will be involved four hours a week in various community service projects and analyze and reflect on their experiences through journals, discussion and a final paper in a weekly seminar.



SKLS	DEV	
SLP	2400	A study of causative factors and characteristics of communicative disorders in comparison to normal speech/language/hearing processes.
SLP	3010	Understanding of articulatory and acoustic phonetics with emphasis on the development of transcription skills using the International Phonetic Alphabet in recording normal and disordered speech production. Laboratory required for transcription skill development.
SLP	3020	The study of the anatomy and physiology of the mechanisms used for communication including oral-pharyngeal-esophageal, respiratory, and neurological systems.
SLP	3030	This course will include procedures to describe language and the developmental sequence in which it is acquired by children. Basic theories of language acquisition will be discussed. Laboratory experience required.
SLP	3140	Identification of linguistic structures in standard English. Course focuses on analysis of semantic and syntactic components of language with pragmatic analysis included. Laboratory experience required.
SLP	3150	Detailed exploration of the functions of the speech and language production system including neurological components. Aerodynamic and acoustical functions are explored through the phonatory, respiratory and articulatory parameters of speech.
SLP	3170	The study of the hearing mechanism with relation to the auditory environment and perception of speech.
SLP	3200	Assessment techniques and intervention strategies for persons with disorders of the sound system of the language. Theories of phonological acquisition and etiological factors will be discussed during this course. Laboratory experience required.
SLP	3300	Course includes the identification of etiologic bases and characteristics of language disorders. Assessment strategies leading to choice of intervention techniques will be discussed. Laboratory experience required.
SLP	3400	The student learns to administer and interpret the comprehensive auditory battery consisting of pure-tone air conduction and bone conduction thresholds, speech reception thresholds, speech discrimination tests and acoustic emittance test battery.
SLP	3800	Teaches methods of intervention of speech, language and hearing services in various settings. Emphasis on developing skills in observation, report writing, and structuring intervention services and their implementation. Requires 25 hours of observation. Mandatory clinic meeting, and one hour lab duty. Laboratory experience required.
SLP	4000	Supervised participation in structured individual or group intervention leading to the accumulation of 25 clinical hours of practicum.



SLP	4300	Students are assigned individual clients for whom they will plan an intervention program, implement the program and evaluate the results of the intervention under faculty supervision. Mandatory clinic meeting and 1 hour lab duty.
SLP	4350	This capstone course explores literature in advanced speech and language disorders as well as intervention communication disorders.
SLP	4440	Technological systems available for persons with the absence of functional speech will be described. Etiological factors, assessment and intervention procedures and hands-on experience with devices will be provided.
SLP	4900	Seminar provides students with the opportunity to explore, as a group, specific topics with a faculty member. Current issues in the area of speech-language pathology will be the focus.
SLP	4910	Directed research provides students the opportunity to explore specific topics and develop individual research with a faculty member. Current questions in the area of speech-language pathology will be the focus.
SLP	4920	Individual Readings is designed to provide students with opportunities to examine literature related to specific issues. The student works under the direction of faculty in the speech-language pathology program.
SLP	4980	An advanced course for undergraduate majors in speech-language pathology or majors in related fields covering an important area of communication disorders. Student may repeat this course under different section numbers.
SLP	4990	Independent study provides students with opportunities to work individually on issues under the direction of the speech-language pathology program faculty. The student meets with instructor without formal classes.
SLP	5440	Provides students with supervised therapeutic experiences with specific speech and language disorders. Students should have completed or be currently enrolled in graduate level communication disorders course addressing the specific practicum disorder selected.
SLP	6000	
SLP	6010	Provides a minimum of 30 hours supervised diagnostic practicum with a variety of communicatively disordered cases.
SLP	6020	Provides the advanced student with supervised practicum hours in the screening, impedance and pure tone threshold testing for audiological diagnosis.
SLP	6030	Early graduate course in research methods with emphasis on analysis of current research, application of single-subject research in clinic practicum, and development of research project.
SLP	6100	Detailed analysis of formal and informal instruments and procedures designed to evaluate speech and language disorders.
SLP	6210	The conceptual framework for understanding language disorders in young children. Application and theory of assessment and intervention strategies will be described and discussed.



SLP	6220	The conceptual framework for understanding language disorders in school-age children with special emphasis on language assessment and language interventions in school settings.
SLP	6300	Advanced study of phonological and articulatory disorders including developmental apraxia. Focus on phonological differences in multi-cultural society with emphasis on assessment of disorders and current advances in remediation.
SLP	6400	Advanced course in deficits due to neurological alterations resulting in aphasia. Formal and informal assessment procedures for the diagnosis of aphasia as well as techniques and functional strategies for communicative compensation provide the focus of the course.
SLP	6450	Course in cognitive and linguistics deficits due to trauma and disease to central nervous system. Course focuses on identification and intervention in communication disorders as the result of acquired brain injury/disease. Traumatic brain injury, right hemisphere damage and dementia are addressed.
SLP	6500	Adult apraxia and dysarthrias are discussed in relation to neurological organization, disorders and speech characteristics.
SLP	6550	The study and application of assistive communication technology for persons who are nonspeaking. The course includes characteristics of ACC consumers, design features of augmentative communication devices, assessment strategies to choose a system and intervention strategies to facilitate use of the ACC system.
SLP	6600	Advanced course in the evaluation and treatment of voice disorders. Major voice disorders in children and adults are emphasized.
SLP	6650	Evaluation and intervention procedures for individuals with communication problems related to structural impairments of the oral cavity and pharynx.
SLP	6670	An advanced course to develop skills in the assessment and remediation of fluency disorders with special emphasis on current trends in stuttering therapy.
SLP	6700	
SLP	6800	Advanced care and training in the use of individual and group assistive listening devices, auditory trainers and other aids to augment hearing. Methods for using residual hearing and contextual factors to augment technology are addressed.
SLP	6900	Independent research provides opportunities to work on individual research under the direction of faculty. The student meets with the instructor at intervals and conducts research without formal class meeting.
SLP	6920	The Master's project is an individually designed product.
SLP	6930	Seminars will consider problems and provide advanced study in the field of Speech-Language Pathology. A student may register for more than one seminar during a graduate program.



SLP	6940	Provides the advanced graduate student with supervised practicum experiences at an off-campus site; including schools, hospitals, agencies, rehabilitation clinics, work training sites and other community sites where persons with disabilities are served.
SLP	6960	The master's thesis is an individually designed investigation approved by the thesis committee and designed to contribute to the knowledge base of the speech-language pathology. Meets the final activity requirement for completion of the master's degree.
SLP	6990	Individual study provides advanced graduate students opportunities to work individually on professional problems with faculty of the Speech-Language Pathology program. Individual meetings with sponsoring faculty are held.
SLP	8000	Provides students with supervised therapeutic experiences with specific speech and language disorders. Students should have completed or be currently enrolled in graduate level communication disorders course addressing the specific practicum disorder selected.
SLP	8010	Provides a minimum of 30 hours supervised diagnostic practicum with a variety of communicatively disordered cases.
SLP	8020	Provides the advanced student with supervised practicum hours in the screening, impedance and pure tone threshold testing for audiological diagnosis.
SLP	8100	Detailed analysis of formal and informal instruments and procedures designed to evaluate speech and language disorders.
SLP	8210	The conceptual framework for understanding language disorders in young children. Application and theory of assessment and intervention strategies will be described and discussed.
SLP	8220	The conceptual framework for understanding language disorders in school-age children with special emphasis on language assessment and language interventions in school settings.
SLP	8300	Advanced study of phonological and articulatory disorders including developmental apraxia. Focus on phonological differences in multi-cultural society with emphasis on assessment of disorders and current advances in remediation.
SLP	8400	Advanced course in deficits due to neurological alterations resulting in aphasia. Formal and informal assessment procedures for the diagnosis of aphasia as well as techniques and functional strategies for communicative compensation provide the focus of the course.
SLP	8450	Course in cognitive and linguistics deficits due to trauma and disease to central nervous system. Course focuses on identification and intervention in communication disorders as the result of acquired brain injury/disease. Traumatic brain injury, right hemisphere damage and dementia are addressed.
SLP	8500	Adult apraxia and dysarthrias are discussed in relation to neurological organization, disorders and speech characteristics.



SLP	8550	The study and application of assistive communication technology for persons who are nonspeaking. The course includes characteristics of ACC consumers, design features of augmentative communication devices, assessment strategies to choose a system and intervention strategies to facilitate use of the ACC system.
SLP	8600	Advanced course in the evaluation and treatment of voice disorders. Major voice disorders in children and adults are emphasized.
SLP	8650	Evaluation and intervention procedures for individuals with communication problems related to structural impairments of the oral cavity and pharynx.
SLP	8670	
SLP	8700	An advanced course to develop skills in the assessment and remediation of fluency disorders with special emphasis on current trends in stuttering therapy.
SLP	8800	Advanced care and training in the use of individual and group assistive listening devices, auditory trainers and other aids to augment hearing. Methods for using residual hearing and contextual factors to augment technology are addressed.
SLP	8900	Independent Research provides opportunities to work on individual research under the direction of faculty. The student meets with the instructor at intervals and conducts research without formal class meeting.
SLP	8930	Seminars will consider problems and provide advanced study in the field of Speech-Language Pathology. A student may register for more than one seminar during a graduate program.
SLP	8940	Provides the advanced graduate student with supervised practicum experiences at an off-campus site; including schools, hospitals, agencies, rehabilitation clinics, work training sites and other community sites where persons with disabilities are served.
SLP	8960	The master's thesis is an individually designed investigation approved by the thesis committee and designed to contribute to the knowledge base of the speech-language pathology.
SLP	8990	Individual study provides advanced graduate students opportunities to work individually on professional problems with faculty of the Speech-Language Pathology program. Individual meetings with sponsoring faculty are held.
SOC	1010	(not for major credit) Freshmen and sophomores only. Sociological topics regarding social behavior, institutional dynamics and social change are examined, and the principles and basic concepts used by sociologists are taught.
SOC	1750	(not for major credit) Introduces students to the sociological perspective through the analysis of various social problems including inequality, population, environment, workplace and deviant behavior.
SOC	1EL	
SOC	1EN	



SOC	1EU	
SOC	2000	Students are introduced to the academic and professional nature of Sociology. Topics covered include professional socialization, honor theses, portfolio construction, preparation for graduate studies, and career development.
SOC	2010	This course focuses on the rapidly expanding use of the Internet and its impact on society. The course will also be experiential, with Internet based interaction (through on-line, e-mail, list-servs, etc.) an essential component of the course.
SOC	2100	Examination of American society. Emphasis upon the interplay between cultural ideas and actual behavior as these relate to change in American institutions.
SOC	2150	Examines changes in the family through history, focusing especially on current changes in the nature of the family and on theoretical explanations for why these changes are occurring and what they may mean for family members.
SOC	2200	Examines social significance of various stages of the life cycle. Problems and issues for individuals and society as people progress through the life cycle.
SOC	2410	This course will focus on the problem of defining community and will explore various forms of community.
SOC	2500	The course focuses on the current and evolving social, economic and political status of women in the United States and selected non-Western societies. For both men and women students.
SOC	2600	This course will review and analyze the major ways society organizes itself, including families, communities, formal organizations and informal organizations, education, economic, political, and religious institutions.
SOC	2640	Introduction to the study of race, class and gender as factors in American stratification.
SOC	2750	This course examines sport as a microcosm of our society, exploring many sociological issues (socialization, social institutions, and inequality) within the framework of sport that exist in society as whole.
SOC	2900	A survey of the sociohistorical and cultural factors related to the African American experience in the United States.
SOC	2980	Examination of a special topical area in sociology. May be repeated on different topics.
SOC	2EL	
SOC	2EN	
SOC	2EU	
SOC	3240	Examination of family planning and population policies in Western and non-Western societies. Historical background and current issues will be investigated and specific programs will be evaluated.
SOC	3270	Introduction to procedures used in the various phases of sociological research.



SOC	3290	Study of major statistical procedures and techniques in sociology.
SOC	3340	The course will outline the historical development of population trends in the U. S. and consider current dynamics, trends and tendencies.
SOC	3520	This course examines qualitative methods used in social science research. Focusing on ethnographic and qualitative methods, the course provides students the skills necessary to design and conduct qualitative research studies.
SOC	3600	An overview of the sociology of work, examining how different types of occupations affect the people who perform them, and current social forces that are changing the nature of work organizations.
SOC	3640	This course examines the bases, varieties and consequences of systems of stratification, including the development of and changes in stratification patterns in the US and other societies.
SOC	3800	An introduction to theory and research concerning social influences on the experience and behavior of individuals. Includes interaction patterns, interpersonal and intergroup relations.
SOC	3EL	Discussion among faculty and students devoted to the study of Sociology with a special focus on the development of a professional portfolio for graduate work or career.
SOC	3EN	
SOC	3EU	
SOC	4000	
SOC	4040	19th century theory in sociology with emphasis on A. Comte, K. Marx, E. Durkheim, T. Veblen, M. Weber and H. Spencer.
SOC	4050	Theoretical developments in sociology today.
SOC	4100	This course focuses on attempt of communities to regain power and wealth lost through urban disinvestment occurring since World War II. The course will involve numerous practical workshops to learn how to do community organizing and community development and will include information on Toledo case studies.
SOC	4110	Examination of political institutions, organizations and behavior with special attention to participation, power, ideology, decision making and conflict.
SOC	4160	An examination of gender as a predisposing factor of health status, health behavior, health care delivery, and the structure and posture of health care professionals.
SOC	4170	Dynamics of law and legal institutions; the relationship of sociocultural changes in substantive and procedural aspects of law to the concept of justice, and to the social control of deviance.
SOC	4180	An analysis of the sociocultural factors in health and illness, and in medical and paramedical services, and in the field of health practice as a social institution.



SOC	4190	A study of the changing proportions of older people in the population, their changing roles and statuses, and the problems and processes of adjustment.
SOC	4200	This course acquaints students with various schools of anthropological theory, stressing the influence of traditional approaches on contemporary thought and the impact of historical context on the development of theory.
SOC	4210	The study of how information and communication technologies interact with spatial and non-spatial communities, including a focus on the use of technology as a community development strategy.
SOC	4220	The study and application of sociological theory to understand the role of information and communication technologies in shaping social structure and social processes, with special focus on social policy issues.
SOC	4230	This course is designed as a service learning collaboration with community technology centers in Toledo or elsewhere. Students will conduct programming or community-based research with faculty and community guidance.
SOC	4340	Examination of the interaction among variables of population (fertility, mortality and migration) and other aspects of societal organization.
SOC	4440	Methods of population analysis, including examination and evaluation of data sources.
SOC	4450	This course takes an interdisciplinary approach to life in cities around the world, with emphasis on the ethnographic exploration of how power, cultural difference, and social inequality in cities are produced and experienced.
SOC	4580	The impact of rapidly changing science and technology on North American society: social change in a technological age; the emergence of post industrial society.
SOC	4600	Analysis of the social networks affecting institutionalized economic life, and the impact of corporate power on society.
SOC	4610	Study of the structure and processes of organizations; includes theory of bureaucratic and non-bureaucratic organizations, as well as structure and function of organizations.
SOC	4620	Analysis of the contemporary position in the U.S. work force focusing on the expansion of the number of women joining the labor force in recent decades, and the persistence of relatively low pay, status and authority in female-dominated occupations.
SOC	4650	An overview of sociological literature on Latin American and the Caribbean. Topics include economic development, political change, gender and ethnicity, disability, culture and international migration.
SOC	4660	Basic principles of majority/minority relations including the minority groups nature and consequences of prejudice, discrimination, segregation, entitlement and differing cultural practices between such groups.



SOC	4670	Sociological study of African Americans in the United States, focusing on issues of ethnic identity, educational and economic achievement, continuing sources of discrimination, and current movements for change.
SOC	4710	Crime and criminal behavior: nature, types and extent of crime, societal reactions; problems in research and theory, prevention, control and treatment.
SOC	4720	Study and analysis of the nature, meaning and process of deviant behavior in terms of social norms, control and societal reaction.
SOC	4730	Etiological theories of mental illness; community role in etiology; community processes in relation to prognosis and rehabilitation; treatment modalities including clinic, mental hospital and therapeutic community.
SOC	4740	Topics may include legalizing drugs, police violence, plea bargaining, death sentence and mandatory sentencing. Emphasizes liberal/conservative ideology.
SOC	4750	Topics may include abortion, three strike sentencing, homosexual rights, hate speech and decriminalizing narcotics. Emphasizes liberal/conservative ideology.
SOC	4760	Delinquency and delinquent behavior, including definitions, extent, process, types and causes; methods of prevention, protective control and treatment; institutional and non-institutional facilities and services.
SOC	4770	Historical and theoretical analysis of ideas concerning punishment. Treatment of offenders as reflected in the type of administration of correctional programs, including probation and parole.
SOC	4800	The new emerging ideological, political, social and economic patterns which repeat themselves in and determine the Third World transition from a traditional to a new society.
SOC	4810	Analysis of gender stratification and its impact on culture in various nations and across ethnic groups in the United States.
SOC	4820	Sociocultural factors in development of gender identity and behavioral differences between men and women. Sex differentials in participation, power and reward in family, education, work, politics and community.
SOC	4830	This course analyzes how and why social protest movements form, and how and why they succeed or fail. Attention will be given to post-World War II social movements, including current examples.
SOC	4900	Discussion of substantive problems in sociology, in terms of significant theoretical and methodological debates in the discipline.
SOC	4910	Student-selected research topic under the supervision of a sociology faculty member. Permission to enroll is contingent on the instructor's acceptance of the student's research proposal.
SOC	4920	Written proposal required. May be repeated for additional credit. For majors wishing to continue course work in greater depth or seeking contact with unlisted subject areas.
SOC	4940	
SOC	4960	



SOC	4980	Sociological examination of a developing and/or important social issue or sociological topic. May be repeated for different specialized topics.
SOC	4990	
SOC	4EL	
SOC	4EN	
SOC	4EU	
SOC	5040	19th Century theory in sociology with emphasis on A. Comte, K. Marx, E. Durkheim, T. Veblen, M. Weber and H. Spencer.
SOC	5050	Theoretical developments in sociology today.
SOC	5100	This course will review the major forms of community and organizing since World War II. Practical issues and theoretical issues will be stressed. Students will engage in intensive case study research applying the course concepts in addition to reading and writing on the various topics.
SOC	5110	Examination of political institutions, organizations and behavior with special attention to participation, power, ideology, decision making and conflict.
SOC	5160	An examination of gender as a predisposing factor of health status, health behavior, health care delivery, and the structure and posture of health care professionals.
SOC	5170	Dynamics of law and legal institutions; the relationship of sociocultural changes in substantive and procedural aspects of law to the concept of justice, and to the social control of deviance.
SOC	5180	An analysis of the sociocultural factors in health and illness, and in medical and paramedical services, and in the field of health practice as a social institution.
SOC	5190	A study of the changing proportions of older people in the population, their changing roles and statuses, and the problems and processes of adjustment.
SOC	5200	This course acquaints students with various schools of anthropological theory, stressing the influence of traditional approaches on contemporary thought and the impact of historical context on the development of theory.
SOC	5210	The study of how information and communication technologies interact with spatial and non-spatial communities, including a focus on the use of technology as a community development strategy.
SOC	5220	The study and application of sociological theory to understand the role of information and communication technologies in shaping social structure and social processes, with special focus on social policy issues.
SOC	5230	This course is designed as a service learning collaboration with community technology centers in Toledo or elsewhere. Students will conduct programming or community-based research with faculty and community guidance.
SOC	5270	Introduction to procedures used in the various phases of sociological research.



SOC	5290	Study of major statistical procedures and techniques in sociology.
SOC	5340	Examination of the interaction among variables of population (fertility, mortality and migration) and other aspects of societal organization.
SOC	5440	Methods of population analysis, including examination and evaluation of data sources.
SOC	5450	This course takes an interdisciplinary approach to life in cities around the world, with emphasis on the ethnographic exploration of how power, cultural difference, and social inequality in cities are produced and experienced.
SOC	5580	The impact of rapidly changing science and technology on North American society: social change in a technological age; the emergence of post industrial society.
SOC	5600	Analysis of the social networks affecting institutionalized economic life, and the impact of corporate power on society.
SOC	5610	Study of the structure and processes of organizations; includes theory of bureaucratic and non-bureaucratic organizations, as well as structure and function of organizations.
SOC	5620	Analysis of the contemporary position in the U.S. work force focusing on the expansion of the number of women joining the labor force in recent decades, and the persistence of relatively low pay, status and authority in female-dominated occupations.
SOC	5650	An examination of social life in Latin America and the Caribbean, focusing on changing political economy, gender and ethnicity, globalization, culture and migration and in and out of the region.
SOC	5660	Review of current theoretical and empirical work in American sociology on racism, discrimination and other dimensions of racial inequality.
SOC	5670	Sociological study of African Americans in the United States, focusing on issues of ethnic identity, educational and economic achievement, continuing sources of discrimination, and current movements for change.
SOC	5710	Crime and criminal behavior: nature, types and extent of crime, societal reactions; problems in research and theory, prevention, control and treatment.
SOC	5720	Study of the analysis of the nature, meaning and process of deviant behavior in terms of social norms, control and societal reaction.
SOC	5730	Etiological theories of mental illness; community role in etiology; community processes in relation to prognosis and rehabilitation; treatment modalities including clinic, mental hospital and therapeutic community.
SOC	5740	Topics may include legalizing drugs, police violence, plea bargaining, death sentence and mandatory sentencing. Emphasizes liberal/conservative ideology.
SOC	5750	Topics may include abortion, three strike sentencing, homosexual rights, hate speech and decriminalizing narcotics. Emphasizes liberal/conservative ideology.



SOC	5760	Delinquency and delinquent behavior, including definitions, extent, process, types and causes; methods of prevention, protective control and treatment; institutional and non-institutional facilities and services.
SOC	5770	Historical and theoretical analysis of ideas concerning punishment. Treatment of offenders as reflected in the type of administration of correctional programs, including probation and parole.
SOC	5800	The new emerging ideological, political, social and economic patterns which repeat themselves in and determine the Third World transition from a traditional to a new society.
SOC	5810	Analysis of gender stratification and its impact on culture in various nations and across ethnic groups in the United States.
SOC	5820	Social context in which gender role ideologies have developed, their influence on social change, and reflections of change in public policy and the social sciences.
SOC	5830	This course will focus on social movements and their political context to understand the causes of social movement success and failure. Special attention will be given to the 1960s wave of protest, as well as to contemporary movement forms. Students will engage in intensive case study research applying the course concepts in addition to reading and writing on relevant topics.
SOC	5980	Sociological examination of a developing social issue. May be repeated in different specialized topics.
SOC	5990	Written proposal required. May be repeated for additional credit. For majors wishing to continue course work in greater depth or seeking contact with unlisted subject areas.
SOC	6000	Graduate students are exposed to and get acquainted with the academic and professional nature of the field of sociology from the experience of several faculty members. Some of the topics that will be covered include writing theses, doing internships and seeking graduate work and careers.
SOC	6040	Building on classical traditions, the course includes readings and lectures on functionalist, neo-Marxist, symbolic interactionist and other significant twentieth century sociological theories.
SOC	6050	This course will analyze and evaluate major social theories drawn from various 19th and 20th century intellectual and ideological traditions. The common subject focus of course readings is state, power and class relations.
SOC	6140	Building on previous theoretical and empirical research, this course examines contemporary perspectives of family dynamics. Socio-demographic changes of the family in the US with cross-ethnic and cross-cultural comparisons will also be examined.
SOC	6270	Examination of advanced methods of data collection in sociological research.

SOC	6280	The study of applied research designs, ranging from needs assessments to evaluation research, with particular focus on collaborative, action-oriented research designs used in community, government and nonprofit settings.
SOC	6290	Examination of advanced methods of data analysis in sociological research.
SOC	6340	Examination of the development of contemporary theoretical and empirical research of selected topics in population and human ecology. Students should be familiar with some population and human ecology studies.
SOC	6380	The application of research in a community setting with a client, with a focus on negotiating and designing an applied research project.
SOC	6390	The application of research in a community setting with a client, with a focus on implementing, analyzing and reporting on the research.
SOC	6440	This course will explore current topics in urbanization, with significant student input into design of topics. Students must have previous experience in urban studies.
SOC	6560	Examination of 20th Century social policy from various ideological perspectives. The course will include social policy efforts promoted by governments, foundations, trade associations, trade unions, social movements and other selected institutions.
SOC	6610	This course will explore current topics in social movements and protest, with significant student input into design of topics. Students must have previous experience in social movement studies.
SOC	6620	A social scientific analysis of work, including differences between occupations and workplace issues.
SOC	6640	After examination of the historical development of stratification (social classes), the course will examine contemporary theoretical and empirical research of social stratification in social inequality.
SOC	6660	Sociological explanations of racial and ethnic inequality are explored. Major figures in the sociological study of race and ethnicity are examined.
SOC	6710	The course will examine recent development in the research of crime with critical analysis of the paradigms that this research tries to build upon. Measurement, trends and patterns are also examined.
SOC	6800	Intensive sociological study of theory building in social psychology including, among others, paradigms of social cognition and belief, social influence, and social relations.
SOC	6810	Intensive sociological study of selected topics from among those including the illness experience, patient-health provider relations, the organization of medicine and problems inherent in the delivery of health care services.
SOC	6850	Sociological study of one or more selected topics in small group research including structural properties of groups, power and influence, group membership, and emergence of leadership in small groups.



SOC	6860	Supervised research in selected topics in social psychology with special focus on measurement issues.
SOC	6900	Student-selected research topic under the supervision of a sociology faculty member. Permission to enroll is contingent on the instructor's acceptance of the student's research proposal.
SOC	6930	Seminar on selected topics in the field of Sociology.
SOC	6940	In applied setting in areas of student interest: community organizing - health-probation - gerontology.
SOC	6960	Topic (proposal) is selected by the student and approved by a thesis committee.
SOC	6990	Written proposal required. May be repeated for additional credit. For majors wishing to continue course work in greater depth or seeking contact with unlisted subject areas.
SOC	WAC	
SOCW	1030	An introduction to the social welfare institution, its history, relation to social values, major social laws and programs, and the systems characteristic of service delivery. (not for major credit)
SOCW	1EU	
SOCW	2010	A beginning study of the profession of social work, values and ethics, and diversity. The generalist framework, strengths perspective and systems theory are introduced.
SOCW	2210	Supervised field experience. Ninety hours evenly distributed with weekly directed classroom discussion of reflecting the relationship of field experience to social work practice. This course meets the WAC requirements, and journaling and written classroom exercises will be required.
SOCW	2EL	
SOCW	2EU	
SOCW	3020	Provides an in depth study of the concepts of social and economic justice relative to the practice of social work including power and economic distribution, oppression, discrimination and confronting injustice.
SOCW	3030	Provides an overview of various tools used by social workers in practice including use of DSM IV, individual, family, group, organization and community assessments.
SOCW	3040	History and development of practice with older adults. Trends in aging, services for older adults, health care, social security, retirement, elder abuse, substitute care decision, hospice, loss, death and dying.
SOCW	3050	Provides an examination of crisis intervention theories and strategies to deal with stress. Emphasis is on observing, formulating, defining and measuring the threats, tasks and opportunities associated with crisis behavior.



SOCW	3060	Examination of social work values and their professional implications. Provision of working knowledge of Social Work Code of Ethics and licensing and subsequent professional responsibilities. Integration of theoretical models with practice situations.
SOCW	3070	Child welfare history. Knowledge, concepts and skill development concerning child maltreatment and protection, risk assessment and family-centered services.
SOCW	3080	Provides an understanding of women's poverty and its perpetuation through marriage and divorce, women's work and wages, welfare, children, child support and the economics of the unpaid women's labor.
SOCW	3090	Focus is on racial/ethnic groups who are among social welfare consumers. Cultural characteristics and group strengths, needs, priorities and experiences within the context of social work are also explored.
SOCW	3110	An overview of generalist social work practice with various system sizes. Emphasizes strengths, empowerment, social and economic justice, ethical practice and examination of self in relation to professional social work.
SOCW	3120	Develops skills needed for the generalist social work interview and appropriate recording techniques. Integrates computer simulation, role-play and video recording for a participatory learning experience.
SOCW	3170	Addresses the developmental and permanence needs of children, effects of maltreatment on children, placement issues, separation, reunification and adoption. Includes child welfare services for children with developmental disabilities.
SOCW	3240	Theoretical approaches to understanding human behavior and the interrelatedness of biological, psychological, social, cultural and environmental factors affecting individual, family and group behavior within the context of diversity.
SOCW	3250	Provides an understanding of theories addressing behavior of larger systems including groups, organizations, and communities with a focus on socio-cultural factors and social and economic justice.
SOCW	3300	An examination of current social welfare issues and theories and the significance to the social, economic and political factors which influence policymaking and implementation.
SOCW	3EL	
SOCW	3EU	
SOCW	4010	Presentation of basic concepts used in social work research. Practice based methods are emphasized. Course content will focus on scientific methods of building knowledge within the social sciences.
SOCW	4120	Provides advanced theory and skill development as a generalist social worker with individuals, families and groups. Emphasis is on a strengths and empowerment perspective focused on social and economic justice.



SOCW	4130	Provides advanced theory and skill development as a generalist social worker with organizations and communities. Emphasis is on a strengths and empowerment perspective focused on social and economic justice.
SOCW	4200	Integration of field experience and proactive principles.
SOCW	4210	Integration of field experience and proactive principles.
SOCW	4220	A professional experience in generalist social work practice with an integration of classroom learning with practice in a social agency. Must be taken in successive semesters during a single academic year. Application for entry to field placement must be submitted to social work office during spring semester prior to fall placement.
SOCW	4230	A professional experience in generalist social work practice with an integration of classroom learning with practice in a social agency. Must be taken in successive semesters during a single academic year. Application for entry to field placement must be submitted to social work office during spring semester prior to fall placement.
SOCW	4500	This course focuses upon the cultural group strengths, needs, priorities and experiences of ethnic/racial groups in the U.S. through a social welfare perspective. Individual and institutional racism are examined.
SOCW	4960	Senior standing and approval of the department honor adviser.
SOCW	4980	Courses on various social work specialties. May be repeated in different topics.
SOCW	4990	Designed for advanced students in social work to pursue supervised independent study in unlisted subject areas or to continue course work in greater depth. Written proposal required.
SOCW	4EL	
SOCW	4EU	
SOCW	5010	Course introduces students to qualitative and quantitative research methodologies, supporting statistical methods as utilized within the social work profession, data analysis technology and evidenced based social work practice concepts.
SOCW	5110	Provides an overview of social work practice theory and paradigms to base practice with individuals, families and groups emphasizing strengths and empowerment, values and ethics, and understanding self.
SOCW	5120	Provides an overview of social work theories guiding social work practice with groups and organizations, including group development, leadership, and models of organizations within a social and economic justice framework.
SOCW	5130	Provides historical and contemporary look at the social work profession, its roots in community organizing, theories underpinning group work and community organizing. Strengths and empowerment models and social justice emphasized.



SOCW	5210	Course is organized on a developmental model including social work perspectives and theory on: biopsychosocial aspects of human growth and development. Critical analysis encouraged through social justice conceptualizations.
SOCW	5220	Course views the behavior of groups, organizations, and communities and their environmental contexts through a social work perspective. Attention focuses on issues of diversity, oppression, and social and economic justice.
SOCW	5330	Course covers the history of social work profession and major institutions. Through current policy issues, methods of policy analysis are provided. Students are introduced to various methods of policy practice.
SOCW	5900	The student participates in a weekly seminar to be oriented to field requirements, expectations and safety; and to integrate classroom learning to the field experience. During the 6th week the student adds a field experience in an assigned field agency and completes 16 field hours per week for a total of 160 field hours. This course must be taken in consecutive semesters with SOCW 5910.
SOCW	5910	The student continues in the field placement which was assigned in SOCW 5900 and attends a weekly integrative field seminar. The student completes 240 field hours at 16 hours per week. SOCW 5900 and 5910 must be taken in consecutive semesters during which students complete a cumulative total of 400 field hours. Prerequisite: Permission of Field Director, SOCW 5900 with B or better; Co-requisites: SOCW 5130 Permission of Field Director, SOCW 5900 Minimum Grade of B. Co-requisite SOCW 5130
SOCW	6030	Covers research methods specific to macro social work practice especially needs assessment and program evaluation. Content on research ethics, data management, and evidence based practice are addressed. Prerequisites: All 5000 level courses, advanced standing status or permission of instructor.
SOCW	6040	Course covers evaluation of client accomplishments through subject design methods. Content on research Ethics, data management, and evidence based practice are addressed. Prerequisites: all 5000-level courses, advanced standing status or by permission of instructor.
SOCW	6110	Advanced study of generalist social work practice and theory when working with individuals, families, and groups with an intergenerational focus on social and economic justice. All SOCW 5000-level courses, Advanced Standing Status, or Permission.
SOCW	6120	Course provides advanced content on social work practice in organizations including financial management, supervision and planning. Incorporates current theoretical perspectives and research on effective practice. Prerequisite: SOCW 6110 with a B or better, or permission of instructor.



SOCW	6130	Course provides advanced content on social work practice within the community and with groups. Particular attention is paid to community change processes and social and economic justice. Prerequisite: SOCW 6110 and 6140 with a B or better.
SOCW	6140	Course provides an overview of theories and methods of social work assessment with an emphasis on psychosocial assessment, macro assessments and various tools used by social workers for assessment purposes. Prerequisites all 5000 level courses, advanced standing status. Or by permission.
SOCW	6410	Course covers the social worker's role in child and family practice settings including the major theoretical perspectives accepted in the field with an emphasis on strengths and empowerment. Prerequisites: all 5000-level classes, Advanced Standing status, or permission of instructor. Must be taken concurrently with SOCW 6460. Co requisite: SOCW 6110.
SOCW	6430	Course provides knowledge about current social work policy issues concerning child and family services. Major emphasis is placed on social and economic justice in the resolution of policy conflicts.
SOCW	6460	This course enables students to gain a critical understanding and appreciation of the social work literature and research underpinning social work practice in child and family services. Prerequisite: All 5000-level classes and SOCW 6140. Co requisites: SOCW 6110, 6410, or permission of instructor
SOCW	6470	Course provides a more in depth examination and appreciation of social work literature and research underpinning social work practice with children and family services. Prerequisite: SOCW 6110, 6140, 6410 with a B or better. Co requisite: 6430.
SOCW	6510	Course provides an understanding of the social worker's role in mental health practices. Included are major theoretical perspectives currently accepted in the field with an emphasis on strength and empowerment. Prerequisite: All 5000-level courses, advanced standing status, and SOCW 6140. Co requisite: SOCW 6110, or permission of instructor. Must take SOCW 6560 concurrently
SOCW	6530	Course provides knowledge about the current social work policy issues concerning mental health services. Major emphasis is placed on social and economic justice in the resolution of policy conflicts. Prerequisite: SOCW 6110, 6410, 6510 with a B or better.
SOCW	6560	Course enables students to gain a critical understanding and appreciation of the social work literature and research underpinning social work practice in mental health settings. Prerequisites: All 5000-level classes, advanced standing status, and SOCW 6140. Co requisites: SOCW 6110, 6510, or permission of instructor.
SOCW	6570	Course provides a more in depth examination and appreciation of social work literature and research underpinning social work practice in mental health settings. Prerequisites: SOCW 6110, 6140, 6510 with a B or better.



SOCW	6610	Course provides an understanding of social worker's role in aging practice settings. Included are major theoretical perspectives currently accepted in the field with emphasis on strengths and empowerment.
SOCW	6630	Course provides knowledge about the current policy issues concerning social work services for the elderly. Major emphasis is placed on social and economic justice in the resolution of policy conflicts.
SOCW	6660	Course provides an understanding and appreciation of the social work literature and research underpinning social work practice with older adults.
SOCW	6670	Course provides a more in depth examination and appreciation of the social work literature and research underpinning social work practice with older adults.
SOCW	6900	Students are placed in a social work field agency and participate in a weekly integrative seminar. Students registered for 5 hours must complete 360 field hours at 24 hours per week. Students who have been approved to participate in the extended field experience plan must register for 4 hours and complete 288 field hours. SOCW 6900 and 6910 must be taken in consecutive semesters during which students complete a cumulative total of 720 field hours. Prerequisites: Permission of Field Director; Advanced Standing or SOCW 5900 with B or better and overall GPA of B or better for 5900 level courses; pre or co-requisite SOCW 6410 or SOCW 6510 Prerequisites: Permission of Field Director; Advanced Standing or SOCW 5900 with B or better and overall GPA of B or better for 5900 level courses; Pre or co-requisite SOCW 6410 or SOCW 6510 Credit hours 4-5
SOCW	6910	Students continue placement in the field agency assigned in SOCW 6900 and participate in a weekly integrative seminar. The student registered for 5 hours must complete 360 field hours at 24 hours per week. Students who have been approved to participate in the extended field experience plan must register for 6 hours and complete 432 field hours. SOCW 6900 and 6910 must be taken in consecutive semesters during which students complete a cumulative total of 720 field hours. Prerequisites: Permission of Field Director; SOCW 6900 with B or better and overall GPA of B or better; pre or co-requisite SOCW 6430 or SOCW 6530 Credit Hours = 5-6
SOCW	6960	This course involves research leading to a written thesis. Thesis topic, defense, and final thesis must be approved by the student's thesis committee.
SOCW	6980	Content will vary as instructors present a single concentration on developments, problems, and controversies in social work.



SOCW	6990	Directed study in social work under the supervision of a social work faculty member.
SOMN	600	The Basic Life Support Healthcare Provider Course is designed to teach the skills of CPR for use in victims of all ages (including ventilation with a barrier device, a bag-mask device, and oxygen); use of an automated external defibrillator (AED); and relief of foreign-body airway obstruction (FBAO).
SOMN	602	
SOMN	603	
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SOST	1010	The historical development of social services as it relates to the present system of delivery of services. Significant writing involved.
SOST	1020	All social services agencies use a modified form of the Scientific Method. This course will assist the student in executing gathering data, defining problems, generating solutions, implementing solutions and follow-up. Significant writing involved.



SOST	1040	This course gives an overview of the role of the older adult in contemporary society, including the demography of aging, physical and social environments, specialized services available and stereotypical myths related to the aged. Significant writing involved.
SOST	1070	The knowledge and practice of effective approaches to interviewing. Significant writing involved.
SOST	1080	Experiential exploration of the variety of professional teams, the division of responsibility within the professional team and the differences in function of its members. Significant writing involved.
SOST	1130	An explanation of community resources (human services agencies) with focus on their effective use for connecting clientele to services. Significant writing involved.
SOST	1150	Exploration of materials and applications of techniques covering a variety of two and three dimensional arts and crafts projects as applied to various age groups.
SOST	1500	A course designed to assist the student in learning about human behavior in relation to awareness of oneself and relationships to others. Significant writing involved.
SOST	1510	
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SOST	2020	Experientially learning the processes involved in the various methods of giving service casework, (one-to-one approach), group work and community organization. Significant writing involved.



SOST	2030	An in-depth examination of current funding systems in human services, with particular emphasis on Medicare, Medicaid, social security benefits and private health care coverage. Significant writing involved.
SOST	2100	Assists the student in acquiring recording skills for use in providing service with emphasis on relationship between practice and record keeping. Significant writing involved.
SOST	2110	This course explores the effects of living in a multi-cultural society, examines stereotyping, discrimination and racism. Significant writing involved.
SOST	2160	This course explores the meaning of death, as well as adjustment to the deaths of others and the social-emotional consequences. Dealing with those who are terminally ill and who must deal with dying is of concern in this course. Significant writing involved.
SOST	2210	Understanding the child as an interacting member of family and community. Management techniques and methods to promote mental and emotional health will be studied. Significant writing involved.
SOST	2220	A study of normal patterns of development from conception through middle childhood. Recognition of abnormal patterns which indicate special physical, mental or emotional problems or needs. Significant writing involved.
SOST	2230	Investigates the changes and stress in adolescence and the special dynamics of parent-adolescent interaction through use of journal research and class discussions. Significant writing involved.
SOST	2350	Supervised practice obtained in the equivalent of up to 18 hours a week at an agency. Significant writing involved.
SOST	2990	A course designed to provide educational opportunities in a specialized academic area under the direct supervision of a faculty member.
SPAN	1080	A study of the Hispanic world with emphasis on the relationship between its culture and business and economic institutions and practices. Taught in English. (Not for major credit)
SPAN	1090	A study of selected artistic, literary, philosophical, political and social aspects of present day Latin American culture. Taught in English. (Not for major credit)
SPAN	1100	A study of the events, people and movements that have formed Spain. Taught in English. (Not for major credit)
SPAN	1110	Practice in using and understanding Spanish to develop listening, speaking, reading and writing skills. Pronunciation, grammar, vocabulary and cultural topics. Lab practice required. (Not for major credit)
SPAN	1120	A comprehensive introductory course in Spanish language and culture through the four basic skills: aural comprehension, reading, speaking and writing. Laboratory practice required. (Not for major credit)



SPAN	1500	Review of first-year college Spanish for students who studied the language in high school and who need to strengthen communication skills, vocabulary, grammar and pronunciation before study at the 2000 level. (Not for major credit)
SPAN	1EL	
SPAN	1EN	
SPAN	2140	Intermediate-level review and development of aural comprehension, speaking, reading and writing skills. Topics in the cultures of the Spanish-speaking world. Lab practice required. (Not for major credit)
SPAN	2150	Further review and development of aural comprehension, speaking, reading and writing skills. Topics in the cultures of the Spanish-speaking world. Lab practice required. (Not for major credit)
SPAN	2190	Designed to permit and encourage non-majors to spend time in a country where Spanish is spoken. Credit will be given in accordance with established departmental procedures. (Not for major credit.)
SPAN	2EL	
SPAN	2EN	
SPAN	3000	A study of all Spanish grammatical aspects with special emphasis on those which present greater difficulty for the English speaker.
SPAN	3010	Practice in speaking, listening, reading and writing. Vocabulary and fluency building in Spanish with special emphasis on oral practice.
SPAN	3020	Practice in speaking, listening, reading and writing. Vocabulary and fluency building in Spanish with special emphasis on writing practice. A writing-intensive course.
SPAN	3170	An introduction to the language of the Hispanic world peculiar to the areas of business and commerce.
SPAN	3210	A survey of Spanish literature from its origins through the seventeenth century.
SPAN	3220	A survey of Spanish literature from the eighteenth century to the present.
SPAN	3270	The literature of Latin America from the Colonial period to the end of the nineteenth century.
SPAN	3280	The literature of Latin America from the beginning of the twentieth century to the present.
SPAN	3410	A study of the events, people and movements that have formed Spain. Attention is also given to the nation's contemporary life-style and culture.
SPAN	3420	A study of Latin America's contributions to world culture in such fields as architecture, painting, sculpture, music, literature, folklore, sciences, philosophy and education.
SPAN	3EL	
SPAN	3EN	
SPAN	4000	An advanced study of Spanish grammar in preparation for higher levels of study in the language and for its use in professional pursuits.



SPAN	4010	A thorough study of the grammatical structure of Spanish with special attention to stylistic problems.
SPAN	4060	A study of the techniques of translation and interpretation as they relate to English and Spanish based on a contrastive analysis of the two languages, both in theory and practice.
SPAN	4070	A study of the development of the Spanish language from Vulgar Latin to the present, illustrated with selected texts.
SPAN	4110	Basic concepts of linguistics as applied to the study of the Spanish language and its dialectal systems. Emphasis on phonetics, phonology, morphology, syntax and semantics.
SPAN	4120	A course in the theory and practice of teaching Spanish and of second language acquisition in general.
SPAN	4150	An analysis of critical theory and methodology as it applies to Spanish-language literature. Special emphasis on the most recent trends. Highly recommended for students planning graduate studies.
SPAN	4160	A study of the Latin American novel from the nineteenth century to the authors of the literary Boom of 1963.
SPAN	4170	A study of the major developments in Latin American novel from the Boom to the present.
SPAN	4190	The course permits the Spanish major or minor to spend time in a country where Spanish is spoken. Credit awarded in accordance with established departmental procedures.
SPAN	4240	A study of the social, philosophical, political and economic ideas expressed in the Latin American essay from the Colonial period to the present.
SPAN	4250	Development of the Latin American short story from its origins with special emphasis on the contemporary authors such as Allende, Borges, Cortazar, Garcia Marquez and Rulfo among others.
SPAN	4260	The poetry of Latin America from Sor Juana Ines de la Cruz to Ruben Dario.
SPAN	4270	Latin American poetry from Surrealism to the present, with emphasis on authors such as Borges, Huidobro, Neruda, Paz and Vallejo.
SPAN	4310	Study of major works from the Poema de Mio Cid to the early writers of the Siglo de Oro.
SPAN	4370	Advanced study of the business language, cultural attitudes and current business climate of the societies that comprise the Spanish-speaking world.
SPAN	4410	Readings in the literature of the fifteenth and sixteenth centuries. Among the authors covered are Lope de Vega, Calderon de la Barca, Gongora and Quevedo.
SPAN	4430	Reading and discussion of Don Quijote de la Mancha.
SPAN	4710	Critical readings of works by such realist and naturalist masters as Galdos, Pardo Bazan and Blasco Ibanez.



SPAN	4720	Critical readings of Spanish novels from the Generation of 1898 to the most recent trends.
SPAN	4810	Critical readings of Spanish poetry from Romanticism to the present.
SPAN	4820	Critical readings of Spanish drama from Romanticism to the latest contemporary trends.
SPAN	4830	Critical viewings of Spanish-language films from Spain and the Americas. Emphasis on cultural criticism.
SPAN	4910	Independent research in special topics. May be repeated once for credit.
SPAN	4980	Study and research in specific areas or authors with considerable reading of Spanish texts plus written reports in Spanish.
SPAN	4EL	
SPAN	4EN	
SPAN	5000	An advanced study of Spanish grammar in preparation for higher levels of study in the language and for its use in professional pursuits.
SPAN	5010	A thorough study of the grammatical structure of Spanish with special attention to stylistic problems.
SPAN	5060	A study of the techniques of translation and interpretation as they relate to English and Spanish based on a contrastive analysis of two languages, both in theory and practice.
SPAN	5070	A study of the development of the Spanish language from Vulgar Latin to the present, illustrated with selected texts.
SPAN	5110	Basic concepts of linguistics as applied to the study of the Spanish language and its dialectal systems. Emphasis phonetics, phonology, morphology, syntax and semantics.
SPAN	5120	A practical course in the theories, methods and specific techniques of teaching Spanish.
SPAN	5140	A comparative study of the emergence of Romance vernaculars against the historical perspective of Classical and Vulgar Latin, with special attention to the problems of interest to the Hispanics.
SPAN	5150	An analysis of critical theory and methodology as it applies to Spanish-language literature. Special emphasis on the most recent trends. Extensive analysis of selected works of criticism.
SPAN	5160	A study of the Latin American novel from the nineteenth century to the authors of the literary Boom of 1963.
SPAN	5170	A study of the major developments in Latin American novel from the Boom to the present.
SPAN	5190	Study Abroad in Latin America or Spain is designed to permit and encourage the language major to gain personal contact with the language and culture under study.
SPAN	5210	Study of those elements of structure and vocabulary most appropriate for preparing graduate students to read effectively in Spanish. (Not for majors)
SPAN	5220	Study of those elements of structure and vocabulary most appropriate for preparing graduate students to read effectively in Spanish. (Not for majors)



SPAN	5240	A study of the social, philosophical, political and economic ideas expressed in the Latin American essay from the Colonial period to the present.
SPAN	5250	Development of the Latin American short story from its origins with special emphasis on the contemporary authors such as Allende, Borges, Cortazar, Garcia Marquez and Rulfo among others.
SPAN	5260	The poetry of Latin America from Sor Juana Ines de la Cruz to Ruben Dario.
SPAN	5270	Latin American poetry from Surrealism to the present, with emphasis on authors such as Borges, Huidobro, Neruda, Paz and Vallejo.
SPAN	5310	Study of major works from the Poema de Mio Cid to the early writers of the Siglo de Oro.
SPAN	5370	Advanced study of the language of business, cultural attitudes and current business climate of the societies that comprise the Spanish-speaking world.
SPAN	5410	Readings in the literature of the fifteenth and sixteenth centuries. Among the authors covered are Lope de Vega, Calderon de la Barca, Gongora and Quevedo.
SPAN	5430	Reading and discussion of Don Quijote de la Mancha.
SPAN	5710	Critical readings of works by such realist and naturalist masters as Galdos, Pardo Bazan and Blasco Ibanez.
SPAN	5720	Critical readings of Spanish novels from the Generation of 1898 to the most recent trends.
SPAN	5810	Critical readings of Spanish poetry from Romanticism to the present.
SPAN	5820	Critical readings of Spanish drama from Romanticism to the latest contemporary trends.
SPAN	5830	Critical viewings of Spanish-language films from Spain and the Americas. Emphasis on cultural criticism.
SPAN	5980	Study and research in specific areas or authors with considerable reading of Spanish texts plus written reports in Spanish.
SPAN	6900	May be repeated for additional credit when topic varies.
SPAN	6930	Selected topics from Spanish culture, linguistics, or literature.
SPAN	WAC	
SPED	1EL	
SPED	2010	Lecture and fieldwork, consisting of a minimum of 15 clock hours as assistant in each of two placements for persons with disabilities (total of 30 hours)
SPED	2040	Synthesis of the cross-categorical components required of special education. Issues addressed: causes and characteristics for disabling conditions and issues related to persons with disabilities, i.e., identification, intervention strategies, educational settings. Role of professionals in the field of special education.



SPED	2900	Seminar provides students with the opportunity to explore, as a group, specific topics with a faculty member. Current issues in the area of Special Education will be the focus.
SPED	2910	This is a linking seminar with the urban studies or public administration dual majors. The purpose is to integrate the two majors. Students will learn the relation of cultural diversity and special education. Theoretical as well as pragmatic positions will be discussed.
SPED	2990	Designed to provide the student with the opportunity to explore special interests through individual study.
SPED	2EL	
SPED	3130	Identification and evaluation of language usage. Course focuses upon development of competence for the analysis of semantic and syntactic components of language. Some pragmatic analysis is included. Lab required.
SPED	3350	
SPED	3380	
SPED	3670	Principles of manual communication. Course builds an expressive and receptive vocabulary of at least 1,000 signs in American Sign Language (ASL) and Pidgin Signed English. Ten hours of lab required.
SPED	3680	Emphasis on fluency development in manual communication. Study of various models of interpreting and transliterating processes.
SPED	3690	American Sign Language III is designed to continue the development of proficiency in using the language and understanding the culture of the Deaf. Student will gain knowledge and skill in applying approximately 900 additional vocabulary words. Students will advance in the complexity of sentence structure and grammatical structures including classifiers, specifier, verb modulations and aspects, special referencing, pluralizations and the importance of facial expressions.
SPED	3700	American Sign Language IV is designed to continue the development of proficiency in using the language and understanding the culture of the Deaf. Student will gain knowledge and skill in applying approximately 900 additional vocabulary words.
SPED	3850	Basic course in both reading and writing literary Braille; practical application of this medium to teaching.
SPED	3860	Covered in this course will be reading and writing and advanced literary Braille, nemeth code and other nee
SPED	3EL	
SPED	4010	Factors that contribute to atypical development in early childhood, appropriate intervention models and implications of delay on young children's development.
SPED	4020	Focus on the classroom teacher's role in the development and modification of environment, curriculum and instruction to enable students with disabilities to be educated within the typical educational environment.



SPED	4030	Focus on the teacher's role in middle age grade classrooms in the development and modification of environment curriculum and instruction to enable students with disabilities to be educated within an inclusive educational environment. Course must be taken concurrently with CI 4200.
SPED	4060	Atypical infant, toddler and early childhood development examined. Intervention strategies in home, school and specialized environments, which are family-centered and developmentally appropriate, will be addressed. Forty (40) clock hour practicum required.
SPED	4070	Atypical infant, toddler and early childhood development examined. Intervention strategies in home, school and specialized environments, which are family-centered and developmentally appropriate, will be addressed. 20 clock hour practicum required.
SPED	4080	Curriculum models and intervention strategies which facilitate the cognitive, academic, social, language, self-help and lay skills of children with disabilities in preschool and primary grades will be examined.
SPED	4100	This course must be taken with SPED 4110 or SPED 4370. The purpose is to implement strategies and techniques for teaching students with mild and moderate educational needs. Students will have the opportunity to work in educational settings with experienced teachers. One hundred sixty hours of required field.
SPED	4110	This course focuses on community-referenced functional curricula approaches to teaching students with moderate educational needs. Topics include inclusionary activities, community-based instruction, social skills.
SPED	4120	Examination of appropriate curriculum models, instructional strategies and adaptations, and related behavior problems for students with intensive education needs. A transdisciplinary team approach is explored. Must be taken concurrently with SPED 4130.
SPED	4130	This course must be taken concurrently with SPED 4110 and 4120 to implement strategies and techniques in applied settings for teaching students with moderate to intensive educational needs. Through this course students gain experience working with persons with moderate to intensive needs. One hundred sixty hours of required field.
SPED	4150	This course must be taken with SPED 4160 to implement strategies and techniques for teaching students with moderate to severe developmental delays the applied settings. Forty hours of required field.
SPED	4170	Study of issues faced by adults with severe and multiple disabilities and their families. Emphasis on supported employment, residential options, self-determination, recreation and quality of life issues. Field experience required.
SPED	4220	Exploration of the development of visual, auditory and tactile-kinesthetic learning modalities and implications for social and academic learning with curricular consideration for math and language arts. Field experience required.



SPED	4230	Provides opportunities for field experience to use and refine the teaching of basic skills presented in SPED 4220. Eighty hours of field required. Must be taken concurrently with SPED 4220.
SPED	4240	Methods for teaching reading and writing to diverse learners. Emphasis on individualized and small-group approach using structured, explicit phonics in a balanced literacy program. Twenty-four hours of field required.
SPED	4250	This course covers career and vocational education activities for youths with disabilities. Special emphasis is placed on developing and implementing an Individual Transition Plan (ITP) and coordination with adult service providers.
SPED	4260	Effective parent and professional partnerships will be explored. Interpersonal communication skills, legal issues, effective models for home-school communication, and differences in culture, values and family expectations will be discussed.
SPED	4310	The purpose of this course is to present causes and characteristics of learning and behavioral problems. Emphasis of course: (a)theoretical models and considerations, (b)techniques of instruction and (3) the IEP.
SPED	4320	Provides opportunities to use, refine and implement strategies for working with persons with specific learning disabilities presented in SPED 4310. Forty hours of field required. Taken concurrently with SPED 4310.
SPED	4330	Provides educational settings for preservice teachers to practice effective behavioral/academic managing of children and youth experiencing emotional stress/trauma. Thirty hours of field required.
SPED	4340	Techniques for managing student behavior. Topics include analyzing environments and problems, implementing and evaluating interventions, data collection and analysis, and handling aggression and noncompliance. Case-backed approach. Integrated field component required.
SPED	4350	An in-depth study of instructional methods and strategies for persons with learning disabilities. The focus will be on organization, study skills and self-advocacy strategies.
SPED	4360	Provides students with supervised practice in developing and implementing learning strategies and study skills for persons with learning problems. Required 15 hours instructional practice with weekly meetings with supervisors/instructors.
SPED	4370	Study of causes and characteristics of mild disorders. Discussion will be on theoretical considerations as well as intervention approaches pertinent to the school and clinic setting. Taken concurrently with SPED 4100 and SPED 4110.
SPED	4480	
SPED	4510	Appropriate curriculum models, learning objectives and teaching strategies for students with physical or health impairing conditions are examined. Modification of materials, assessment options and alternative response modes will be discussed.



SPED	4600	This seminar is taken concurrently with student teaching/internship. Students will evaluate their behavior in relation to the classroom environment. The students will develop alternative strategies in the educational setting.
SPED	4620	Explores the relationship of disorders of communication with the concept of community language as it impacts language development in children.
SPED	4630	Develops an understanding of the roles and expertise of the professionals; enhances skills which benefit the communicatively disordered client by contributing to diagnostic and intervention terms.
SPED	4800	This course covers the anatomy and physiology of the eye, visual impairments and their implication for learning, working and independent living, as well as general issues and concepts related to blindness, the blind and the visually impaired.
SPED	4810	This course covers low vision conditions as well as instruction of persons with low vision. Advantages and disadvantages of specialized equipment are discussed alongside strategies for instruction. Rehearsal with the equipment is required.
SPED	4820	Exposes undergraduate vision students to basic research skills and enables them to conduct research in areas of interests.
SPED	4830	Covers general assessment in special education but emphasizes assessment vision. This emphasis allows students to critique and administer vision assessment tools.
SPED	4870	The course focuses on methods of instruction of the blind and visually impaired in different settings; cultural diversity, instruction of the blind with additional disabilities, and various types of assessments and methodologies for curriculum adaptation are addressed.
SPED	4880	This course focuses on the general independence of persons who are blind or visually impaired. Covered are skills and strategies for independent living, adaptive technology, and orientation and mobility skills for the blind and visually impaired.
SPED	4900	Seminar provides students with the opportunity to explore, as a group, specific topics with a faculty member. Current issues in the area of Special Education will be the focus.
SPED	4910	Directed research provides students the opportunity to explore specific topics and develop individual research with a faculty member. Current questions in the area of Special Education will be the focus.
SPED	4920	Individual Readings is designed to provide students with opportunities to examine literature related to specific issues. The student works under the direction of staff in the Department of Special Education Services.
SPED	4930	Planned field experience in public school classrooms under the direction of University supervisors. Full responsibility for the classroom is expected by the end of the student teaching experience.



SPED	4940	Provides advanced undergraduate students with supervised practicum experiences at off-campus site, including schools, hospitals, rehabilitation clinics, work training sites and other community sites where persons with disabilities are served.
SPED	4980	An advanced course for undergraduate majors in special education or majors in related fields covering an important area of special education. Student may repeat this course under different section numbers.
SPED	4990	Individual study provides students with opportunities to work individually on issues under the direction of department of Special Education Services faculty. The student meets with instructor without formal classes.
SPED	4EL	
SPED	5000	Examination of causes and characteristics, identification procedures, and potential of learners who significantly deviate from the norm mentally, physically and behaviorally. Issues related to services for persons with disabilities will be studied.
SPED	5010	Factors that contribute to atypical development in early childhood, appropriate intervention models and implications of delay on young children's development.
SPED	5080	
SPED	5120	In-depth study of personality, psychological and physical development, and educational needs of atypical children: including current research issues in areas of social, legal and environmental aspects of exceptional populations.
SPED	5150	This course is taken with SPED 5160 to apply strategies and techniques for teaching students with moderate educational needs. Forty hours of required field.
SPED	5160	This course focuses on a community-referenced functional curricula approach to teaching children and youths with moderate to severe delays. An in-depth study of inclusionary activities, community-based instruction, social skills.
SPED	5170	In-depth study of issues faced by adults with severe and multiple disabilities and their families. Emphasis on supported employment, residential options, self-determination, recreation and quality of life issues. Field experience required.
SPED	5180	An in-depth examination of appropriate curriculum models, instructional strategies and adaptations, and related behavior problems for students with severe and multiple disabilities. A transdisciplinary team approach is explored.
SPED	5190	This course is taken with SPED 5180 to apply strategies and techniques for teaching students with intensive needs. Forty field hours are required.



SPED	5220	Current trends and issues in teaching reading and writing to students with disabilities. Examination of research supporting various methods. Application of research-based methods into practical strategies for classroom implementation. Twenty-four hours of field required.
SPED	5230	Provides the laboratory to rehearse and refine the teaching skills presented in SPED 5/7220. Required of persons seeking initial special education certification. Forty field hours required. Taken concurrently with SPED 5220.
SPED	5250	This course covers career and vocational education activities for youths with disabilities. Special emphasis placed on developing and implementing an Individual Transition Plan (ITP) and coordination with adult service providers.
SPED	5260	Effective parent and professional partnerships will be explored. Interpersonal communication skills, legal issues, effective models for home-school communication, and differences in culture, values and family expectations will be discussed.
SPED	5270	Theoretical and conceptual bases of instruction for students with mild disabilities. Analysis of a range of intervention models.
SPED	5280	Aspects of quality environments, in the home and in early childhood centers for young children with special needs. Of particular interest is identifying characteristics of natural environments that promote positive child outcomes.
SPED	5300	This course will review existing theories and research regarding teaching literacy to students with disabilities in 4th through 12th grades (those who did not learn to read by 3rd grade).
SPED	5310	A study of the research on theoretical models and considerations about the causes and characteristics of learning and behavioral problems. Emphasis of course: (1) techniques of instruction and (2) the IEP process.
SPED	5320	Provides opportunities for field experience to use and refine the strategies for persons with mild disabilities presented in SPED 5310. Forty hours of field required.
SPED	5330	Provides quality educational settings to in-service teachers to practice effective behavioral and academic managing of children and youth experiencing continuous emotional stress and trauma.
SPED	5340	This course provides training in-service teachers to become managers of intra-communication and interpersonal relationships in diverse special education settings. Nonviolent Crisis Prevention/Intervention (CPI) training required.
SPED	5510	Appropriate curriculum models, learning objectives and teaching strategies for students with physical or health impairing conditions are examined. Modification of materials, assessment options and alternatives response modes will be discussed.



SPED	5600	The focus of this seminar is on teaching as a profession. Student will complete The Student Teaching Portfolio Project, a performance-based assessment approach to licensure and professional development. Additionally, this internship seminar provides a forum for group sharing, reflection, professional issues, ethical behaviors, interview processes, and career development.
SPED	5800	A study of the research on the anatomy and physiology of the eye, visual impairments and the practical implication for learning, working and independent living.
SPED	5810	An in-depth study of the field of low vision. Conditions, equipment and instruction will be reviewed and analyzed for their implication to the field of vision.
SPED	5870	This course focuses on the practical and philosophical pedagogy of teaching persons who are blind or visually impaired. Research on spectrum of learning environments is explored.
SPED	5880	This course includes the research regarding technology, strategies and an analytical evaluation of the independent living of the blind and visually impaired.
SPED	5950	A workshop developed around topics of interest and concern for in-service teachers and other education personnel. Practical application of workshop topics will be emphasized.
SPED	5980	An advanced course for graduate students in special education or related fields. Topics are selected based on needs of the population. Student may repeat this course under different section numbers.
SPED	5990	Individual study provides graduate students with opportunities to work individually on professional problems with faculty of the Department of Special Education Services. Individual meetings with sponsoring faculty are held.
SPED	6070	Atypical infant, toddler and early childhood development will be examined. Specialized intervention techniques, their research and practice base and appropriate curriculum models will be explored. 20 clock hour practicum required.
SPED	6080	An in-depth study of instruments used by school psychologists and classroom teachers to access and evaluate students. The diagnostic uses and the understanding of the results will be the focus.
SPED	6220	Provides information and competencies to develop, implement and evaluate collaborative programs. Educators will enhance their ability to collaborate so that they can better meet the needs of their students.
SPED	6250	In-depth study of transition issues and outcomes focusing on: a) best practices, b) the roles and responsibilities of a transition specialist, c) inter-agency collaboration, d) team building, and e) program development, implementation and evaluation.
SPED	6350	Students will examine current trends in research and program development in Specific Learning Disabilities. The focus will be on learning and study skills: their implication in the development of learning.



SPED	6360	Provides advanced graduate student with supervised practice in developing and implementing strategies and study skills for persons with learning problems. Required 15 hours instructional practice and weekly meetings with supervisors.
SPED	6410	This course provides in-depth readings on problems of emotionally and behaviorally disturbed/disordered children and youth. Intense study on two levels: (1) theoretical considerations and (2) treatments pertinent to diverse educational settings.
SPED	6420	This course provides supervised practice in classroom participation with students identified as Emotionally Behaviorally Disturbed/Disordered. Public School settings include: self-contained, resource, transition, mainstreamed and consultative-collaborative teaching roles.
SPED	6440	This course provides evaluation and application techniques of research based methodologies for teaching students with emotional behavioral Disorders/disturbances. Psycho-social educational best practices within the least restrictive environment are presented.
SPED	6470	This course provides in-depth readings in the field of autism. The course includes intense study on two levels: (1) theoretical considerations and (2) treatment approaches pertinent to populations with autism.
SPED	6480	This course provides research based methodologies for understanding and teaching children and youth with autism. Psycho-Social Educational best practices within the least restrictive environment are presented.
SPED	6720	Clinical evaluation model in descriptive linguistics and interaction in the use of a process approach to developing language with children with hearing impairments. Includes relation of hearing impairment to language development.
SPED	6730	Historical, Philosophical, psychological and social aspects of educating the hearing impaired. Factors affecting successful public school instruction are covered.
SPED	6740	Principles of educational assessment and curriculum development for students with hearing impairment. Assessment and curriculum issues will be discussed as they relate to current research trends in hearing impairment.
SPED	6900	Independent Research provides opportunities to work on individual research under the direction of faculty. The student meets with the instructor at intervals and conducts research without formal class meeting.
SPED	6920	The master's project is an individually designed product which meets the final activity requirement for completion of the masters degree.
SPED	6930	Seminars will consider problems and provide advanced study in the field of Special Education. A student may register for more than one seminar during a graduate program.



SPED	6940	Provides the advanced graduate student with supervised practicum experiences at an off-campus site; including schools, hospitals, agencies, rehabilitation clinics, work training sites and other community sites where persons with disabilities are served.
SPED	6960	The master's thesis is an individually designed research study which meets the final activity requirement for completion of the master's degree.
SPED	6990	Individual study provides advanced graduate students opportunities to work individually on professional problems with faculty of the Department of Special Education Services. Individual meetings with sponsoring faculty are held.
SPED	7000	Examination of causes and characteristics, identification procedures, and potential of learners who significantly deviate from the norm mentally, physically and behaviorally. Issues related to services for persons with disabilities will be studied.
SPED	7120	In-depth study of personality, psychological and physical development, and educational needs of atypical children: including current research issues in areas of social, legal and environmental aspects of exceptional populations.
SPED	7150	This course is taken with SPED 5160 to apply strategies and techniques for teaching students with moderate educational needs. Forty hours of required field.
SPED	7160	This course focuses on a community-referenced functional curricula approach to teaching children and youths with moderate to severe delays. An in-depth study of inclusionary activities, community-based instruction, social skills.
SPED	7170	In-depth study of issues faced by adults with severe and multiple disabilities and their families. Emphasis on supported employment, residential options, self-determination, recreation and quality of life issues. Field experience required.
SPED	7180	An in-depth examination of appropriate curriculum models, instructional strategies and adaptations, and related behavior problems for students with severe and multiple disabilities. A transdisciplinary team approach is explored.
SPED	7190	This course is taken with SPED 7180 to apply strategies and techniques for teaching students with intensive needs. Forty field hours are required.
SPED	7220	Current trends and issues in teaching reading and writing to students with disabilities. Examination of research supporting various methods. Application of research-based methods into practical strategies for classroom implementation. Twenty-four hours of field required.
SPED	7230	Provides the laboratory to rehearse and refine the teaching skills presented in SPED 5/7220. Required of persons seeking initial special education certification. Forty field hours required. Taken concurrently with SPED 7220.



SPED	7250	This course covers career and vocational education activities for youths with disabilities. Special emphasis placed on developing and implementing an Individual Transition Plan (ITP) and coordination with adult service providers.
SPED	7260	Effective parent and professional partnerships will be explored. Interpersonal communication skills, legal issues, effective models for home-school communication, and differences in culture, values and family expectations will be discussed.
SPED	7270	Focus of course is on effective service coordination strategies in early intervention and early childhood special education. Issues related to peer coaching and collaborative consultation also will be examined.
SPED	7280	Aspects of quality environments, in the home and in early childhood centers for young children with special needs. Of particular interest is identifying characteristics of natural environments that promote positive child outcomes.
SPED	7310	Theoretical and conceptual bases of instruction for students with mild disabilities. Analysis of a range of intervention models.
SPED	7320	Provides opportunities for field experience to use and refine the strategies for persons with mild disabilities presented in SPED 7310. Forty hours of field required.
SPED	7330	Provides quality educational settings to in-service teachers to practice effective behavioral and academic managing of children and youth experiencing continuous emotional stress and trauma.
SPED	7340	This course provides training in-service teachers to become managers of intra-communication and interpersonal relationships in diverse special education settings. Nonviolent Crisis Prevention/Intervention (CPI) training required.
SPED	7510	Appropriate curriculum models, learning objectives and teaching strategies for students with physical or health impairing conditions are examined. Modification of materials, assessment options and alternatives response modes will be discussed.
SPED	7800	A study of the research on the anatomy and physiology of the eye, visual impairments and the practical implication for learning, working and independent living.
SPED	7810	An in-depth study of the field of low vision. Conditions, equipment and instruction will be reviewed and analyzed for their implication to the field of vision.
SPED	7880	This course includes the research regarding technology, strategies and an analytical evaluation of the independent living of the blind and visually impaired.
SPED	7950	A workshop developed around topics of interest and concern for in-service teachers and other education personnel. Practical application of workshop topics will be emphasized.



SPED	7980	An advanced course for graduate students in special education or related fields. Topics are selected based on needs of the population. Student may repeat this course under different section numbers.
SPED	7990	Individual study provides graduate students with opportunities to work individually on professional problems with special education faculty. Individual meetings with sponsoring faculty are held.
SPED	8070	Atypical infant, toddler and early childhood development will be examined. Specialized intervention techniques, their research and practice base, and appropriate curriculum models will be explored. 20 clock hour practicum required.
SPED	8080	An in-depth study of instruments used by school psychologists and classroom teachers to access and evaluates students. The diagnostic uses and the understanding of the results will be the focus.
SPED	8220	Provides information and competencies to develop, implement and evaluate collaborative programs. Educators will enhance their ability to collaborate so that they can better meet the needs of their students.
SPED	8250	In-depth study of transition issues and outcomes focusing on: a) best practices, b) the roles and responsibilities of a transition specialist, c) inter-agency collaboration, d) team building, and e) program development, implementation and evaluation.
SPED	8350	Students will examine current trends in research and program development in Specific Learning Disabilities. The focus will be on learning and study skills: their implication in the development of learning.
SPED	8360	Provides advanced graduate student with supervised practice in developing and implementing strategies and study skills for persons with learning problems. Required 15 hours instructional practice and weekly meetings with supervisors.
SPED	8410	This course provides in-depth readings on problems of emotionally and behaviorally disturbed/disordered children and youth. Intense study on two levels: (1) theoretical considerations and (2) treatments pertinent to diverse educational settings.
SPED	8420	This course provides supervised practice in classroom participation with students identified as Emotionally Behaviorally Disturbed/Disordered. Public School settings include: self-contained, resource, transition, mainstreamed and consultative-collaborative teaching roles.
SPED	8440	This course provides evaluation and application techniques of research based methodologies for teaching students with emotional behavioral Disorders/disturbances. Psycho-social educational best practices within the least restrictive environment are presented.
SPED	8470	This course provides in-depth readings in the field of autism. The course includes intense study on two levels: (1) theoretical considerations and (2) treatment approaches pertinent to populations with autism.



SPED	8480	This course provides research based methodologies for understanding and teaching children and youth with autism. Psycho-Social Educational best practices within the least restrictive environment are presented.
SPED	8720	Clinical evaluation model in descriptive linguistics and interaction in the use of a process approach to developing language with children with hearing impairments. Includes relation of hearing impairment to language development.
SPED	8730	Historical, Philosophical, psychological and social aspects of educating the hearing impaired. Factors affecting successful public school instruction are covered.
SPED	8740	Principles of educational assessment and curriculum development for students with hearing impairment. Assessment and curriculum issues will be discussed as they relate to current research trends in hearing impairment.
SPED	8900	Independent Research provides opportunities to work on individual research under the direction of faculty. The student meets with the instructor at intervals and conducts research without formal class meeting.
SPED	8930	Seminars will consider problems and provide advanced study in the field of Special Education. A student may register for more than one seminar during a graduate program.
SPED	8940	Provides the advanced graduate student with supervised practicum experiences at an off-campus site; including schools, hospitals, agencies, rehabilitation clinics, work training sites and other community sites where persons with disabilities are served.
SPED	8960	The doctoral dissertation is an original scholarly product required of all students completing the doctoral degree in Special Education Services.
SPED	8990	Individual study provides advanced graduate students opportunities to work individually on professional problems with faculty of the Department of Special Education Services. Individual meetings with sponsoring faculty are held.
SPSY	5030	An introduction to issues in school psychology and the differing roles and responsibilities of the school psychologist as a member of the school staff. Includes onsite observations in regular and special classrooms. Legal and ethical issues as well as a history of the profession will be included.
SPSY	5040	Covers the ethical standards and legal regulation in school psychology and school counseling. Ethical standards, litigation and legal regulation are examined in regard to professional practice.
SPSY	5060	Orientation to the organization of schools for school psychology students without teaching experience. Students will serve a wide range of educational settings and integrate their observations through discussion and readings.
SPSY	5170	Addresses the theories and techniques of collaborative problem solving; includes an examination of variables affecting the consultation process.



SPSY	5300	Training in direct and standardized academic assessment techniques and in designing appropriate interventions.
SPSY	5310	Training indirect and standardized assessment techniques of preschool and low-incidence population, and designing appropriate interventions. Introduces functional behavior assessment.
SPSY	5980	This course is open to a graduate student pursuing a master's, specialist or doctoral degree program and may be a requirement of that program.
SPSY	6260	Examination of disorders of childhood adolescence from an ecological perspective, focusing on understanding characteristics and causes, diagnosis both medical and educational, and identification of interventions for school and home.
SPSY	6990	Provides students the opportunity to work independently on professional problems under the direction of a faculty member in the Department of Counseling and Mental Health Services.
SPSY	7170	Addresses the theories and techniques of collaborative problem solving; includes an examination of variables affecting the consultation process
SPSY	7180	Advanced theory and practice in consultation. Emphasis on system-level techniques for developing and sustaining home and school collaboration. Includes study of prevention programs for promoting student academic success.
SPSY	7190	Advanced theory and practice in system-level consultation. Emphasis on techniques for developing and sustaining school and community collaboration. Includes study of prevention programs promoting student mental health and crisis intervention.
SPSY	7260	Examination of disorders of childhood adolescence from an ecological perspective, focusing on understanding characteristics and causes, diagnosis both medical and educational, and identification of interventions for school and home.
SPSY	7310	Training indirect and standardized assessment techniques of preschool and low-incidence population, and designing appropriate interventions. Introduces functional behavior assessment.
SPSY	7320	Assessment of cognitive and personality functioning of school-age children using standardized tests, and the interpretation of results.
SPSY	7330	Practice in individual evaluation, assessment and intervention design with school age children.
SPSY	7340	Practice in individual evaluation, assessment and intervention design, with preschool and other special populations. Includes practice in functional behavioral assessment.
SPSY	7510	Training in supervision models, methods, roles, ethical issues, research and evaluation. Advanced training in consultation.
SPSY	7530	Advanced preparation in theory pertaining to the principles and practice of individual counseling, group work and consultation.



SPSY	7920	In this capstone experience, specialist students review the literature, report implications and produce a project which can be applied in school psychology and counseling-related settings.
SPSY	7930	Advanced preparation in research problems, design and implementation of quantitative and qualitative research and methodology in the fields of counseling and supervision.
SPSY	7940	Academic year on-the-job experience in a school supervised by a school psychologist with further supervision by the university. Broad range of assessment, consultation and counseling experiences are emphasized.
SPSY	8480	Advanced training in contemporary professional, legal and ethical issues that regulate or affect the work of counselors, psychologists and other mental health professionals.
SPSY	8930	This seminar will consider problems and provide advanced study. Open only to advanced graduate students.
SPSY	8950	Workshops developed around topics of interest and concern to counselors, school psychologists, or other mental health care professionals. Practical application of topics will be stressed.
SPSY	8960	Dissertation credit may not total less than 10 semester hours and no greater than 32 hours. A doctoral student may register for such credit in more than one semester.
SPSY	8980	This course is open to a graduate student pursuing a master's, specialist or doctoral degree program and may be a requirement of that program.
SPSY	8990	Provides students the opportunity to work independently on professional problems under the direction of a faculty member in the Department of Counseling and Mental Health Services.
STAB	1000	
SURG	661	Weekly assessment and critical review of the literature devoted to surgical science. Emphasis will be placed on structure and content of literature with the goal of developing the student's ability to evaluate validity. May be repeated for credit.
SURG	673	Students will participate in ongoing research programs of members of the staff in rotation. May be repeated for credit.
SURG	680	Lecture and/or seminar course in topics of current interest in general surgery with special emphasis on the fundamentals of life under normal, experimental, or pathological conditions. Will present and moderate the discussion of original and on-going research publications and studies.
SURG	681	Lecture and/or seminar course in topics of current interest in general surgery with special emphasis on the fundamentals of life under normal, experimental, or pathological conditions. Will present and moderate the discussion of original and on-going research publications and studies.



SURG	682	Lecture and/or seminar course in topics of current interest in general surgery with special emphasis on the fundamentals of life under normal, experimental, or pathological conditions. Will present and moderate the discussion of original and on-going research publications and studies.
SURG	689	Intensive study in field of interest, including theoretical and experimental work. May be repeated for credit.
SURG	703	Surgery (12 weeks)
SURG	704	Students will be given an individualized opportunity to participate in the activities of the Division of Cardiothoracic Surgery. Opportunities may be available for clinical experience in the operating room, in management of adult and pediatric cardiac surgical patients, or in clinical research. The focus will be the development of an understanding of the basic and clinical sciences as they pertain to cardiovascular surgical procedures and pulmonary resection.
SURG	705	Students will be designated as an Acting Intern with increased responsibility for patient management & under supervision.
SURG	706	Students will be designated as an Acting Intern with increased responsibility for patient management & under supervision.
SURG	708	The student will have the opportunity to evaluate eye disorders in the outpatient setting. Techniques for eye examination will be stressed with special emphasis on diagnosis of diabetic retinopathy, macular degeneration, cataract, and glaucoma. Viewing a series of slides will also be a part of the rotation
SURG	710	
SURG	711	The focus will be to develop a more sophisticated understanding of basic and clinical sciences as they pertain to reconstructive and cosmetic surgical procedures. Evaluation of pre and post operative management of the plastic surgical patient.
SURG	714	Students will be designated as an Acting Intern with increased responsibility for patient management & under supervision.
SURG	715	Students will be designated as an Acting Intern with increased responsibility for patient management & under supervision.
SURG	716	Students will be designated as an Acting Intern with increased responsibility for patient management & under supervision.
SURG	730	The student will have the opportunity to evaluate eye disorders in the outpatient setting. Techniques for eye examination will be stressed with special emphasis on diagnosis of diabetic retinopathy, macular degeneration, cataract, and glaucoma. Viewing a series of slides will also be a part of the rotation



SURG 731 Students will be given an individualized opportunity to participate in the activities of the Division of Cardiothoracic Surgery. Opportunities may be available for clinical experience in the operating room, in management of adult and pediatric cardiac surgical patients, or in clinical research. The focus will be the development of an understanding of the basic and clinical sciences as they pertain to cardiovascular surgical procedures and pulmonary resection.

SURG 740

SURG 745

In the summer after the second year of medical school, MD/PhD students will identify a clinical mentor. This faculty member will be responsible for the clinical training program of the student, and will provide formative and summative feedback concerning the development of clinical skills and a foundation for subsequent clinical clerkship training. The mentor may change during the course of the student's graduate school years, but any change should occur after the end of a semester. Although students may choose a clinical mentor from any department, the following specialties are particularly suited to training MD/PhD students with limited prior clinical training and restricted hours of availability:

Emergency Department: Students schedule specific hours (which may include evenings or weekends) with their clinical mentor. Patients will be assigned to the student for evaluation, and students will be involved in all aspects of emergency patient care. Contact: Dr. Kris Brickman, Director of Emergency Medicine.

Student time commitment: Students are expected to spend 8 hours per month in clinical training. This can be divided into weekly 2 hour session, biweekly 4 hour sessions or an 8 hour day per month. Students are encouraged to discuss the most appropriate schedule with their laboratory mentor to ensure that the clinical experience does not interfere with graduate coursework or research progress. The program should be formalized in writing, and submitted to the MD/PhD Director for approval. Students should see about one patient per hour of training. Students should keep a log of their patients, their diagnoses, and any procedures performed. An electronic logging system for patient experiences will be developed.

Credit:

Upon completion of 3 years of graduate training, assuming 40 weeks per year of participation, students will have accumulated about 300 hours of clinical experience. This is approximately equivalent to 2 months of clinical electives (8 h/d X 5 d/w X 4 weeks = 160 h/mo), and students will be awarded 2 months of 4th year elective credit for this training upon re-enrolling in the College of Medicine. This credit should allow further flexibility in 4th elective scheduling, enabling additional research months, off site rotations, etc. If students require more than 3 years of graduate work, continued participation in the clinical training program is strongly encouraged, but no more than 2 months of elective time will be awarded.

SURG 750

SURG 751

SURG 755

SURG 789



THR	1010	Using theatre games and theatrical techniques, students explore the nature of creativity and its relationship to their own processes of creative expression.
THR	1030	Introduction to scenic design and construction using the tools and techniques of theatre including properties and scene painting. Lectures, readings and projects with practical laboratory experience.
THR	1040	Introduction to theory and practice in stage lighting and sound. Students will use lighting and sound tools and equipment in production crews on department productions.
THR	1050	Introduction to the theory and practice of stage costuming. Lectures, readings and projects offer practical laboratory experiences. Students will use tools and equipment of the costume shop on production crews.
THR	1100	Introductory survey of the development of theatre and drama from the ancient world to the present day; discussion of representative plays; slides and films complement lectures. (Not recommended or required for majors.)
THR	1EL	Students will be assigned a crew position for one of the department productions.
THR	1ELD	
THR	1ELP	
THR	1ELT	
THR	1EU	
THR	2000	
THR	2200	A study of contemporary theatrical organization and styles; theatre compared with film and television; Broadway, regional and experimental theatre; research skills development; exploration of career opportunities in theatre and related fields.
THR	2420	Principles and techniques of makeup for stage. Practical execution of stage makeup problems. Students are required to purchase supplies.
THR	2610	An introduction to the art and craft of acting. Through scene work and improvisation, students learn to use acting terminology, identify dramatic beats, develop character objectives and play actions.
THR	2620	Students are exposed to a range of techniques explicated by primary acting theorists/practitioners, including diagnosis of individual skills, work in voice, movement, textual analysis and scene preparation.
THR	2640	Theory and practice of vocal and physical techniques for the actor. Repeatable for up to 8 hours of credit. (BFA Performance majors should enroll in the course every semester up to the maximum credit.)
THR	2990	Individual study provides a student an opportunity to work independently on a problem of special interest in theatre under the direction of the faculty. (Seminar forms available in the department office.)
THR	2EL	
THR	2ELD	
THR	2ELP	



THR	2ELT	
THR	2EU	
THR	3110	Developments and trends in theatre and drama from the ancient world through the Renaissance, including traditional forms of theatre in India, China and Japan.
THR	3120	Developments and trends in theatre and drama from the late 17th Century to the present day, including developments in Latin America and Africa.
THR	3210	Creative writing for the theatre analyzing traditional and contemporary structure and style.
THR	3410	Principles and theories of lighting design for theatrical productions are explored. Develop skills of script analysis, light study, light plot and related graphics for conceptualization and communication of design ideas.
THR	3440	Theory and principles of scenic design for stage are the focus. Conceptualization and communication of design ideas are explored through renderings, models, ground plans and elevations. Students are required to purchase supplies.
THR	3470	Students study the methods and techniques of sound production and design used in the theatre. Tools and techniques of audio production are used in laboratory recording and mix down.
THR	3480	Principles and theories of costume design for theatrical productions are explored. Develop skills of script analysis, sketching, fabric study and rendering for conceptualization and communication of design ideas. Students are required to purchase supplies.
THR	3610	Performing dramatic material for camera with an emphasis on the differences between stage and screen performing.
THR	3620	Contemporary, nonrealistic theatre requires adjustments for actors trained in the Stanislavski tradition. This course examines the theory and praxis of artists such as Brecht, Artaud, Grotowski, Boal and others.
THR	3640	Theories and practice of vocal techniques for the actor. Diagnosis of individual skills continues work begun in voice and movement.
THR	3650	Theories and practice of physical techniques for the actor. Diagnosis of individual skills continues the work begun in voice and movement.
THR	3710	The director's approach to analyzing a script, formulating a production concept and realizing that concept on stage. Discussions and exercises progress to directing scenes or short plays in class.
THR	3800	Through study and practice the student contributes significantly to department productions. This course is for students who have auditioned for roles or applied for design/tech positions in department productions.
THR	3830	Through study and practice students contribute significantly as members of the costume shop and wardrobe crew on productions. As a laboratory course students must see instructor to arrange lab time.
THR	3EL	
THR	3ELD	



THR	3ELP	
THR	3ELT	
THR	3EU	
THR	4110	Developments and trends in the American Theatre since 1945.
THR	4120	Contemporary British and Irish theatre surveys a diverse group of writers who represent previously silenced voices in those countries, forcing a reexamination of who speaks for British or Irish drama.
THR	4130	A history of the American musical theatre from the 19th century to the present.
THR	4400	Individual and group investigations of particular topics in all phases of design and technology, i.e. scene painting, advanced design and rendering technique, new technology.
THR	4500	Study of the professional theatre as a business: contracts, unions, the theatre marketplace, preparation of resumes, portfolios, audition pieces, interview.
THR	4620	Advanced training in acting with emphasis on effective vocal and rhetorical techniques and the use of poetic rhythm and imagery in creating a role psychologically as well as physically.
THR	4630	
THR	4640	Exercises and projects designed to help the student explore the major regional and foreign stage dialects. An introduction to the International Phonetic Alphabet.
THR	4700	Survey of the full range of professional opportunities and practices in Theatre. Students in designated program tracks are instructed in resume, portfolio and interview processes.
THR	4800	The student conceives, creates and presents theoretical or executed theatrical productions as part of the requirements for the B.F.A.
THR	4900	Exploration of a special topic in the history and criticism of theatre and drama - e.g., Modern Theories of Theatre Art or Stanislavski's Heritage or Baroque Theatre Architecture and Its Scenic Conventions.
THR	4940	Internship with an approved program, company, or agency in theatre. Students must submit proposal for approval of instructor. (Repeatable for 6 hours credit.)
THR	4950	Research or a creative project on a topic in theatre. Required of all candidates seeking department honors. (Repeatable for 6 hours credit.)
THR	4990	Individual study provides a student an opportunity to work independently on a problem of special interest in theatre under the direction of the faculty.
THR	4EL	
THR	4ELD	
THR	4ELP	
THR	4ELT	
THR	4EU	
THR	WAC	



TSOC	1500	Introduction to the socio-cultural foundations of schooling in the United States, including purposes of schooling in a multicultural society and the resulting nature of teacher work.
TSOC	1EL	
TSOC	1EU	
TSOC	2000	This course analyzes the roles of people in a culturally diverse society through an exploration of issues of race, class, gender, ethnicity and disability.
TSOC	2500	This course uses history and philosophy as lenses through which to inspect and reflect on the developing role of public schooling in the US from colonial times to the present.
TSOC	2EL	
TSOC	2EU	
TSOC	3000	The evolving role of education in the US, including the historical and contemporary relationship of schooling to other educational institutions, groups of people and the process of social change.
TSOC	3010	Emphasizes being and teaching others to be "reflective practitioners" in vocational and avocational endeavors. Coping with changing client circumstances, effective thinking, higher levels of learning and self-renewal are also studied.
TSOC	3100	Different approaches to problem solving are examined and students use some to complete real-life projects they have designed. Creativity, logical analysis, personal effectiveness and polarity management will be studied.
TSOC	3500	
TSOC	3540	Examines lifelong conceptual learning tools from several humanity disciplines that help define and frame action on real life problems of a diverse, global nature.
TSOC	3EL	
TSOC	3EU	
TSOC	4000	The evolving role of education in the US, including the historical and contemporary relationship of schooling to other educational institutions, groups of people and the process of social change.
TSOC	4100	Investigation of theory, research and individual interactions which undergird effective actions in groups. Group processes and individual-group relationships are emphasized in education, voluntary and business group settings.
TSOC	4130	Examines major issues and laws involved in public education and health services, especially the role of advocate for students that the school nurse and other professionals play.
TSOC	4150	Provides a framework, the analysis skills and the action implementation behaviors for understanding community schools and agencies. Develops skills in project management within the context of understanding and valuing diversity.



TSOC	4190	Practical applications of topics of interest and concern for preservice teachers and other education personnel.
TSOC	4940	Students will establish and complete an internship focusing on specified objectives, actions and time schedules under both on and off-campus supervision. Progress reports and a summary evaluation are required.
TSOC	4990	Directed study of a current topic in educational theory and social foundations. The student meets with the instructor at arranged intervals without formal classes.
TSOC	4EL	
TSOC	4EU	
TSOC	5100	Examines intrapersonal and interpersonal principles of high performing teams, meaningful relationships, and being an effective leader and member of groups. Real-life projects will be designed, implemented and evaluated.
TSOC	5110	Examines controversial contemporary educational issues, the forces that perpetuate them and the socio-cultural contexts in which they exist. Teachers' work and ethical tenets shaping practice are also examined.
TSOC	5190	School personnel collaborate with persons from higher education, the community, and scholars who have created model multicultural/urban education programs to learn new ways of teaching and learning among diverse populations.
TSOC	5200	Critical examination of the socio-cultural foundations of schooling in the United States, including purposes of schooling in a multicultural society and the resulting nature of teacher work.
TSOC	5210	Examines how race, class, gender, ethnicity and disability intersect with power, culture, knowledge and ideology in American schools to influence the lives of students and teachers in a multicultural society.
TSOC	5230	In-depth history of America's racial and ethnic minorities and the role of schooling in assisting their adaptation to and assimilation into American society.
TSOC	5300	Exploring the nature of philosophic inquiry in education and examining competing traditions in the West, particularly in the United States. A distinction between education and schooling will be drawn.
TSOC	5400	Evolving role of schooling and teaching in the US, using history to reflect on the relationship of schooling to other social institutions, groups of people and the process of social change.
TSOC	5950	Each workshop is developed around a topic of interest and concern to in-service teachers and other educational personnel. Practical application of workshop topics will be emphasized.
TSOC	6000	This course surveys works of prominent feminist scholars in order to address the impact of dominant ideology upon the lives of women and girls in American schools.
TSOC	6120	The purposes, structure and practice of non-formal and formal education are explored using a wide range of concepts and paradigms of comparative educational analysis throughout the globe.



TSOC	6140	An examination of the historical, legal, sociological interaction between state and schooling in US, emphasizing both religious/non-religious issues. These concerns are compared and analyzed with respect to other countries.
TSOC	6190	The collaborative study of a specific topic in educational theory and social foundations by a group of advanced students under the direction of one or more professors.
TSOC	6220	2Application of theoretical assumptions presented in TSOC 5210/7210 to US schools and classrooms, with particular attention given to program and curriculum issues, teachers and teaching policies, practices and procedures.
TSOC	6240	Development and dynamics of schooling in urban centers across the United States, including historical and critical analyses of current problems, issues and reform initiatives.
TSOC	6310	An examination of selected educational philosophers who have addressed themselves to the problem of the ends and means of education from Classical Hellenic Times to the present.
TSOC	6320	Examination of the interdependence among education, democracy and ethics in the context of civic life. Applications made to the practice of schooling as cultural production in a democratic society.
TSOC	6330	The purpose of this seminar is to explore the ethics of war and peace and its implications for the moral and civic education of democratic citizens.
TSOC	6340	The purpose of this seminar is to explore the nature of human rights and human rights education. The origin, definition, content, scope, foundation, and correlative duties of human rights, as well as, the theory of human rights education will be explored.
TSOC	6350	The purpose of this seminar is to explore the nature of environmental ethics and its implications for educational theory, in particular moral and civic education.
TSOC	6500	Examination of cross-cultural, comparative and other studies directed toward understanding processes of cultural transmission and transformation, and implications of anthropological research for contemporary issues in education.
TSOC	6960	A formal, independent study culminating in a written discourse that advances our understanding of educational theory or social foundations.
TSOC	6980	A formal, independent project applying principles of educational theory or social foundations to analyze a particular problem and culminating in a written discourse.
TSOC	6990	Directed study of a current topic in educational theory and social foundations. The student meets with the instructor at arranged intervals without formal classes.



TSOC	7100	Examines intrapersonal and interpersonal principles of high performing teams, meaningful relationships, and being an effective leader and member of groups. Real-life projects will be designed, implemented and evaluated.
TSOC	7110	Examines controversial contemporary educational issues, the forces that perpetuate them and the socio-cultural contexts in which they exist. Teachers' work and ethical tenets shaping practice are also examined.
TSOC	7190	School personnel collaborate with persons from higher education, the community, and scholars who have created model multicultural/urban education programs to learn new ways of teaching and learning among diverse populations.
TSOC	7200	Critical examination of the socio-cultural foundations of schooling in the United States, including purposes of schooling in a multicultural society and the resulting nature of teacher work.
TSOC	7210	Examines how race, class, gender, ethnicity, and disability intersect with power, culture, knowledge and ideology in American schools to influence the lives of students and teachers in a multicultural society.
TSOC	7230	In-depth history of America's racial and ethnic minorities and the role of schooling in assisting their adaptation to and assimilation into American society.
TSOC	7300	Exploring the nature of philosophic inquiry in education and examining competing traditions in the West, particularly in the United States. A distinction between education and schooling will be drawn.
TSOC	7400	Evolving role of schooling and teaching in the US, using history to reflect on the relationship of schooling to other social institutions, groups of people and the process of social change.
TSOC	7950	Each workshop is developed around a topic of interest and concern to in-service teachers and other educational personnel. Practical application of workshop topics will be emphasized.
TSOC	8000	This course surveys works of prominent feminist scholars in order to address the impact of dominant ideology upon the lives of women and girls in American schools.
TSOC	8120	The purposes, structure and practice of non-formal and formal education are explored using a wide range of concepts and paradigms of comparative educational analysis throughout the globe.
TSOC	8140	An examination of the historical, legal, sociological interaction between state and schooling in US, emphasizing both religious/non-religious issues. These concerns are compared and analyzed with respect to other countries.
TSOC	8150	This course aims to develop a broader understanding of the role of culture in psychological processes and the implications of such psychological understanding for a culturally diverse society.



TSOC	8180	The proseminar will enable doctoral students to improve their understanding of the research process. Students will learn to ask research questions, choose alternative methodologies and interpret the validity of conclusions.
TSOC	8190	The collaborative study of a specific topic in educational theory and social foundations by a group of advanced students under the direction of one or more professors.
TSOC	8220	2Application of theoretical assumptions presented in TSOC 5210/7210 to US schools and classrooms, with particular attention given to program and curriculum issues, teachers and teaching policies, practices and procedures.
TSOC	8240	Development and dynamics of schooling in urban centers across the United States, including historical and critical analyses of current problems, issues and reform initiatives.
TSOC	8310	An examination of selected educational philosophers who have addressed themselves to the problem of the ends and means of education from Classical Hellenic Times to the present.
TSOC	8320	Examination of the interdependence among education, democracy and ethics in the context of civic life. Applications made to the practice of schooling as cultural production in a democratic society.
TSOC	8330	The purpose of this seminar is to explore the ethics of war and peace and its implications for the moral and civic education of democratic citizens.
TSOC	8340	The purpose of this seminar is to explore the nature of human rights and human rights education. The origin, definition, content, scope, foundation, and correlative duties of human rights, as well as, the theory of human rights education will be explored.
TSOC	8350	The purpose of this seminar is to explore the nature of environmental ethics and its implications for educational theory, in particular moral and civic education.
TSOC	8500	Examination of cross-cultural, comparative, and other studies directed toward understanding processes of cultural transmission and transformation, and implications of anthropological research for contemporary issues in education.
TSOC	8960	A formal, independent study culminating in a written discourse central to the advancement of knowledge in educational theory or social foundations.
TSOC	8990	Directed study of a current topic in educational theory and social foundations. The student meets with the instructor at arranged intervals without formal classes.
UC	1000	An orientation to college for adults over 25. Provision of information to equip students with the tools for academic success. Open only to students in University College.
UC	1110	



UC	1120	This course offers an opportunity to explore two important considerations in choosing a career: (1) career opportunities and requirements, (2) individual interests, abilities, skills, needs, values and goals.
UC	1200	Introduces students to critical thinking and fosters intellectual abilities. The course is designed for first year students who earned below a 2.0 their first or second semester and for transfer or adult students entering college with less than a 2.00 GPA.
UC	2010	Course is designed for non-traditional students whose prior learning experiences will be formatted into a portfolio for faculty assessment with the potential of earning college credit.
UC	2980	Special Topics is an opportunity to create and pilot potential courses at a 2000 level.
UC	4940	This is the capstone course for Individualized Program students. The field experience internship is gone under the guidance of academic advisor. It is done prior to graduation.
UC	4980	Topics of interest to University College students offered by various instructors. Open to any University College student.
UROL	640	Selected readings in the field of immunology. Emphasis will be placed on the historical development of the field and establishing a working model of the immune system for the student. May be repeated for credit.
UROL	641	The student and instructor will agree on a program of study which will enable the student to achieve his/her objectives. May be repeated for credit.
UROL	642	Students will participate in selected ongoing research programs of members of the department faculty. May be repeated for credit.
UROL	645	The student and instructor will agree on a program of study which will enable the student to achieve his/her objectives. May be repeated for credit.
UROL	646	Students will participate in selected ongoing research programs of members of the department faculty. May be repeated for credit.
UROL	650	Literature review and critical analysis of subspecialty areas within the field of urology, pediatric urology, and oncology. May be repeated for credit.
UROL	651	Literature review and critical analysis of subspecialty areas within the field of urology, endourology, neurogenic bladder, renal lithiasis. May be repeated for credit.
UROL	655	A weekly assessment and critical review of the literature devoted to urological science. Emphasis will be placed on structure and content of the literature with the goal of developing the student's ability to evaluate literature validity. May be repeated for credit.
UROL	656	Selected readings in the field of urological science. Emphasis will be placed on the historical development of different treatment modalities. May be repeated for credit.



UROL	657	Seminar on the biology and clinical science of renal transplantation. Topics include basic immunology of transplantation, biology of rejection, and clinical techniques of immunosuppression. May be repeated for credit.
UROL	658	Seminar on the biology and clinical science of renal transplantation. Topics include basic immunology of transplantation, biology of rejection, and clinical techniques of immunosuppression. May be repeated for credit.
UROL	673	The student and instructor will agree on a program of study that will enable the student to achieve his/her objectives. May be repeated for credit.
UROL	675	Students will participate in selected ongoing research programs of members of the department faculty. May be repeated for credit.
UROL	690	The student and instructor will agree on a program of study to enable the student to achieve objectives including theoretical and experimental work. May be repeated for credit.
UROL	691	The student and instructor will agree on a program of study to enable the student to achieve his/her objectives including theoretical and experimental work. May be repeated for credit.
UROL	692	Student and instructor will agree on a program of study to enable the student to achieve objectives including theoretical and experimental work. May be repeated for credit.
UROL	693	The student and instructor will agree on a program of study that will enable the student to achieve his/her objectives including theoretical and experimental work. May be repeated for credit.
UROL	701	This clerkship is designed to expose students to a variety of urologic disorders seen in an outpatient setting. Teaching will be conducted primarily in the outpatient clinics, on rounds and in the ambulatory operating rooms by residents and faculty in a one-on-one setting. The student will be exposed to patients presenting with a variety of disorders such as abnormal voiding, urinary tract pain, impotence, incontinence and renal failure
UROL	702	This clerkship is designed to expose students to a variety of urologic disorders seen in an inpatient or outpatient setting. Designed for students considering a career in Urology or a surgical discipline. Students will be designated as an Acting Intern with increased responsibility for patient management & under supervision. The student will also be exposed to the variety and complexity of urologic diagnostic testing and surgical intervention.
UROL	703	This clerkship is designed to expose students to a variety of pediatric urologic problems including voiding disorders, urinary infections, undescended testes and congenital penile abnormalities. This clerkship will be especially beneficial for students considering a career in Pediatrics or in Urology.



UROL	704	This course will review fundamentals of laparoscopic surgery including indications, complications, physiology, and basic techniques as well as other didactic information that will set the stage for skills training in a specialized laboratory setting. Basic skills will precede eventual training in complex tasks such as laparoscopic suturing. Individualized training from advanced laparoscopic surgeons will be offered with the expectation that students will practice tasks of progressive difficulty independently between group training sessions. Students demonstrating satisfactory acquisition of skills necessary for operation of the surgical robot may be allowed the opportunity to train in the basic controls of the robot, but all students will be introduced to the robot with demonstrations and videos regardless.
UROL	705	
UROL	750	
UROL	751	
UROL	789	
VCT	566	
WGST	1150	Students reflect on the academic and professional and community activist dimensions of Women's and Gender Studies. Students develop a preliminary plan for the development of their portfolio.
WGST	1EL	
WGST	1EN	
WGST	1EU	
WGST	2010	Interdisciplinary introduction to gender studies. Critically examines competing theories of gender and sex identification, construction, and biological determinism. Considers ethical issues regarding differences of gender, sex and sexuality.
WGST	2150	Designed for majors only. Students reflect on the academic and professional and community activist dimensions of Women's and Gender Studies. Special emphasis will be dedicated to the completion of the portfolio for future career, community activism and graduate studies.
WGST	2400	The course focuses on the current and evolving social, economic and political status of women in the United States and selected non-Western societies.
WGST	2610	An examination of the role of women in the American political system with special attention to the socializing experiences, political power bases and legal status.
WGST	2640	Introduction to the study of race, class and gender as factors in American stratification.
WGST	2880	An interdisciplinary, multicultural examination of diverse lesbian, gay, bisexual, transgender, and other queer cultural productions, this course examines continuities and conflicts in aesthetics, issues, materials, and motivations for queer culture.



WGST	2980	Study of selected topics relevant to Women's and Gender Studies. May be repeated for major or minor credit when topic varies.
WGST	2EL	
WGST	2EN	
WGST	2EU	
WGST	3010	Required for the major. An interdisciplinary introduction to basic works of feminist thought, feminist methodologies and current issues in the field world-wide. Writing Intensive (WAC) course.
WGST	3020	Writing intensive (WAC) course. This non-studio course focuses on the ways images reflect and shape our understanding of gender. Students will learn to analyze visual material in order to identify and articulate their cultural significance in relation to gender.
WGST	3200	This course will provide the student with an understanding of current issues facing LTBG communities including historical, developmental, socio-cultural and political perspectives.
WGST	3320	Explore and critique theories and research related to the psychology of women. Life span development in women, the validity of the study of gender differences and selected topics relevant to women's mental health will be addressed.
WGST	3400	This course will examine current social problems from a feminist perspective. The course will examine such issues as the feminization of poverty, violence against women, homeless, prostitution, teen pregnancy, HIV/AIDS and addictions.
WGST	3470	This course will look at South Asian women's lives, cultures and histories. Journalistic, academic, legal, and cinematic sources will help explore South Asian women and their diasporas. Non-western multicultural course.
WGST	3550	An examination of feminist perspectives in philosophy, exploring the relevance of gender to central questions in ethics, political theory and epistemology.
WGST	3650	Analysis of labor market outcomes and income distribution characteristics resulting from gender differences; Gender-related economic outcomes; the feminization of poverty, persistent male-female wage differential, expanding proportion of female headed households.
WGST	3700	Specific topics vary. Check schedule of classes for specific subject.
WGST	3750	Examines literary works in light of major issues raised by feminist criticism. Specific emphasis varies. Recommended ENGL 2700 or 3790
WGST	3800	This course examines sexual politics through studying canonical literature of Western political theory, feminism and postmodern theory.
WGST	3980	Specific topics vary. Check schedule of courses for specific subject.
WGST	3EL	
WGST	3EN	
WGST	3EU	



WGST	4000	Cross-listings of 4000-level courses with the music department. Specific topics vary. Check schedule of courses for specific subject and prerequisites.
WGST	4010	Specific topics vary. Check schedule of courses for specific subject and prerequisites.
WGST	4100	Specific topics vary. Check schedule of courses for specific subject and prerequisites.
WGST	4130	This course will examine the issues of family violence, including child abuse and elder abuse. Gender and cultural issues will be explored along with the intergenerational nature of family violence.
WGST	4140	Sociocultural factors in development of gender identity and behavioral differences between men and women. Sex differentials in participation, power and reward in family, education and work, politics and community.
WGST	4160	An examination of gender as a predisposing factor of health status, health behavior, health care delivery, and the structure and posture of health care professionals. Writing intensive (WAC) course.
WGST	4170	This course will examine the significance of gender in understanding the historical development of mental health concepts. Contemporary feminist critiques of diagnostic categories will be discussed.
WGST	4180	Analysis of the contemporary position in the U.S. work force focusing on the expansion of the number of women joining the labor force in recent decades, and the persistence of relatively low pay, status and authority in female-dominated occupations.
WGST	4190	Analysis of gender stratification and its impact on culture in various nations and across ethnic groups in the United States.
WGST	4200	Cross-listings of 4000-level courses with biology, chemistry, geology, math, natural sciences, physics and pre-med. Specific topics vary. Check schedule of courses for specific subject and prerequisites.
WGST	4300	Cross listings of 4000 level courses with the Psychology department. Specific topics vary. Check Course Schedules for specific subject and prerequisites determined by the Psychology department.
WGST	4350	Cross-listings of 4000-level courses with the communication department. Specific topics vary. Check schedule of courses for specific subject and prerequisites determined by the department of communication.
WGST	4410	Specific topics vary. Check schedule of courses for specific subject.
WGST	4420	Specific topics vary. Check Course Schedules for specific subject.
WGST	4430	Specific topics vary. Check Course Schedules for specific subject.
WGST	4440	A study of texts produced by women in the French language in various fields (for example, literary theory, film, literature, philosophy, psychoanalysis, semiotics, post-colonial theory).
WGST	4500	Cross listings of 4000 level courses with the history department. Specific topics vary. Check schedule of courses for specific subject and prerequisites.



WGST	4510	This course presents American history from early settlement to the present by examining the contributions of women, in interaction with men, to the immensely complex fabric of American life.
WGST	4540	Witchcraft, religion and magic in western Europe from the 12th through 17th centuries, focusing on the origins of witchcraft belief, diabolical magic, the witchcraft and its decline.
WGST	4550	Cross-listings of 4000-level courses with the philosophy department. Specific topics vary. Check schedule of courses for specific subject and prerequisites.
WGST	4600	Cross-listings of 4000-level courses with the political science department. Specific topics vary. Check schedule of courses for specific subject and prerequisites as determined by the political science department.
WGST	4610	An analysis and discussion of contemporary feminist theory.
WGST	4700	Specific topics vary. Check Course Schedules for specific subject.
WGST	4760	Classic works by diverse American and English men and women considered in light of significant recent feminist scholarship and how such perspectives enhance classroom teaching and academic production.
WGST	4770	Author/authors vary with each offering. Consult schedule of courses for specific subject. Recommended ENGL 2700, 2800 or 3790.
WGST	4780	Author/authors will vary with each offering. Consult schedule of courses for specific subject.
WGST	4810	The course is designed to consider those personal health topics of special interest and applicability to women. The focus will be upon the role of self-understanding and self-help in promotion of health and well-being.
WGST	4870	This introduction to global feminist thought familiarizes students with feminist terminology and a variety of feminist theoretical frameworks.
WGST	4880	This course explores the theoretical concepts/texts of Queer Theory and its locations in communities and identities, focusing principally on the theories that have emerged since the late 1990s.
WGST	4890	Investigates and applies current trends in Women's Studies as a discipline and the ways in which Women's Studies methodologies inform other disciplines. Requires research project.
WGST	4900	Seminar focused on timely topics in Women's Studies chosen by rotating faculty.
WGST	4910	Supervised research and writing for honors students only.
WGST	4940	Practical field experience applying Women's Studies theories, arranged in conjunction with the department of women's and gender studies. Students must have pre-approval based on detailed written proposal.
WGST	4980	A course on a special topic in Women's Studies. Consult schedule of courses for topic to be studied and semester offered. Recommended WGST 3010.
WGST	4990	Supervised independent reading and research on selected topics. Before the end of open registration, students must present the supervising instructor a detailed written proposal and get written approval.



The University of Toledo