COURSE DESCRIPTIONS

• Some courses are not offered every semester. You should consult the schedule of classes for a specific semester or summer session to determine which courses are being offered.

• An asterisk (*) preceding the course prefix and number indicates a course which potentially meets general education requirements. See Pages 55-66 for general education details.

• If a course has a separate laboratory period, the number of lecture hours and the number of laboratory hours per week will be shown in parentheses immediately following the course title.
Accounting

College of Business

ACTG 301. Accounting Technology. 1 credit.
Integration of accounting applications with technology. Provides the foundation for analyzing accounting problems using technology. Includes modules on advanced spreadsheet techniques, database structuring and design and searching the internet for useful information for making business decisions. Prerequisite: COB 204. Prerequisite or corequisite: ACTG 343.

ACTG 313. Accounting Information Systems. 3 credits.
Covers the uses of computers as tools for the collection, organization, analysis and reporting of accounting data. Topics include: Internal controls, documentation of accounting systems, transaction processing cycles, auditing information technology, data warehousing, computer and information systems security and integration of business functions in the accounting process. Prerequisite: ACTG 343. Prerequisite or corequisite: ACTG 301. (Formerly ACTG 413.)

ACTG 343. Intermediate Accounting I. 3 credits.
Selected topics include: Theory and concepts of financial accounting standards: financial statements, the accounting model, cash, receivables, inventories, current liabilities and investments in plant, property and equipment and intangibles. Prerequisite: Completion of both COB 241 and COB 242 with grades of B or better, 2.5 GPA.

ACTG 344. Intermediate Accounting II. 3 credits.
Selected topics include: Theory and concepts of financial accounting standards, financial instruments, leases, pensions, deferred taxes, stockholders’ equity, earnings per share and other corporate accounting issues. Prerequisite: ACTG 343. Prerequisite or corequisite: ACTG 301.

Devoted to a consideration of federal income taxes. These topics, among others, will be studied: income exclusions, gain or loss on sales, exchanges and involuntary conversions, deductions, exemptions and pay-as-you-go withholdings. An overview is given of social security, estate and gift taxes levied by the federal government. Prerequisite or corequisite: ACTG 301.

ACTG 410. Auditing. 3 credits.
A study of techniques available for gathering, summarizing, analyzing and interpreting the data presented in financial statements and procedures used in verifying the fairness of the information. Also emphasizes ethical and legal aspects and considerations. Prerequisite: ACTG 343-344.

ACTG 440. Advanced Information Technology for Accountants. 3 credits.
Continuation of ACTG 413 for AIS concentration students. Topics include telecommunications, distributed processing, networking, EDP auditing, systems security and system design fundamentals, taught from an accounting perspective. Prerequisite: ACTG 313 with "C" or better.

ACTG 445. Advanced Accounting. 3 credits.
The application of fundamental accounting theory to affiliated companies, governmental and not-for-profit organizations and foreign subsidiaries. Emphasizes recent pronouncements of the FASB, SEC and GASB. Prerequisite: ACTG 343-344.

ACTG 450. Seminar in Advanced Accounting. 3 credits.
Designed to meet the requirements of, but not limited to, persons majoring in accounting who are interested in being candidates for the CPA examination. The presentation of this course will be on a semester basis covering the following fields: auditing, accounting theory, business law and problems in various areas of interest to the group. Prerequisite: ACTG 445.

ACTG 475. Cost Accounting I. 3 credits.
Devoted to concepts of cost and managerial accounting in providing cost data for planning and controlling routine manufacturing, productive and supporting operations, measuring performance in production activities, costing finished product and measuring income. Prerequisite: ACTG 301, 343. (Formerly ACTG 375.)

ACTG 483. International Accounting and Financial Reporting. 3 credits.
Designed to develop a fundamental knowledge of the assumptions, environmental considerations and techniques underlying the collection and reporting of financial information on an international scale. Prerequisite: FIN 345.

ACTG 490. Special Studies in Accounting. 1-3 credits each semester.
Designed to give capable students in accounting an opportunity to do independent study under faculty supervision. Admission only by recommendation of the instructor and permission of the director. Forms obtained in department office before registration.

ACTG 491. Business Analysis for Accountants. 3 credits.
An application course designed to serve as the capstone to the accounting program of study. Emphasizes critical thinking skills in solving unstructured problems that will be encountered in the business world. This course culminates in a special project requiring students to use technology to solve a business problem in a consulting context. Special emphasis is given to analyzing the problem, choosing the appropriate technology for the problem, considering alternative solutions, developing a solution and implementing the solution. Prerequisite: ACTG 313, 344 and 377. Must be taken in the final semester of B.B.A. coursework.

ACTG 494. Business Practicum. 3-6 credits.
A course, taken by graduating seniors, to give students an opportunity to work in and with local industry to gain insight into the real side of modern business. (Forms obtained in accounting office before registration.)

ACTG 499. Honors. 6 credits. Year course.
See catalog description entitled "Graduation with Distinction" and "Graduation with Honors."
American Studies

College of Arts and Letters

AMST 250F. Introduction to American Studies. 3 credits.
A study of the process by which the United States established a national identity and shaped its core of beliefs and values. How Americans reconciled ideals associated with nature/the frontier and new realities like industrialism/urbanization will be explored, using a variety of interdisciplinary approaches.

AMST 490. Special Studies in American Studies. 3 credits.
Independent study of a topic appropriate to the interdisciplinary method of American studies.

Anthropology

Department of Sociology and Anthropology

*GANT 195. Cultural Anthropology. 3 credits (GA, CD).
An introduction to the nature of culture and its relationship to language, economics, politics, kinship and other institutions in diverse cultures. The course also provides an overview of the theories, methods and ethical responsibilities involved in the study of cultural systems and ethnographic writing.

ANTH 196. Biological Anthropology. 3 credits (GA, BD).
An introduction to the origins, evolution and genetic variability of humans and their relationship to nonhuman primates. Examination of the fossil record, the relationship between biology and culture and human genetics are included. Theories and methods used in the study of biological anthropology are also introduced.

ANTH 197. Archaeology. 3 credits (GA, CD).
An introduction to archaeology through a survey of the major developments in human cultural evolution, focusing on the transition from foraging to agricultural and state-level systems. An examination of the origins and nature of Old and New World civilizations and an overview of archaeological methods and theories are also included.

ANTH/SOCI 236. Race and Ethnic Relations. 3 credits (GA, CD).
Comparative study of the causes and consequences of racial and ethnic inequality in the United States and around the world. Black/white relations in the United States and South Africa, native American rights and other ethnic and racial issues are discussed.

ANTH 284. Introduction to Folklore. 3 credits (CD).
A survey of the field of folklore including narratives (myths, legends, tales), superstitions and witchcraft and artifacts. Investigates the history, problems and issues of folklore.

ANTH 300. Anthropology of Diet and Nutrition. 3 credits.
An evolutionary and cross-cultural perspective on diet and nutrition in human populations. Focus on how and why people choose what to eat, the range and significance of cross-cultural variability in diet, how diets have changed in the evolutionary and recent past and the health and social significance of those changes. Prerequisite: Any lower-level course in anthropology or permission of instructor.

ANTH 310. Prehistoric and Pioneer Virginia. 3 credits (CD).
A study of the development and diversity of Indian society in Virginia, the initial European settlement and westward expansion. Economic and social problems of initial settlement and the interaction between European and Indian cultures is emphasized.

ANTH 312. The Native Americans. 3 credits (CD).
A study of the nature of Indian societies occupying different environmental areas of North America at the time of earliest historic contact. Indian groups such as Shawnee, Mandan, Nuummiut, Natchez, Creek, Iroquois and Sioux will be considered.

ANTH/SOCI 313. Processes of Social and Cultural Change. 3 credits (GA, CD).
Investigates the procedures through which a society operates and the manner in which it introduces and incorporates changes. Issues considered include belief, innovation, directed change, coercive change, revitalization and revolution.

ANTH 315. Human Evolution. 3 credits (BD).
An examination of the evidence for the emergence of humans and the factors which influenced it. Includes a review of fossil and artifact evidence for biological and cultural evolution.

ANTH 325. Aztec, Maya and Their Predecessors. 3 credits (GA, CD).
Survey of the Olmec, Toltec, Teotihuacan, Maya and Aztec civilizations and the factors leading to their development, persistence and decline.

ANTH 327. Ancient North American Civilizations. 3 credits (CD).
Studies the emergence of Native American societies prior to historic contact. Emphasizes prehistoric developments in the eastern United States.

ANTH 335. Ethnographic Genres. 3 credits (CD, W).
This course introduces students to the distinct theories and methods anthropologists use in crafting ethnographies of different cultures, the historical context in which ethnographies are written and their creative and analytical merits and drawbacks. Prerequisite: GANT 195.
ANTH/REL 337. Archaeology and the Bible.
3 credits.
An examination of the relationship between material
historical remains, texts and history. Specific exercises in
recreating the history of ancient Israel and Judah through
the use of texts and artifacts will be undertaken in class
and in student papers.

ANTH 345. Economic Anthropology. 3 credits (GA).
Anthropological perspectives on subsistence patterns
and economic organization in non-Western and Western
societies. A comparative perspective is used to consider the
extent to which neoclassical and political economic
assumptions based on capitalist societies are applicable
to other forms of economic organization. Prerequisite:
GANT 195.

ANTH/SOCI/SOWK 348. Third World Societies: An
Introduction. 3 credits (GA).
This course will provide a critical examination of Third
World societies within the global system. The course will
address theoretical frameworks used to analyze Third
World problems. Special attention will be given to persistent
problems in the areas of population, poverty, health,
care, housing and social welfare.

3 credits (GA).
An anthropological study of religion in society. The influence
of religion on the development of social, legal, govern-
mental and economic aspects of culture is emphasized.

ANTH/SOCI 352. Birth, Death, Sex: Exploring
Demography. 3 credits.
Fertility (birth) and mortality (death) and their biological
and social determinants in cross-cultural and evolution-
ary/historical frameworks. Exploration of the dynamic
between the material constraints on and symbolic signifi-
cance of, reproduction, sexuality and death within a cul-
tural context. Critical examination of population growth as
a global "problem." Basic demographic methods. Prerequi-
site: Any lower-level course in anthropology or sociology
or permission of the instructor.

ANTH 355. Culture and Ecology. 3 credits.
A comparative study of cultures from an ecological per-
spective. The course focuses on the effects of climate, envi-
ronment and population interaction on shaping and
determining human behavior. Basic ecological concepts
and theories are introduced as they relate to the study and
explanation of human behavior.

ANTH 360. Medical Anthropology. 3 credits.
The evolutionary, ecological and socio-cultural context
of health and disease. A multi-level, cross-cultural explo-
roration of disease including genetic and macro-level social
inputs. Topics include Darwinian medicine, cultural ecology
of infectious disease, including emergent diseases, the
biology of poverty, maternal-child health and the history of
global health problems. Prerequisite: GANT 195 or ANTH
196 or permission of the instructor.

ANTH/SOCI 368. Modern American Culture.
3 credits (CD).
Analysis of American society as reflected in popular
cultural forms. Cultural expressions such as music, litera-
ture, theater, films and sports will be examined as they
reflect the values and quality of contemporary life and
social structure of the United States.

ANTH 380. Chinese and Japanese Society and
Culture. 3 credits (GA, CD).
An examination of the social structures of the Chinese
and Japanese peasantries from the mid-18th century to
present. Emphasis is placed on local level systems (town,
village, lineage, household) in order to assess their impor-
tance for China and Japan’s different paths to moderniza-
tion. Particular attention is paid to China’s “evolution” ver-
sus Japan’s “revolution” and the social and cultural factors
which led to their emergence.

ANTH 382. Cultures of Appalachia. 3 credits (CD).
An overview of the peoples, cultures and special prob-
lems of the Appalachian region.

ANTH 385. Peoples and Cultures of Latin America.
3 credits (GA, CD).
A survey of the various cultures of Latin America from an
anthropological perspective through a discussion of such
themes as colonialism, nationalism, ethnicity, development,
aesthetic traditions and urban and rural resistance move-
ments within a historical context.

ANTH 410. The History of Anthropological Theory.
3 credits (W, GA).
An examination of the historic emergence of modern
anthropological theory. The contributions of major theoreti-
cians and schools of approach are considered.

ANTH 450. Ethnographic Methods and Analysis.
3 credits (C, R, F).
An introduction to ethnographic strategies, methods
and analyses including participant observation, key infor-
mant interviewing, direct and indirect observation, field
note management, scaling, decision modeling and network
analysis. Students will also gain experience with computer
programs developed by anthropologists to analyze various
types of data. Prerequisite: At least 12 credit hours in
anthropology, including GANT 195 and ANTH 335.

ANTH 455. Archaeology: Methods of Analysis and
Interpretation. 3 credits (W, R, F).
A review of the nature of inquiry, recent theory and its
practical implications and applications of acquiring, ana-
lyzing and interpreting archaeological data. In addition to
training in methods of analysis used in contemporary prac-
tice, students will gain experience in archaeological report
preparation. Prerequisite: GANT 195 and ANTH 197.
ANTH/SOCI 485. Internship in Anthropology/Sociology. 1-6 credits.

Students participate in internships or as course assistants in anthropology and sociology. Prerequisite: Students seeking credit for internships must secure the approvals of their adviser and department head prior to registration. Students receiving credit as course assistants must have junior/senior standing and can register by faculty invitation only. While a maximum of six credits can be taken under this option, only three credits can be applied toward the major.

ANTH 490. Special Studies in Anthropology. 1-3 credits (R).

Course offers students an opportunity to do independent study under staff supervision. (Admission only by recommendation of the instructor and permission of the department head.)

ANTH 494. Field Techniques in Archaeology. 4-8 credits (F, R).

Laboratory course directed at teaching students the basic field techniques and procedures of historic and prehistoric archaeology. Classroom lectures will present techniques and relevant aspects of method and theory.

ANTH 495. Special Topics in Anthropology. 3 credits (repeatable).

Examination of selected topics which are of current importance to anthropology. (May be taken for a maximum of six hours credit toward the major.)

ANTH 499. Honors. 6 credits. Year course (W, R).

An independent research topic initiated and completed by qualified senior majors who want to graduate with distinction.

Art

School of Art and Art History

ART 140. Two-Dimensional Design (0, 6). 3 credits.

Application and appreciation of the principles and elements of design, with emphasis on line, form, color and texture, as applied to two-dimensional space.

ART 160. Drawing I (0, 6). 3 credits.

An introductory course composed of problems in landscape, perspective, figure and still-life in several media.

*CART 200. Art in General Culture. 3 credits.

An exploratory course which aims to develop a non-technical, general cultural understanding of the space arts, such as architecture, painting, sculpture and industrial design. Emphasis is on the contemporary.

ART 240. Three-Dimensional Design (0, 6). 3 credits.

A course exploring the basic problems in three-dimensional design.

ART 242. Color Theory (0, 6). 3 credits.

An exploration of the nature and theories of color. Students will study the expressive and symbolic qualities of master colorists and apply this knowledge to theoretical and practical problems. Prerequisite: ART 140.

ART/GPH 243. Computer Graphics (0, 6).

3 credits.

Introduction to graphics on the computer. Students will explore hardware and software that relate to the presentation of graphic design projects and computer generated imaging. Prerequisite: ART 140 and 160 or permission of instructor.

ART 248. Introduction to 3-D Computer Animation.

3 credits

An introductory studio/lecture course focusing on 3-D computer generated animation. Basic 3-D modeling and animation techniques will be explored in relationship to the movie, gaming and entertainment industries. Several software packages will be used to learn the basic processes of creating and animating synthetic objects, materials, lights and cameras. Prerequisite: ART 140 and 160.

ART 260. Drawing II (0, 6). 3 credits.

A continuation of ART 160 involving more complex problems with emphasis on composition and expressive possibilities of a variety of media including ink, pencil, conte, charcoal and experimental materials. Prerequisite: ART 160 or permission of the instructor.

ART 310. Art Activities in the Elementary School (1, 4). 3 credits.

A study of the aims and philosophy of art education in the elementary school with emphasis on child growth and development through art. Experience with art techniques and materials suitable to children from nursery school through grade eight with emphasis on appropriate motivational and teaching methods.

ART 311. Secondary Art Education Methods. 3 credits.

The study of art education methods, philosophy and contemporary practices as related to the middle and senior high school in public education. Includes class presentations, observation and practicum in the secondary grades. Prerequisite: PSYC 270 and EDUC 360.

ART 313. Introduction to Art Therapy (1, 4). 3 credits.

A survey dealing with the origins, historical development and major theoretical trends in the field of art therapy. Examines a variety of patient/client populations and treatment approaches. Visits to institutional settings will be included. Intended primarily for students in the arts, education and social sciences.

ART 317. Methods of Art Criticism. 3 credits.

The practical analysis and interpretation of works of art through oral and written forms. Emphasis is on the practice of art criticism in public settings, such as the school classroom, art museum and college art studio.

ART 318. Visual Arts Across the Curriculum (1, 4). 3 credits.

Explores ways in which the art teacher can promote relationships between art and other subjects within the public school curriculum. Emphasis will be placed on how art experiences can be used to teach skills and concepts associated with other subjects.
ART 321. Weaving and Other Fiber Arts (0, 9). 3 credits.
Introduction to and practice in basic weaving and other fiber arts. Emphasis will be placed on floor loom weaving and surface design on the fabric.

ART 322. Metal and Jewelry (0, 9). 3 credits.
An exploration of techniques necessary to execute well-designed objects in metals including forming, repousse, stone setting, metal finishing, enameling and centrifugal casting.

ART 323. Papermaking (0, 9). 1-3 credits, repeatable.
A creative approach to handmade paper as an art medium. Emphasis will be on one-of-a-kind pieces. Cast paper, mould and deckle, mould formation, collage and assemblage techniques will be explored.

ART 325. Ceramics (0, 6). 3 credits.
Exploration of ceramic hand-building processes and introduction to use of the potter’s wheel.

ART 326. Intermediate Ceramics (0, 9). 3 credits.
Studio practice in forming, firing and glazing ceramic ware. Wheel-thrown pottery will be emphasized. Fundamentals of glaze composition will be given in lectures. Prerequisite: ART 325.

ART 328. Stained Glass (0, 9). 1-3 credits, repeatable.
A comprehensive course in the design and construction of stained glass panels or windows. Traditional glazing techniques of lead came and copper foil will be explored, as well as epoxy resin bonding of dalle de verre. Glass surface decorating techniques of sandblasting, etching, plating, fusing, glue chipping and painting will be demonstrated.

ART 331. Intermediate Weaving and Other Fiber Arts (0, 9). 3 credits.
Introduction to surface design techniques such as painting and printing on fabric. Further work may be in this area (in which case no prerequisites apply) or in weaving or other fiber techniques. Prerequisite: ART 321 or permission of the instructor.

ART 333. Intermediate Metal and Jewelry (0, 9). 1-3 credits, repeatable.
Continuation of development in metalworking and its skills with emphasis on design and craftsmanship. Prerequisite: ART 322 or equivalent.

ART 335. Sculpture (0, 9). 3 credits.
Problems in three-dimensional form using traditional and modern techniques. Processes of modeling in clay, mold making, casting, carving in wood and stone and welded metal sculpture are explored. Prerequisite: ART 240.

ART 336. Intermediate Sculpture (0, 9). 3 credits.
A study in casting techniques for sculpture using the lost wax process. Foundry operations, cold cast methods, ceramic shell and fiberglass are also explored. Prerequisite: ART 335.

ART 342. Computer Aided Design. 3 credits.
An introduction to computer aided design experiences. Exploration of CAD beginning with terms, conventions and drawing tools. Students will learn advanced concepts of 2-D and 3-D tools and commands.

ART 348. Intermediate 3-D Computer Animation (0, 9). 3 credits.
The secondary level of 3-D modeling and animation. The emphasis of this course is to produce and animate digital characters similar to those found in popular movies and video games. Intermediate modeling techniques, texturing, and the animation of basic human movements will be explored. Prerequisite: ART 248. (Formerly ART/GRPH 343.)

ART 349. Special Effects in 3-D Animation (0, 9). 3 credits.
The study and creation of special effects similar to those found in the movie and video game industries. This is a studio/lecture class in which students will model and animate cinematic effects such as explosions, fire, liquids, smoke, electricity, etc. Dynamic rules of physics will be used to simulate natural forces in 3-D animation. Prerequisite: ART 348. (Formerly ART/GRPH 348.)

ART 352. Printmaking: Screenprint (0, 9). 3 credits.
An introduction to the history and techniques of screen-printing. Lectures, demonstrations, and projects will involve photographic and nonphotographic stencils, related digital processes and color registration. Prerequisite: ART 140 and ART 160.

ART 353. Printmaking: Relief and Intaglio (0, 9). 3 credits.
An introduction to the history and techniques of relief and intaglio printing. Lectures, demonstrations and projects will involve linocut, woodcut, wood engraving, stencocut, collagraph, drypoint, engraving, line etching, aquatint, softground, color registration, and related photographic processes. Prerequisite: ART 140 and ART 160.

ART 354. Printmaking: Monotype and Lithography (0, 9). 3 credits.
An introduction to the history and techniques of monotype and lithography printing. Lectures, demonstrations and projects will involve oil based and water soluble inks, stone and plate lithography, color registration and related photographic processes. Prerequisite: ART 140 and ART 160.

ART 355. Photography (0, 9). 3 credits.
A creative approach to photography with emphasis on understanding materials and techniques. Students must provide a fully manual 35mm camera and a light meter which may be built into the camera or separate.

ART 356. Intermediate Photography (0, 9). 3 credits.
Intensive exploration of advanced black and white photography and an introduction to view camera techniques. Prerequisite: ART 355.

ART 357. Digital Photography. 3 credits.
An intensive exploration of digital photography with an introduction to digital camera techniques, combinations of traditional and digital photographic methods, photo-editing and modes of output. Prerequisite: ART 355.
ART 360. Painting (0, 9), 3 credits.
Oil painting and other media with creative and aesthetic considerations in picture structure. Prerequisite: ART 140 and ART 160.

ART 362. Figure Drawing (0, 9), 3 credits.
An introductory course with problems stressing the fundamental skills, approaches and concepts involved in drawing the human figure. Prerequisite: ART 160 and 260.

ART 366. Watercolor (0, 9), 3 credits.
Study of and practice in transparent and opaque watercolor techniques. Prerequisite: Foundation courses in drawing and design.

ART/PHIL 380. Seminar in Aesthetics. 3 credits.
Readings and discussions in the persistent philosophical problems of the arts, centering on consideration of the work of art, the artist and the audience. Prerequisite: ART 200 or ARTH/GARH 205B or ARTH/GARH 206B or GPHL 101.

ART/GRPH 390. Topics in Art or Graphic Design. 1-3 credits.
Studies in selected topics in art or graphic design. May be repeated when course content changes. See Schedule of Classes for current topics.

ART 421. Problems in Fiber Arts (0, 9), 1-3 credits, repeatable.
A series of fiber projects selected by the student with the approval of the instructor. Prerequisite: ART 321 and 331.

ART 422. Problems in Metal and Jewelry (0, 9), 1-3 credits, repeatable.
A series of metal arts projects selected by the student with the approval of the instructor. Prerequisite: ART 322 and 333.

ART 425. Problems in Ceramics (0, 9), 1-3 credits, repeatable.
Problems in ceramic design with increased attention to the chemical composition of glazes and clays. Prerequisite: ART 326.

ART 435. Problems in Sculpture (0, 9), 1-3 credits, repeatable.
Problems chosen by the student in consultation with the instructor from the array of materials and processes used in contemporary sculpture. Prerequisite: ART 336.

ART 448. Advanced 3-D Character Animation (0, 9), 3 credits.
An advanced study of the complex aspects of natural human movement and expressions as they relate to the field of 3-D computer animation. This is a lecture/studio class in which complex character modeling and animation will be explored. The goal is to create original models that move and express themselves similarly to those found in the movie industry. Prerequisite: ART 348.

ART 449. Senior Project in 3-D Animation (0, 9), 3 credits.
The advanced study of 3-D animation for the completion of a video portfolio aimed at the film, television, multimedia or video game industries. The final project will be selected by the student with the advice of the instructor. Prerequisite: ART 448.

ART 454. Advanced Printmaking (0, 9), 1-3 credits, repeatable.
Advanced projects in printmaking to be determined by the student and instructor. Prerequisite: ART 352, 353 or 354 as appropriate.

ART 455. Problems in Photography (0, 9), 1-3 credits, repeatable.
Each semester the course will alternate between Alternative Process and Color Photography (check current class schedule) along with advanced problems in photography selected by the student and instructor. Prerequisite: ART 356.

ART 460. Problems in Painting and Drawing (0, 9), 1-3 credits, repeatable.
Advanced problems in media selected by the student with the advice of the instructor. Prerequisite: ART 360.

ART 466. Problems in Watercolor (0, 9), 1-3 credits, repeatable.
Advanced problems in the use of watercolor and related water-based media. Prerequisite: ART 366.

ART/ARTH 489. Topics in Art and Art History. 3 credits.
Study of selected topics in art and art history. May be repeated when the course content changes. See Schedule of Classes for current topics.

ART/ARTH/GRPH 490. Independent Studies in Art or Art History or Graphic Design. 1-3 credits each semester.
Independent activity, such as research or studio practice, under faculty supervision. Projected studies in any area of the school's offering must be arranged with the instructors who will direct them. (Offered only with consent of the director.)

ART/ARTH/GRPH 495. Internship in Art or Art History or Graphic Design. 1-8 credits.
An off-campus program prepared and monitored on an individual basis. Internships are designed to provide practical experience in the arts. Prerequisite: Permission of instructor and director.

ART/ARTH/GRPH 499. Honors. 6 credits total for three semesters (1,3,2).
Art History

School of Art and Art History

*ARTH 205. Survey of World Art I: Prehistoric to Renaissance. 3 credits.
An introduction to the art and architecture of the world from cave painting through European Pre-Renaissance art. Includes ancient through medieval art in Europe and the Near East as well as Asian and African arts.

*ARTH 206. Survey of World Art II: Renaissance to Modern. 3 credits.
Introduction to art and architecture of the world from the Renaissance through Modern ages. Includes European Renaissance, Baroque, Enlightenment, 19th and 20th centuries, as well as Asian and African art.

ARTH 300. Art History Seminar. 3 credits.
Exploration of various methodological approaches in the history of art, including connoisseurship, iconography, formalism, psychological studies and interpretations of art and society. Students will examine contrasting interpretations of major works of art. Seminar format. Prerequisite: ARTH 205 or 206 or permission of the instructor.

ARTH 301. African Art. 3 credits.
An introduction to the traditional visual arts of Africa with reference to African influence on contemporary Western Art.

ARTH 302. Far Eastern Art. 3 credits.
A survey of East Asian art from prehistoric times to 19th-century colonialism. Emphasis is on the areas of major production: India, China and Japan, with less attention to such centers as Cambodia, Siam and Korea.

ARTH 303. West African Experience: Art and Culture. 3 credits.
An interdisciplinary introduction to West African art and culture with topics that include music, religion, art, literature and cinema.

ARTH 304. History of Photography. 3 credits.
A survey of photographic as art from its discovery to the present day. Emphasis is on 20th-century developments and recent contemporary trends.

ARTH 313. Masterpieces of Italian Renaissance Art. 3 credits. (Semester in Florence Only)
A survey of Italian Renaissance painting and sculpture (1280-1550), including the works of Giotto, Donatello, Masaccio, Fra Angelico, Botticelli, Leonardo and Michelangelo. Weekly visits to the Uffizi, San Marco, the Accademia and other Florentine museums.

ARTH 314. Masterpieces of Spanish Art. 3 credits. (Semester in Salamanca Only)
A survey of art in Spain from prehistoric cave painting through 20th-century art. Emphasis is given to 17th/18th-century Baroque and modern artists including El Greco, Velasquez, Goya, Gaudi and Picasso. Visits to Altamira, the Alhambra, the Prado, Toledo, Santillana del Mar and other sites.

ARTH 315. Masterpieces of British Architecture. 3 credits. (Semester in London Only)
This history and theory of British architecture from prehistoric to modern times. Weekly visits to the British Museum, Hampton Court, Avebury, Bath, Chiswick, the Victoria Albert Museum and other monuments.

ARTH 316. Masterpieces of British Art. 3 credits. (Semester in London Only)
Survey of painting and sculpture in Britain (1530-1860) concentrating on 18th/19th-century painting. British art is viewed in the context of European civilization. Weekly visits to London museums including the Portrait Gallery, Sir John Soane's House, the Wallace Collection and the Tate Gallery.

ARTH 317. Masterpieces of French Art. 3 credits. (Semester in Paris Only)
A survey of French art from the Middle Ages to the modern day. Weekly visits to the major museums of Paris including the Louvre, the Musee D'Orsay, Cluny and Centre Pompidou.

ARTH 402. Art of the Ancient World. 3 credits.
A study of major works selected from the Egyptian, Mesopotamian, Greek, Etruscan and Roman cultures. Considers themes such as the development of sacred places, royal art and architecture and artistic conventions in early civilizations. Prerequisite: GARH 205 or permission of instructor.

ARTH 403. Art of Later Middle Ages. 3 credits.
A study of Western European arts and architecture in the later Middle Ages with concentration on Romanesque and Gothic styles (1000-1400). Examines church construction and allied arts around the millennium and the development of Gothic architecture, sculpture and painting in France, Italy and England. Prerequisite: GARH 205 or permission of instructor.

ARTH 404. Italian Renaissance Art. 3 credits.
A survey of the development of Italian Renaissance art and architecture 1300-1550. Focuses on themes such as the revival of classical art, the influence of humanism and Neo-Platonism, the invention of perspective and the formation of the Early and High Renaissance styles. Prerequisite: GARH 206 or permission of instructor.

ARTH 406. Baroque Art. 3 credits.
A survey of European art and architecture of the 17th century. This course will focus on Baroque art and its cultural context in Italy, France, Britain and Holland. Prerequisite: ARTH 206 or permission of instructor.

ARTH 407. Eighteenth-Century Art. 3 credits.
A survey of the major European artistic movements of the 18th century. This course will focus on the development of the Rococo and Neoclassical styles in architecture, sculpture and painting. Prerequisite: ARTH 206 or permission of instructor.
Course Descriptions 261

ARTH 408. Nineteenth Century Art. 3 credits.
A study of European art (1750-1900) concentrating on Neoclassicism, Romanticism, Realism, Impressionism and Symbolism. Major topics include nationalism, historicism and the advent of new modes of representation. Prerequisite: GARH 206 or permission of the instructor.

ARTH 409. American Art. 3 credits.
A survey of American visual arts and material culture from the time of the first European settlers to the 1930s. Prerequisite: ARTH 206 or permission of instructor.

ARTH 410. Modern Art from 1900-1945. 3 credits.
Principle trends in European and American art - painting, sculpture, photography, film, architecture - during the first decades of the century. Central themes include art and nationalism, modernity and industry/technology, impact of popular culture, and art theory and criticism. Prerequisite: GARH 206 or permission of the instructor.

ARTH 411. Modern Art Since 1945. 3 credits.
A study of the many developments and trends in American and European art since 1945. This course will focus on such movements as abstract expressionism, pop, conceptual art, installation art, video, film and computer art with an understanding of the theoretical basis of those movements and the development of the art market during this period. Prerequisite: GARH 206 or permission of instructor.

ARTH 412. Modern Architecture. 3 credits.
Survey of architecture from 1851 to the present day. Thematic investigations will include regional, philosophical and technical developments in architectural space. Architects may include Labrouste, Berlage, Wagner and Richardson, through Wright, Mies, Le Corbusier, to the avant-garde Murcott, Siza, Nouvel and Mockbee. Prerequisite: GARH 206 or permission of instructor.

ARTH 413. Women and Art. 3 credits.
An interdisciplinary approach to the history of women in art. This introductory course examines the implications of gender in the lives, education and professional practice of women as artists from prehistory to the present.

ARTH 419. Travel Study in Art History. 1-3 credits.
Art history credit is available to students participating in formal travel study programs with an emphasis on art history. Students maintain a journal with an emphasis on their art history experiences and write a research paper. Prerequisite: Permission of program leader and art history coordinator.

ARTH 483. Topics in Medieval Art. 3 credits.
Topics in Medieval Art may include studies of Gothic art and architecture, Medieval Revival styles, or thematic studies such as the history of manuscript illumination. Prerequisite: GARH 205 or permission of the instructor.

ARTH 484. Topics in Renaissance Art. 3 credits.
Topics in Early and High Renaissance art may include studies of major artists such as Leonardo and Michelangelo, or thematic issues such as Renaissance frescoes and their influence in later periods. Prerequisite: GARH 206 or permission of the instructor.

ARTH/ART 489. Topics in Art and Art History. 3 credits.
Study of selected topics in art and art history. May be repeated when the course content changes. See Schedule of Classes for current topics.

ARTH/ART/GRPH 490. Independent Studies in Art or Art History or Graphic Design. 1-3 credits each semester.
Independent activity such as research or studio practice under faculty supervision. Projected studies in any area of the school's offering must be arranged with the instructors who will direct them. (Offered only with consent of the director)

ARTH 494. Introduction to Museum Work. 3 credits.
(Cross listed at HIST 494.)
A study of the philosophy and practice of museum work including the areas of exhibit design, conservation registration, education and administration. Subject is taught from the perspective of the museum profession and is applicable to diverse disciplines and types of collections.

ARTH/ART/GRPH 495. Internship in Art or Art History or Graphic Design. 1-8 credits.
An off-campus program prepared and monitored on an individual basis. Internships are designed to provide practical experience in the arts. ARTH 494 is a prerequisite for internships in museum and galleries. Prerequisite: permission of the instructor and director.

ARTH/ART/GRPH 499. Honors. 6 credits total for three semesters (1, 3, 2).

Biology

Department of Biology

BIO 101. Contemporary Biology. 3 credits.
A study of the scope and limitations of biological science. Scientific information is integrated with important social issues. (Not available for major or minor credit in biology)

BIO 120. General Zoology (3, 3). 4 credits.
Emphasis is on the study of the evolutionary development, classification, morphology and ecology of representatives of the major animal phyla.

*BIO 130. General Botany (3, 3). 4 credits.
A study of the structure, function and importance of plants including a survey of the major divisions of the plant kingdom.

BIO 220. Cell Biology. 3 credits.
A comparative and theoretical coverage of basic aspects of cell structure and function common to most biological systems, including integration of cell theory, metabolism and gene action. Credit may not be earned in both BIO 220 and CHEM 222. Prerequisite: CHEM 132 or permission of the instructor.

BIO 230. Genetics (3, 3). 4 credits.
A study of the major principles of biological inheritance through lectures, readings, experimentation and discussions. Prerequisite: BIO 120 and 130.
BIO 270. Human Physiology (3, 2). 4 credits.
Study of the function of major organ systems of the human body. Credit may not be earned in both BIO 270 and 370. Not for major credit. Prerequisite: A course in freshman biology or chemistry.

BIO 280. Allied Health Microbiology (2, 4). 4 credits.
An introduction to the biology and significance of microorganisms. Emphasis will be placed on human- and health-related aspects of microbiology. Credit may not be earned in both BIO 280 and BIO 380. Not available for major credit. Prerequisite: BIO 101 or permission of the instructor.

BIO 290. Human Anatomy (2, 4). 4 credits.
A study of the basic body plan is reinforced by studies of dissected human cadavers and computer simulations. Emphasis is on the major body structures and systems.

BIO 305. Ornithology (1, 4). 3 credits. "
Introduction to avian biology with exercises in field identification.

BIO 310. General Entomology (2, 4). 4 credits. "
A laboratory and field study of insects. Morphology, physiology and behavioral aspects will be emphasized. Collection, identification and preservation of local insects by standard procedures will be part of the course.

BIO 312. Animal Welfare. 3 credits.
An examination of the biological basis of animal welfare. Topics include the evolution of domestic animals, physiological and behavioral measurements of stress, welfare assessment and pain perception. Case studies examine the use of animals for companionship, food, medical research and entertainment. Prerequisite: BIO 120 or permission of the instructor.

BIO 315. Introduction to Plant Pathology. 3 credits. "
A study of plant diseases, their prevention, identification, control and treatment. Common diseases of both wild and cultivated plants are studied. Practical information is provided for those who attempt to grow plants and are confronted with plant disease problems. Prerequisite: BIO 130 or consent of instructor.

BIO 316. Vertebrate Embryology (2, 4). 4 credits. "
An introduction to the comparative developmental anatomy of the vertebrates, including the human. Prerequisite: BIO 120 and junior standing.

BIO 320. Comparative Anatomy of Vertebrates (2, 4). 4 credits. "
An integrated course comparing the gross anatomy and embryonic development of vertebrate organ systems.

BIO 325. Topics in Biology. 1-4 credits, repeatable to 7 credits.
Studies in special areas of biology. May be repeated for credit when course content changes. (Topics that satisfy a capstone requirement will be noted in the Schedule of Classes.)

A detailed study of the comparative morphology and anatomy of tracheophytes. Prerequisite: BIO 130.

BIO/GEOL 350. Invertebrate Paleontology (3, 2). 4 credits.
The history of nonvertebrate life from its origin, through evolving biogeochemical cycles, origin of eukaryotes and multicellularity, evolutionary records of all major groups and theoretical issues such as major group origins, adaptive radiation patterns, extinctions, functional adaptations and paleoecology. Prerequisite: GEOL 230, a general zoology course or permission of the instructor.

BIO 351. Introduction to Ecology. 3 credits.
An introduction to habitat, populations, communities and ecosystems with emphasis on the principles of ecology as they are applied and their relationships to other areas of science. Credit may not be earned in both BIO 351 and 352. Prerequisite: Two courses in biology. Students wishing to pursue upper division ecology courses should take BIO 351 in their sophomore year.

BIO 352. Honors Introduction to Ecology (3, 1). 4 credits.
An introduction to ecological principles including independent study and/or a problem-solving seminar which distinguishes this course from BIO 351. Credit may not be earned in both BIO 351 and 352. Prerequisite: Meet university honors guidelines; two courses in biology; two semesters of college chemistry or physics. CS 100 or 101 or microcomputer background recommended. Students wishing to pursue upper division ecology courses should take BIO 352 in their sophomore year.

BIO/CHEM 361. Biochemistry I. 3 credits.
An introduction to the molecules and chemical reactions of living systems. Structure and function of important classes of biomolecules are explored and the relationship of structure to function is stressed. Basic metabolic sequences are discussed. Prerequisite: CHEM 342 and permission of instructor.

BIO 370. Vertebrate Physiology (3, 3). 4 credits. "
Function of organs and organ systems in vertebrates. Credit may not be earned in both BIO 270 and 370. Prerequisite: BIO 120 and 220 and CHEM 132; MATH 220 recommended.

BIO 380. General Microbiology (2, 4). 4 credits. "
A study of the structure and function of microorganisms and their relationship to humans and to the environment. Credit may not be earned in both BIO 280 and BIO 380. Prerequisite: BIO 220 or permission of the instructor.

BIO 385. Taxonomy of Vascular Plants (2, 3). 3 credits. "
A study of identification, nomenclature and classification of vascular plants with emphasis on field investigation. Techniques for identification, collection and preservation will be stressed. Major ecological associations in the mid-Appalachian region will be studied. Prerequisite: BIO 130 and 220 or consent of instructor.
BIO 404. Evolution. 3 credits.
An examination of the place of theoretical thought in biology. The concepts of phylogenetic relationships and the mechanisms of organic change as expressed through the principles of organic evolution will be stressed. Prerequisite: BIO 230 and 351.

BIO/GEO/405. Vertebrate Paleontology (3, 1).
3 credits.
A study of the origin and evolution of the vertebrates. Emphasis will be on understanding how the processes of Earth evolution and biological evolution have interacted through time to produce a coherent picture of vertebrate history. Prerequisite: GEO 230, a general zoology course or permission of instructor.

BIO 410. Advanced Human Anatomy (1, 6).
3 credits.
An advanced study of topics in human anatomy using dissection techniques. Prerequisite: BIO 290 and/or BIO 320 and permission of instructor.

BIO 415. Immature Insects (2, 4). 4 credits.
Immature forms of insects representing the major orders will be studied for recognition purposes. Life cycles, habitats and their economic importance will be included. Credit may not be earned in both BIO 415 and 515.

BIO 420. Medical Parasitology (2, 3). 3 credits.
A study of the principal parasites of humans.

BIO 425. Medical Entomology (2, 4). 4 credits.
A study of arthropods that parasitize humans or serve as vectors of human and animal pathogens. Morphological features, distribution, life histories and control methods will be emphasized. Credit may not be earned in both BIO 425 and 525. Prerequisite: BIO 310.

BIO 430. Human Genetics. 3 credits.
Current topics in human genetics with emphasis on species and population variation, medical genetics and genetic applications that affect humans. Prerequisite: BIO 230.

A study of the environmental relationships of insects, including development, population growth and regulators and distributional studies with an emphasis on field problems. Credit may not be earned in both BIO 435 and 535. Prerequisite: BIO 310 and 351 or equivalent.

BIO 442. Basic Immunology. 3 credits.
A study of the basic concepts of immune responses, the properties of antigens and immunoglobulins, immunologic specificity and the development and regulation of cellular and humoral immunity. Credit may not be earned in both BIO 442 and 542. Prerequisite: A course in microbiology or cell biology or the equivalent.

BIO 444. Basic Virology. 3 credits.
A study of the fundamental aspects of both basic and medical virology. Credit may not be earned in both BIO 444 and 544. Prerequisite: A course in microbiology or consent of the instructor.

Ecosystems are examined as basic ecological units which are comprised of communities interacting with their environments and are themselves components of landscape. Credit may not be earned in both BIO 451 and 551. Prerequisite: BIO 351 or 352.

Theoretical and applied aspects of distribution and abundance, population regulation, interactions between populations and conservation will be studied in selected organisms, including humans. Credit may not be earned in both BIO 452 and 552. Prerequisite: BIO 351 or 352.

BIO 453. Microbial Ecology (2, 4). 4 credits.
The ecology of microorganisms will be covered, emphasizing the study of microbial growth and activity in natural environments. Credit may not be earned in both BIO 453 and 553. Prerequisite: BIO 351 or 352 and BIO 380.

BIO 454. Introduction to Biometrics (3, 2).
4 credits.
The design of biological experiments and applications of statistical techniques in ecology, cell biology, physiology, behavior, systematics, genetics and evolution. Experiments and data from the biological literature will be emphasized. Statistical software packages will be used. Credit may not be earned in both BIO 454 and 554. Prerequisite: MATH 220 or equivalent.

BIO 455. Physiology of Vascular Plants (3, 3).
4 credits.
Function and structure of higher plants including water relations, mineral nutrition, transport phenomena, metabolism, growth and development and selected topics in physiological ecology. Credit may not be earned in both BIO 455 and 555. Prerequisite: BIO 130 and 220 and CHEM 341-342. CHEM 342 may be taken concurrently.

BIO 458. Comparative Animal Physiology (2, 4).
4 credits.
An investigation of animal physiological adaptations to biotic and abiotic environmental factors. Laboratory study emphasizes experimental methods utilized to examine adaptive mechanisms. Credit may not be earned in both BIO 458 and 558. Prerequisite: BIO 270 or 370.

BIO 459. Freshwater Ecology (2, 4). 4 credits.
Functional relationships and productivity of freshwater communities are examined as they are affected by their physical, chemical and biotic environment. Organisms inhabiting lakes, ponds, rivers, streams and estuaries are studied at the population, community and ecosystem levels. Credit may not be earned for both BIO 459 and 559. Prerequisite: BIO 351 or 352 and CHEM 131-132.

BIO 460. Plant Cell and Tissue Culture (2, 4).
4 credits.
Theory and practice of growing isolated plant cells, tissues and organs. Credit may not be earned in both BIO 460 and 560. Prerequisite: BIO 130, CHEM 131-132.
BIO 465. Plant Somatic Cell Genetics. 3 credits.
Examination of genetic changes at the cellular level and implications for plant trait modification. Credit may not be earned in both BIO 465 and 565. Prerequisite: BIO 220 and 230.

BIO 470. Morphology of Nonvascular Plants (2, 4).
4 credits. 
Comparative morphology, ecology and taxonomy of representative algae, fungi and bryophytes. Credit may not be earned in both BIO 470 and 570. Prerequisite: BIO 130.

BIO 480. Molecular Biology (2, 4).
4 credits. 
Cellular constituents and genetics are emphasized at the molecular level. Credit may not be earned in both BIO 480 and 580. Prerequisite or corequisite: CHEM 342.

BIO 490. Biomechanics (3, 3).
4 credits. 
A study of the interactions of organisms with their physical environment. Concepts from fluid and solid mechanics are applied to biological form and function. Prerequisite: BIO 220 or permission of the instructor.

BIO 494. Internship in Biology (0, 2-12).
1-6 credits. 
Students participate in research or applied biology outside of this university. A proposal must be approved prior to registration and a final paper will be completed. Prerequisite: Biology major with a minimum of eight biology credit hours and a biology GPA of 2.5 or greater.

BIO 495. Biotechniques (0, 2).
1 credit. 
Emphasis is placed on theory, methodology and the development of manipulative abilities. Students must notify the biology office of their interest the semester before registration. (May be repeated for credit when course content changes.)

BIO 496. Research Literature (0, 2).
1 credit. 
A systematic review and study of the research literature in a selected field of biology. Proposal for study must be approved by sponsor and department head the semester before registration. (May be repeated for credit when course content changes.)

BIO 497A, B, C. Biological Research (0, 4-6).
2-3 credits, repeatable to 6 credits. 
Research in a selected area of biology as arranged with sponsor. Research outline must be approved by sponsor and department head the semester before registration.

BIO 499. Honors in Biology (0, 6).
6 credits. 
Three semester course.

Bachelor of Individualized Study

College of Education and Psychology

BIS 200. Orientation to Bachelor of Individualized Study Program. 1-6 credits, repeatable.
A series of learning activities designed to assist returning adult students to adjust to re-entry into college. Includes career development, life planning, academic program development and portfolio construction. Prerequisite: BIS major or BIS special student only.

BIS 250. Service Learning. 1-6 credits, repeatable to six credits.
BIS majors may prepare a portfolio learning component in service learning. The documented service learning will be assessed by the Center for Service Learning and credit awarded as appropriate. Prerequisite: Request for service learning must be made through the portfolio process, BIS 200C.

BIS 290. Special Studies. 3 credits, repeatable.
BIS students may elect to do independent study in a selected interdisciplinary area under the supervision of a faculty adviser or faculty member in the appropriate department/school. Prerequisite: Approval of the BIS department head.

BIS 300. Sponsored Learning. 1-6 credits, repeatable.
Sponsored learning activity related to a BIS student’s area of concentration and/or volunteer or work activity. Appropriate evaluation will be required. Prerequisite: Approval of BIS department head.

BIS 480. Cooperative Studies. 1-6 credits, repeatable.
Two or more upper-level BIS majors may elect to do a cooperative study in a selected area, related to their individualized program, under the supervision of a faculty adviser or faculty member in the appropriate department/school. Prerequisite: Approval of BIS department head.

BIS 490. Special Studies. 3 credits, repeatable.
Upper-level BIS students may elect to do independent study in a selected interdisciplinary area under the supervision of a faculty adviser or faculty member in the appropriate department/school. Prerequisite: Approval of BIS department head.

BIS 498. Bachelor of Individualized Study Project. 3-6 credits.
An in-depth analysis of some work-related task or cross-disciplinary study directly related to a BIS student’s area of concentration. A final oral report is required. Prerequisite: Completion of a major portion of all other course work in concentration and approval of BIS department head.

BIS 499. Honors. 6 credits.
Three semester course. Prerequisite: Approval of the BIS department head.
Business Law

College of Business

BLAW 314. Real Estate Law. 3 credits.
A study of the principles of law governing interests in real estate including acquisition, encumbrance, transfer, rights and obligations of parties and state and federal regulations thereof. Prerequisite: Junior standing.

BLAW 470. Financial Products: Regulation and Protection. 3 credits.
An inquiry into the legal environment of the financial marketplace. Topics explored include the role of regulatory agencies, the design of contracts which minimize credit risk and maximize marketability and methods of protecting the proprietary component of innovative financial products.

BLAW 495. Business Law I. 3 credits.
A study of the fundamental principles of law of contracts, sale of goods, agency, bailments and carriers with emphasis on the role these play in both personal and business life, as well as social goals which shall receive legal enforcement and the role of the courts. Prerequisite: Junior standing.

BLAW 496. Business Law II. 3 credits.
A study of the fundamental principles of law of commercial paper, partnerships, corporations, bankruptcy, wills, trusts and estates with emphasis on the role these play in business life. Prerequisite: Junior standing.

BLAW 497. Legal Aspects of International Business. 3 credits.
Survey of legal implications of international business dealings including foreign direct sales, distributorship arrangements, licensing of technology and legal aspects of the multi-national corporation. The foreign legal environment, relevant conventions and trade regulations and the transnational reach of regulatory law will be considered. Prerequisite: COB 218.

Business and Marketing Education

School of Education

BMED 230. Document Design and Production. 3 credits.
Experience in planning, designing and producing documents for the business office with focus on transferability of productivity among the genre of word processing software. Prerequisite: Keyboard in excess of 40 words per minute with at least 95 percent word accuracy without visual reference to the keyboard.

BMED 300. Data and Records Management. 3 credits.
Develops skills in managing the information of business by organizing data through the creation and use of computer spreadsheets and databases. Includes the management and organization of hard records.

BMED 376. Occupational Experience in Business and Marketing. 3-6 credits.
Supervised internship providing business office and/or marketing experience for students seeking licensure as business and marketing teachers in middle and secondary schools. Prerequisite: Permission of program coordinator.

BMED 380. Demonstration Methods for Business and Marketing. 3 credits.
Development of an instructional model incorporating demonstrations and supervised walk throughs in planning and directing the learning of computer-related and other complex business and marketing procedures and processes.

BMED 400. Business and Marketing Communications. 3 credits.
Develops skills in communicating effectively through formal and informal business reports, letters and memos. Emphasis on realistic problem solving involving collecting, organizing, analyzing, interpreting and presenting data. Prerequisite: ENG 101-102 and BMED 230 or equivalent.

BMED 430. Desktop Publishing Design and Production. 3 credits.
Experience in planning, designing and producing the publications of business and education with focus on transferability of functions among the genre of desktop publishing software.

BMED 490. Independent Study in Business and Marketing Education. 1-3 credits.
Provides opportunity to complete independent study or research on problems in business and marketing education. Prerequisite: Permission of program coordinator.

Chemistry

Department of Chemistry

CHEM 100. Chemistry Today. 3 credits.
Provides the background necessary to understand how chemistry affects our daily lives. An enriched overview of the fundamental principles of chemistry is followed by applications to topics of current interest. A high school science background is assumed. (Not available for major or minor credit in chemistry)

*CHEM 120. Concepts of Chemistry. 3 credits.
A one-semester introduction to the fundamental principles, laws and applications of chemistry. Examples relating to the health sciences are emphasized. (Not available for major or minor credit in chemistry)

CHEM 120L. Concepts of Chemistry Laboratory. 1 credit.
A one-semester introduction to laboratory work which illustrates the fundamental principles, laws and applications of chemistry discussed in CHEM 120. Experiments relating to the health sciences are emphasized. Prerequisite or corequisite: CHEM 120.
CHEM 131L*. General Chemistry Laboratory. 1 credit. An enriched laboratory course designed primarily for chemistry majors. Corequisite: CHEM 131.

CHEM 136L Special General Chemistry Laboratory. 2 credits. An enriched laboratory course which includes special topics and experiments not presented in the regular CHEM 131-132 lecture courses. (The laboratory and lecture portions must be taken concurrently.) Prerequisite: for CHEM 136L: Grades of "C" or higher in CHEM 131 and either CHEM 131L or CHEM 135L; corequisite: CHEM 131L.*

CHEM 221. Concepts of Organic Chemistry. 3 credits. An introduction to the study of organic compounds with emphasis on the chemistry of functional groups, including methods of preparation and interconversions. (The laboratory and lecture portions must be taken concurrently.) Prerequisite: CHEM 132 and 132L or CHEM 120 and 120L.

CHEM 221L Concepts of Organic Chemistry Laboratory. 1 credit. Laboratory work will include training in the techniques of organic chemistry, preparation of compounds and some organic qualitative analysis. Prerequisite or corequisite: CHEM 221.

CHEM 222. Concepts of Biochemistry. 3 credits. A brief survey of the principal constituents of living cells, proteins, carbohydrates, lipids and nucleic acids, with emphasis on their synthesis and transformations in vivo. Intermediary metabolism and protein replication will be stressed. (The laboratory and lecture portions must be taken concurrently, not available for major credit.) Prerequisite or corequisite: CHEM 221 or 342.

CHEM 222L Concepts of Biochemistry Laboratory. 1 credit. The laboratory work will comprise experiments demonstrating some of the pertinent reactions including those of analytical value. Prerequisite or corequisite: CHEM 222.

CHEM 270. Inorganic Chemistry I. 3 credits. A survey of the chemistry of the elements and modern theories of bonding. Prerequisite: CHEM 132; prerequisite or corequisite: CHEM 221 or 341.

CHEM/PHYS/MATS 275. An Introduction to Materials Science. 3 credits. An introduction to materials science with emphasis on the general properties of materials. Topics will include crystal structure, extended and point defects and mechanical, electrical, thermal and magnetic properties of metals, ceramics, electronic materials, composites and organic materials. Prerequisite: CHEM 131 or PHYS 150 or PHYS 250 or ISAT212 or permission of the instructor.

CHEM 280. An Alternative Lower-Division Chemistry Experience. 1-3 credits. This course will provide a mechanism for offering non-traditional lower-division, lecture and/or laboratory course. It will be offered only with the approval of the full-time teaching faculty. No course will be offered more than three times under the 280 designation. Student may repeat CHEM 280 for credit when course content changes.

CHEM 325. Chemical Hazards and Laboratory Safety. 1 credit. A brief introduction to physical and chemical hazards which may be encountered in a laboratory setting. Methods of personal protection will be emphasized. Prerequisite: CHEM 132; MATH 206 or 236.

CHEM 331. Physical Chemistry I. 3 credits. A study of thermodynamics, solutions, kinetics and macromolecules with applications of chemical and biological problems. Prerequisite: CHEM 132; MATH 206 or 236.

CHEM 336L Applied Physical Chemistry Laboratory. 1 credit. A laboratory course which emphasizes the applied experimental aspects of physical chemistry. Prerequisite or corequisite: CHEM 331.

CHEM 341-342. Organic Chemistry Lecture. 3 credits each semester. The major objective for this course is to teach the modern method of scientific problem solving using organic compounds as models. Emphasis will be on the chemical language (nomenclature and terminology), molecular electronic concepts, theories of organic reactions, stereochemistry and structure elucidation of organic compounds. Prerequisite for CHEM 341: CHEM 132; prerequisite for CHEM 342: a grade of "C" or higher in CHEM 341; corequisite for CHEM 342: CHEM 346L.
CHEM 346L. Organic Chemistry Laboratory. 2 credits.
This course will present laboratory techniques and experiments associated with organic chemistry, including an introduction to synthesis, spectroscopic methods, chromatographic techniques and some qualitative organic analysis. Prerequisite: A grade of “C” or higher in CHEM 341; corequisite: CHEM 342.

CHEM 351. Analytical Chemistry. 4 credits.
The total analysis concept is introduced and developed. This framework encompasses the areas of experiment design, sample collection and treatment and statistical evaluation of results, as well as standard analysis techniques. Prerequisite: CHEM 132.

CHEM 352. Instrumental Analysis. 3 credits.
This course emphasizes the application of instrumental techniques to the quantitative determination of chemical composition. Both instrument theory and practical applications are presented. Prerequisite: CHEM 351 and MATH 205 or 235.

CHEM 352L. Instrumental Analysis Laboratory. 2 credits.
This course will introduce students to the methodology and technology associated with the design and use of chemical instrumentation. Students perform experiments that illustrate the theoretical principles associated with instrument designs and the application of instruments to the solution of qualitative and quantitative analysis problems. Corequisite: CHEM 352.

CHEM 355. Geochemistry of Natural Waters. 3 credits.
(For course description, see GEOL 355.)

CHEM/BIO 361. Biochemistry I. 3 credits.
An introduction to the molecules and chemical reactions of living systems. Structure and function of important classes of biomolecules are explored and the relationship of structure to function is stressed. Basic metabolic sequences are discussed. Prerequisite: CHEM 342 and permission of instructor.

CHEM 362. Biochemistry II. 3 credits.
A continuation of CHEM 361 including metabolic regulation, protein biosynthesis, analytical methods and isolation of biomolecules. Prerequisite: CHEM 361 or permission of instructor.

CHEM 366L. Biochemistry Laboratory. 2 credits.
An introduction to laboratory techniques and experimental approaches associated with modern biochemistry. Isolation and characterization of enzymes and other biomolecules are emphasized. Prerequisite: CHEM 361.

CHEM 387L-388L. Integrated Inorganic/Organic Laboratory. 2 credits each semester.
An enriched, integrated introduction to the laboratory procedures associated with inorganic and organic chemistry. Topics include apparatus design and construction, synthesis, separation methods, spectroscopic analysis and application of computers in the laboratory. Prerequisite or corequisite: for CHEM 387L: CHEM 341; for CHEM 388L: CHEM 270 and 342 and a grade of “C” or higher in CHEM 387L.

CHEM 390A-B. Problems in Chemistry. 1-3 credits, repeatable for a total of 4 credits.
A project is undertaken dealing with some aspect of chemistry under the guidance of a faculty adviser.

CHEM 395. Perspectives in Chemistry. 1 credit.
A description of the technical and nontechnical capabilities expected of a university graduate who enters industry, government or academia is presented. This student is introduced to the various laws governing the chemical industry as well as to the fields of toxicology and environmental health. Experts in various disciplines discuss current topics of concern to the chemistry and biology student.

CHEM 432. Physical Chemistry II. 3 credits.
A study of atomic and molecular energy levels and structure as interpreted by quantum theory. Prerequisite: CHEM 132; MATH 206 or 236; and PHYS 150 or 250.

CHEM 438L. Physical Chemistry Laboratory. 2 credits.
A laboratory course which emphasizes the application of various physical measurement techniques as a means of obtaining data to test fundamental chemical theory. Corequisite: CHEM 432.

CHEM 440. Intermediate Organic Chemistry. 3 credits.
An advanced study of the theory of organic chemistry as applied to chemical reactions and synthetic methods. Such topics as reaction mechanisms, spectroscopy and stereochemistry will be included. Prerequisite: CHEM 342.

CHEM 445. Polymer Chemistry. 4 credits.
A study of the synthesis and characterization of macro-molecules. Polymer chemistry is discussed in a manner that focuses most attention on the properties of macro-molecules that can be understood at the molecular level. Prerequisite: CHEM 342.

CHEM 450. Nuclear and Radiation Chemistry. 3 credits.
A study of the fundamentals of radioactivity in chemistry. Topics include the effects of radiation on matter, measurement of radiation, activation analysis, tracer studies and the nuclear fuel cycle. Applications of radioactive materials and radiation in industry and medicine will be described. Prerequisite: CHEM 342 and PHYS 250 or permission of instructor.

CHEM 450L. Laboratory for Nuclear and Radiation Chemistry. 1 credit.
A laboratory course designed to demonstrate the topics covered in CHEM 450. Corequisite: CHEM 450; prerequisite: CHEM 132 and PHYS 250 or permission of instructor.
CHEM/PHYS 455. Lasers and Their Applications to Physical Sciences. 3 credits.
An introduction to both the theoretical and practical aspects of lasers and their applications in the physical sciences. Prerequisite: PHYS 270 or CHEM 331 or permission of instructor.

CHEM 470. Inorganic Chemistry II. 3 credits.
A study of selected topics in the field of advanced inorganic chemistry. Prerequisite: CHEM 270; prerequisite or corequisite: CHEM 331.

CHEM 480. Selected Topics in Chemistry. 1-3 credits each semester.
This course is designed to allow an in-depth study of specific topics in chemistry selected according to student and staff interest.

CHEM 481. Literature and Seminar I. 1 credit.
Provides instruction in methods of abstracting specific information from the body of chemical literature. Attendance at regularly scheduled department seminars is required.

CHEM 482. Literature and Seminar II. 1 credit.
Provides practice in preparing and presenting a literature-based seminar and paper on a chemical topic. Attendance at regularly scheduled department seminars is required. Prerequisite: CHEM 481 or permission of instructor.

CHEM 497A, B, C. Undergraduate Chemical Research. 2-4 credits, repeatable for a total of 6 credits.
Research in a selected area of chemistry, as arranged with and approved by a faculty research adviser the semester prior to registration.

CHEM 499. Honors. 6 credits.
Year course.

Chinese

Department of Foreign Languages and Literatures

CHIN 101-102. Elementary Chinese (4, 1). 4 credits each semester.
The fundamentals of Mandarin Chinese through listening, speaking, reading and writing. Practice in pronunciation and development of comprehension. One hour's work a week in the language laboratory.

CHIN 231-232. Intermediate Chinese. 3 credits each semester.
A thorough review of grammar, vocabulary building, conversation, composition and reading. Prerequisite: One year of college Chinese or equivalent.

Classics

Department of Foreign Languages and Literatures

CLAS 100. Latin and Greek Roots of English Words. 2 credits.
Intensive study of Latin and Greek word-roots, prefixes and suffixes in the forms they take in English words. An English vocabulary-development course for students with no knowledge of Latin or Greek. Does not count toward licensure in Latin.

CLAS 265. The Individual and Society in Ancient Greece and Rome. 3 credits.
Discussion of literary and historical sources that reflect the attitudes and values of individuals in various social classes. All readings in English.

CLAS 266. Greek and Roman Classics in Translation. 3 credits.
Discussion of the writings that illustrate the cultural values and intellectual attitudes which constitute the most important legacy of Classical civilization. All readings in English.

CLAS 337. Human Values: The Classical Tradition. 3 credits.
Discussion of human values and the human condition reflected in writings from the eighth century B.C. to the present day. Does not count toward licensure in Latin. All readings in English.

College of Business

College of Business

The application of statistical methods to business and economics. Introduces frequency distributions, measures of central tendency and dispersion, probability, sampling, estimation, hypothesis testing and regression and correlation analysis. Prerequisite: Demonstration of strong preparation in algebra.

COB 202. Interpersonal Skills. 3 credits.
An applied course consisting of experiential exercises followed by class discussion. Cases are used as learning activities where the instructor acts as a facilitator to learning. Essential theory emanates from class discussions with a student-based rather than instructor-based format. Theory and application are intertwined by means of student self-assessment exercises and group discussion. Prerequisite: Open only to sophomore business majors.

COB 204. Computer Information Systems. 2 credits.
An introduction to computer-based information systems. Emphasis is placed on computer hardware, software, analysis, design and implementation of information systems, computer ethics and the role of computers in society and the functional areas of business.
COB 218. Legal Environment of Business. 3 credits.

A study of the law as a means of social, political and economic change. The American legal system from the standpoint of its sources and philosophy with special emphasis on business relations and the role of government in affecting them.

COB 241. Financial Accounting. 3 credits.

The role of financial data in contemporary society; the problems of measuring and reporting income, assets, liabilities and equities; interpretation of financial statements. Prerequisite: Sophomore standing.

COB 242. Managerial Accounting. 3 credits.

The attention-directing and problem-solving functions of accounting in relation to current planning and control, evaluation of performance, special decisions and long-range planning. Prerequisite: COB 241.

COB 291. Introduction to Management Science. 3 credits.

The application of quantitative methods to decision making. Emphasis is placed on decision theory, linear programming, sensitivity analysis, forecasting, queuing simulation. Prerequisite: COB 191 and MATH 205 or equivalent.

COB 300A. Integrated Functional Systems: Management. 3 credits.

COB 300A is the management component of an integrated learning experience consisting of four courses, taken concurrently, which introduces the fundamental conceptual tools of management, finance, operation and marketing in such a way as to establish their mutual relevance and interdependence. Students work in small project teams on tasks designed to require the application in concert of conceptual tools from each of the function areas. Prerequisite: Completion of all required 100 and 200 B.B.A. core courses, demonstrated computer competencies, equivalent to CIS 104 requirements; junior standing (56 hours) and a cumulative 2.5 grade point average in all courses taken at JMU.

COB 300B. Integrated Functional Systems: Finance. 3 credits.

COB 300B is the finance component of an integrated learning experience consisting of four courses, taken concurrently, which introduces the fundamental conceptual tools of management, finance, operation and marketing in such a way as to establish their mutual relevance and interdependence. Students work in small project teams on tasks designed to require the application in concert of conceptual tools from each of the function areas. Prerequisite: Completion of all required 100 and 200 B.B.A. core courses, demonstrated computer competencies, equivalent to CIS 104 requirements; junior standing (56 hours) and a cumulative 2.5 grade point average in all courses taken at JMU.

COB 300C. Integrated Functional Systems: Operations. 3 credits.

COB 300C is the operations component of an integrated learning experience consisting of four courses, taken concurrently, which introduces the fundamental conceptual tools of management, finance, operation and marketing in such a way as to establish their mutual relevance and interdependence. Students work in small project teams on tasks designed to require the application in concert of conceptual tools from each of the function areas. Prerequisite: Completion of all required 100 and 200 B.B.A. core courses, demonstrated computer competencies, equivalent to CIS 104 requirements; junior standing (56 hours) and a cumulative 2.5 grade point average in all courses taken at JMU.

COB 300D. Integrated Functional Systems: Marketing. 3 credits.

COB 300D is the marketing component of an integrated learning experience consisting of four courses, taken concurrently, which introduces the fundamental conceptual tools of management, finance, operation and marketing in such a way as to establish their mutual relevance and interdependence. Students work in small project teams on tasks designed to require the application in concert of conceptual tools from each of the function areas. Prerequisite: Completion of all required 100 and 200 B.B.A. core courses, demonstrated computer competencies, equivalent to CIS 104 requirements; junior standing (56 hours) and a cumulative 2.5 grade point average in all courses taken at JMU.

COB 487. Strategic Management. 3 credits.

Strategic management is designed to be the capstone course for seniors completing their undergraduate studies in the various functional areas of business administration. The course is comprehensive and structured to build on the foundational knowledge students have gained through completing the interdisciplinary COB 300, Integrated Functional Systems, learning experience and from their respective concentrations. Prerequisite: COB 300 or MGT 300, MKTG 380, FIN 345 and IDS 360 and senior standing (90 hours).

Computer Information Systems and Operations Management

College of Business

CIS 104. Microcomputer Applications. Credit/ no credit.

Introduction to the operation and use of microcomputers. Emphasis will be placed on the use of word processing, electronic spreadsheets, database, graphics and telecommunications software using business applications.
CIS 301. Information Technology Tools and Methods. 1 credit.

Gives students experience in use of management productivity tools on microcomputers. Emphasizes appropriate uses of common software packages to aid decision making. Specific coverage will vary. See instructor for topics each semester. Prerequisite: COB 204.

CIS 304. Information Technology. 3 credits.

An intermediate-level management information systems course. Emphasis is placed on the role of computer technology in information processing, the workings of computer hardware, operating systems and application programming concepts, data storage concepts, network and client/server concepts and systems development life cycle. Prerequisite: CIS 204 and junior standing.

CIS 314. Business Applications in BASIC. 3 credits.

Instruction and practical experience in designing and coding application software for business functions using the BASIC programming language. Visual BASIC will be used. Prerequisite: COB 204 or equivalent.

CIS 320. Telecommunications and Information Processing. 3 credits.

Instruction and cases in the design, development and management of telecommunications topics and office information processing. Prerequisite: COB 204 or equivalent.

CIS 324. COBOL Programming Language. 3 credits.

Instruction and practical experience in designing and writing COBOL programs using structured methodology. Problems are directed toward business applications using the Common Business Oriented Language. Prerequisite: COB 204 or equivalent and junior standing.

CIS 344. C Programming Language. 3 credits.

Instruction and practical experience in designing and writing C programs using structured methodology. Problems include interactive and file-oriented business applications using the C language. Prerequisite: CIS 324 or equivalent and junior standing.

CIS 354. Advanced Visual Basic Programming. 3 credits.

Advanced course in Visual Basic programming. Emphasis will be placed on Object-Oriented programming, sequential and random data files and error trapping. Other topics covered will include data access objects, client server, printing in VB and Crystal Reports. Prerequisite: CIS 314 or equivalent and junior standing.

OM 360. Operations Management. 3 credits.

An introduction to the operations function in business. Topics include facility design, job analysis and design, forecasting, production planning, quality management, inventory management, scheduling and project management. Prerequisite: CIS/COB 291 and junior standing.

CIS 361. Database for End Users. 3 credits

This course investigates the strategic uses and issues related to databases in the general business environment. Students use database software to generate reports, forms and queries. Prerequisite: COB 204 and junior standing.

CIS/OM 363. Simulation. 3 credits.

The application of computer simulation to support decision making. Topics include the Monte Carlo method, random number and process generators, simulation languages, construction and validation of simulation models, output analysis and implementation issues. Prerequisite: COB 291 and junior standing.


Provides students with understanding of expert systems development from application selection through implementation and maintenance. Students gain hands-on experience in using an expert system shell to develop an expert system for a business application. Related topics such as PROLOG and neural networks are introduced. Prerequisite: COB 204 or equivalent and junior standing.

OM/MGT 370. Quality Management. 3 credits.

An introduction to the management of quality in organization. Topics include statistical quality control, the design of quality management systems, implementation, measurement and management issues in quality programs. Prerequisite: OM 360/COB 300C or equivalent and junior standing.

CIS 374. Advanced COBOL 3 credits.

Advanced course in COBOL programming. Emphasis is placed on both batch and on-line file maintenance programming for sequential, indexed and direct file organization and structured programming principles. Prerequisite: CIS 324 or equivalent and junior standing.

CIS/CS 384. Object-Oriented Programming. 3 credits.

This course introduces concepts of object-oriented programming using C++. The evolution of object-oriented programming is traced from its early implementation to modern languages which include objects. Comparisons between competing systems will be discussed. Emphasis will be placed on the practical application of OOP to business programming problems. Prerequisite: Completion of CIS 344 or CS 239 with a grade of "C" or better.

CIS/OM/ECON 386. Forecasting for Business and Economics. 3 credits.

Introduction to forecasting techniques used in business and economics. Emphasis will be placed on time-series, regression and econometric forecasting techniques. The decision process within which forecasts are used and evaluated will also be discussed. Prerequisite: COB 291 or ECON 385 and junior standing.

CIS/OM 391. Selected Topics in Operations Research. 3 credits.

An intermediate course that examines selected models of operations research with emphasis on their application to business problems. Topics include dynamic programming, advanced inventory models, simulation and several extensions of linear programming. The use of the computer is illustrated in many of the solution procedures. Prerequisite: COB 291 or equivalent and junior standing.
CIS/OM 393. Data Analysis and Experimental Design in Business Applications. 3 credits.
This course focuses on the problems of analyzing real data using applied statistical concepts and developing valid experimental designs for the collection of data to be used in business applications. The course will use current statistical software and focus on use of existing data sets. The focus will be on presentation of results and critical analysis of experimental results. Prerequisite: COB 291.

CIS 404. Advanced Computer Information Systems. 3 credits.
Instruction and cases in the design, development and management of information systems. Emphasis is placed on the managerial implementation of information systems through case analysis which will stress hands-on microcomputer usage in a problem-solving environment. Prerequisite: CIS 304 and senior standing.

CIS 420. Computer-Based Networking. 3 credits.
An introduction to computer-based networks that incorporates data, voice and video traffic between computer systems and users. Topics include the theory, design and operation of local area networks, wide area networks and private branch exchange systems. Prerequisite: CIS 304 and 320.

CIS 424. Computer Security Management. 3 credits.
Instruction and discussion in the design, development and implementation of a computer security program including legal and ethical considerations. Prerequisite: COB 204 or equivalent.

OM 426. Supply Chain Management. 3 credits.
Examines the design, management and control of purchasing and logistics management systems. Topics covered include the design of systems to facilitate material flow, the interrelationships between the purchasing and logistics functions and production activity and their role in supporting production and marketing strategy. Prerequisite: OM 360/COB 300C or equivalent.

OM 450. Issues in Operations Management. 3 credits.
A capstone course for operations management majors. Focus is on the integration of the disciplines of management and decision sciences to a variety of problem situations. Extensive use of case studies, field trips, and applied projects develop problem-solving expertise at the strategic, tactical and operating levels in both manufacturing and service organizations. Prerequisite: OM/MGT 370, OM 426, OM 481 or permission of program director.

CIS 454. Systems Analysis and Design. 3 credits.
An introduction to the techniques of systems analysis and design. Emphasizes concept of system life cycle and importance of users in system design. Prerequisite: CIS 314, 324 or 344 or equivalent and junior standing.

CIS 470. Computer Information Systems Auditing. 3 credits.
An introduction to the fundamentals of computer information systems auditing. Topics covered include CIS controls, types of CIS audits, risk assessment and techniques used in CIS audits. Prerequisite: CIS 324 and either CIS 454 or ACTG 313.

CIS 474. Database Design and Application. 3 credits.
A study of the tools and techniques of database analysis and design including the implementation of the design using common database management system models. Prerequisite: CIS 324 or equivalent and junior standing.

OM 481. Operations Planning and Control. 3 credits.
The design and management of planning and control systems for manufacturing and service organizations. Topics include advanced issues in MRP, JIT, capacity planning, scheduling, demand management, forecasting, inventory management and logistics. Case studies, simulation and projects are used to develop and analyze planning and control activities in business organizations. Prerequisite: OM 360/COB 300C or equivalent and junior standing.

CIS/OM 483. Strategic Decision Making. 3 credits.
An introduction to decision making in organizations. Emphasis is placed on theories of decision making, rationality, individuals as decision makers, quantitative and qualitative techniques and case studies. Prerequisite: COB 291 or equivalent and junior standing.

CIS/OM 490. Special Studies in Information and Decision Sciences. 1-3 credits.
An advanced course in information and/or decision sciences designed to give qualified students an opportunity to complete independent study under faculty supervision. Prerequisite: Senior standing, recommendation of the instructor and written approval of the director prior to registration.

CIS/OM 496. Internship in Information and Decision Sciences. 3 credits.
An advanced course designed to give supervised practical experience in an operating data processing environment. May be taken once as IDS elective but twice for credit. Prerequisite: Senior standing, major in CIS and permission of the director.

CIS/OM 498. Special Topics in Information and Decision Sciences. 3 credits.
An advanced course designed to allow exploration of current topics in information and/or decision sciences. Course content will vary. See your adviser for current content. Prerequisite: Permission of the instructor.

CIS/OM 499. Honors. 6 credits.
Year course.

Computer Science

College of Integrated Science and Technology

CS 100. Introduction to BASIC. 2 credits.
Introduction to computing using Visual BASIC. This course is not open to students who have previously earned credit in CS 139 or equivalent.
CS 128. Information Presentation (2, 2). 3 credits.
Survey of ways to use computer software tools to locate and retrieve information, present that information in written formats that include tables, graphs and pictures and to integrate that information into verbal presentations that may include audio and video materials as well.

4 credits.
Students will use computer software tools to locate and retrieve information, present that information in written formats that include tables, graphs and pictures and to integrate that information into verbal presentations that may include audio and video materials as well. These skills will be applied in the context of an examination of the historical and social aspects of computing, including the responsibilities of the computing professional.

CS 139. Algorithm Development (3, 2). 4 credits.
Students learn fundamental problem-solving techniques using computer software tools that support algorithm development and procedural abstraction to analyze a domain and create reusable software applications. Prerequisite: A grade of "C" or better in CS 138 or GIST 141 or equivalent.

CS 238. Software Application Development (3, 2).
4 credits.
Fundamentals of the computer software development process, with emphasis on using a program development environment to create and combine algorithms and data structures specified in a high-level programming language.

CS 239. Advanced Computer Programming (3, 2).
4 credits.
Students use various advanced problem-solving strategies to develop algorithms using classes and objects. Students also learn how to implement and use elementary data structures, including character strings, records, files, stacks and queues. Prerequisite: CS 139 or equivalent with a grade of "C" or better.

CS 240. Algorithms and Data Structures. 3 credits.
Students learn to implement and analyze elementary data structures and the basic complexity classes of algorithms that use strategies such as greedy algorithms, divide-and-conquer algorithms and backtracking algorithms. This analysis is especially applied to problems in searching, sorting and parsing. Prerequisite: CS 239.

CS 252. Discrete Structures. 3 credits.
Introduction to the mathematical structures used in computer science. Topics include logic and set theory, algebraic structures, automata theory and computability. Prerequisite: CS 139 or CS 238.

CS 274. Introduction to Databases. 3 credits.
Students learn how to design and implement a normalized relational database. Emphasis is on the practical construction of an interactive database using graphical user interfaces and report generation. Prerequisite: CS 138 or equivalent.

CS 280. Projects in Computer Science. 1-3 credits.
Projects or topics in computer science which are of interest to the lower division student. May be repeated for credit when course content changes. Projects or topics selected may dictate. Prerequisites. Students should consult the instructor prior to enrolling for the course.

CS/CIS 334. Symbolic Programming Concepts and Applications. 3 credits.
Applied artificial intelligence and applications of knowledge-based systems in business and the fundamentals of symbolic programming. The course will use Prolog as a primary language for development of business applications; LISP programming will also be covered. Formal logic systems and informal knowledge representation systems will be explored. Prerequisite: COB 204, CIS 104, 291 or CS 239 or ISAT 242.

CS 340. Assembly Language Programming.
3 credits.
Principles of assembly language programming. Assembly language contrasted with machine language. Assembly directives, conditional assembly and macros. Design of a two-pass assembler. The material in this course is useful for those interested in machine design, operating systems, embedded computer systems and microcontrollers and other areas which require low-level knowledge of computer operation. Prerequisite: CS 139 or CS 238.

CS/ISAT 344. Intelligent Systems. 3 credits.
In-depth introduction to current and future intelligent systems, including expert systems, neural networks, hybrid intelligent systems and other intelligent system technologies and their development, uses and limitations. Prerequisite: Junior standing and CS 139 or ISAT 340.

CS/ISAT 345. The Software Industry. 3 credits.
The process by which software products are developed is examined. This process includes requirements analysis and specification, design methods, automated support systems, testing and measurement of software and project planning and management. Prerequisite: CS 139 or CS 340 and sophomore standing.

CS 346. Information System Design Studio.
3 credits.
Information system design methods, tools, techniques, principles and practices are surveyed. Students solve design problems alone and in teams and present their work to their peers and the instructor. Prerequisite: CS 239 and CS 345.

CS/ISAT 348. The Multimedia Industry. 3 credits.
Students are introduced to a variety of tools for viewing multimedia and to the issues in designing effective human-computer interactions. This includes an introduction to the many forms of media that occur in computing systems (text, graphics, images, sound, animation) and to the characteristics of well-produced media. Prerequisite: CS 139, or ISAT 340 or permission of the instructor.
CS 349. Developing Interactive Multimedia. 3 credits.
Students learn the concepts of multimedia, the issues in designing multimedia to interact effectively with users, the performance and speed issues in designing multimedia and how to implement interactive multimedia applications. Prerequisite: CS 239 and CS 348.

CS 350. Computer Organization. 3 credits.
Students learn how a computer works through principles of hierarchical computer organization, hardware (including registers, busses and arithmetic logic units) machine instruction sets, addressing techniques, input/output processing and interrupt handling. Students are introduced to the Unix operating system. As part of this course, students will be provided with a version of Unix to install on a personal computer. Prerequisite: CS 239.

CS 351. Network Operating Systems. 3 credits.
Systems programming and operating systems. Network environments, windowing environments, user interfaces. Memory management, process management, file system management and device management. Prerequisite: CS 350.

CS 352. Design and Analysis of Algorithms. 3 credits.
An introduction to the analysis, design and theory of algorithms. Algorithms studied will be selected from searching, sorting and graph theory. Included are elements of counting, recurrence relations, direct and indirect proofs, recursion, complexity classes, language theory, decidability and undecidability. Prerequisite: CS 240 and CS 252.

CS 355. Programming Languages. 3 credits.
Several actual programming languages are studied in terms of the fundamental principles of computer programming language design, including object-oriented programming, functional programming, concurrent programming and logic programming. Prerequisite: CS 239.

CS 371. Introductory Digital Electronics (2, 4). 2 credits.
Transistors, integrated circuits, logic families, gates, latches, decoders, multiplexers, multivibrators, counters and displays. Prerequisite: CS 350.

CS 372. Microcontrollers and Their Applications. (2, 4). 2 credits.
Microcontrollers, their instructions, architecture and applications. Prerequisite: CS 371.

CS 373. Interfacing Microcomputers (2, 4). 2 credits.
A personal computer and its input/output bus, input/output functions, commercially available devices, proto-typing circuit boards and programs for device control. Prerequisite: CS 371.

CS/ISAT 384. Object-Oriented Programming. 3 credits.
This course introduces concepts of object-oriented programming (OOP) using C++. The evolution of object-oriented programming is traced from its early implementation to modern languages which include objects. Comparisons between competing systems will be discussed. Emphasis will be placed on the practical application of OOP to business programming problems. Prerequisite: Completion of CS 344 or CS 239 with a grade of "C" or better.

CS 444. Artificial Intelligence. 3 credits.
Students will study the history, premises, goals, social impact and philosophical implications of artificial intelligence. Students will study heuristic algorithms for large state spaces and learn to develop recursive and non-deterministic algorithms. Prerequisite: CS 344.

CS/MATH 448-449, Numerical Mathematics and Computer Applications. 3 credits each semester.
Numerical solutions and error analysis of typical problems such as finding zeros of nonlinear functions, solving systems of linear and nonlinear equations, interpolation, approximation, integration, solving ordinary differential equations, optimization and Monte Carlo methods. Prerequisite for CS/MATH 448: MATH 237, MATH 300 and either CS 238 or MATH 248. Prerequisite for CS/MATH 449: CS/MATH 448 and MATH 336.

CS 454. Internship in Computer Science. 1-3 credits.
An advanced course to give supervised practical experience in a professional computing environment. May be taken multiple times for credit, but no more than three credits may be used in the Computer Science Program graduation requirements. Prerequisite: Junior standing, major in computer science and permission of the instructor.

CS/ISAT 460. Local Area Networks. 3 credits.
An overview of LAN hardware, LAN topology and design, and LAN protocols. Installation and management of LAN operating systems and LAN services (address management, name management, file and print sharing, account management). Prerequisite: CS 350 or CS 320 or equivalent (Formerly CS 451).

CS/ISAT 461. Internetworking. 3 credits.
Wide Area Network (WAN) and Metropolitan Area Network (MAN) design. Audio, voice, data and TV transmission over ATM/B-ISDN networks. The SONET signal hierarchy and Q3 standard interface model. Network security. Performance analysis of a given network. Prerequisite: CS/ISAT 460.

CS/ISAT 462. Network Applications Development. 3 credits.
Design and implementation of network-based applications using languages and architectures such as sockets, JAVA, TL1 and CORBA. Concepts in distributed processing, including synchronization of interprocess communication and management of replicated data. Analysis of performance issues related to distributed applications. Prerequisite: CS 239 or CS 344, and CS/ISAT 460.

CS/ISAT 463. Network Analysis and Design. 3 credits.
In-depth introduction to the techniques and tools used to design and analyze computer and telecommunications networks. Overview of issues related to network performance, including the impact on cost, reliability and security. Prerequisite: CS/ISAT 460, and ISAT 340 or equivalent.
CS/ISAT 464. Issues in the Telecommunications Business. 3 credits.
Addresses complex business concepts and issues in the telecommunications industry. Explores the interrelation of the economics of the telecommunications industry with ensuing social, ethical and security issues. Discusses topics in product and service creation, marketing, customer service and billing, and electronic commerce. Prerequisite: CIS 320 and SMAD 356, and ISAT 340 or equivalent.

CS 474. Database Design and Application. 3 credits.
Students study database design and management with emphasis placed on data definition languages, data manipulation languages, query languages and on management of the database environment. Prerequisite: CS 239 or CS 274 or ISAT 340 and junior standing.

CS 475. Distributed Database Management. 3 credits.
Students learn the concepts of client-server architectures and other aspects that arise in the design of distributed systems. Prerequisite: CS 474.

CS 480. Selected Topics in Computer Science. 1-3 credits.
Topics in computer science which are of interest but not otherwise covered in the regular computer science offerings of the department. Offered only with the approval of the department head; may be repeated for credit when course content changes. Prerequisite: CS 239. Topics selected may dictate further prerequisites; students should consult the instructor prior to enrolling for course.

This course develops a computer graphics application package based on standard graphics functions as well as attributes of a graphical user interface. It includes experience in applying interactive computer graphics techniques to industrial problems. Prerequisite: CS 474.

CS 497. Independent Study. 1-3 credits.
An advanced course to give independent study experience under faculty supervision. May be taken multiple times for credit, but no more than three credits may be used in the Computer Science Program graduation requirements. Prerequisite: Junior standing, major in computer science and permission of the program coordinator.

CS 499. Honors. 6 credits.
Year course.

Communication Sciences and Disorders
College of Integrated Science and Technology

CSD 200. Introduction to Speech and Language Disorders. 3 credits.
An introduction to the field of speech pathology. Consideration is given to the cause and treatment of communication disorders in children and adults.

CSD 207. Speech Science I: Phonetics. 3 credits.
Instruction in various transcription techniques for phonetic and phonemic analysis of speech production.

CSD 208. Speech Science II: Anatomy and Physiology of the Ear and Voice Mechanism. 3 credits.
A detailed study of the anatomy and physiology of the speech mechanism. Majors only or by permission of instructor.

CSD 209. Speech Science III: Acoustics of Speech and Hearing. 3 credits.
Introduction to acoustics of speech and hearing. Introduction to physical acoustics, sound generation and transmission, resonance, speech acoustics and speech perception.

CSD 300. Language Development. 3 credits.
The study of language acquisition, development, structure and function in normal children. The development of language in all cultures and the universal nature of the developmental process is the foundation for continued study in speech-language hearing.

CSD 301. Audiology. 3 credits.
An introduction to the symptoms, causes and treatment of hearing disorders. Hearing test instrumentation and interpretation in clinical situations are emphasized.

CSD 310. Biostatistical Methods for Communication Sciences and Disorders. 3 credits.
An introduction to research conducted in and applied to the disciplines of speech-language pathology and audiology. Traditional statistical methods in behavioral and social sciences will be included as well as qualitative and quantitative research approaches relevant to individuals and populations with communication disorders.

CSD 318. Aural Rehabilitation. 3 credits.
Concentrated attention is given to communication problems of the hearing handicapped. Aural rehabilitation is emphasized including lip reading and auditory training. Prerequisite: CSD 301 or permission of instructor.

CSD 414. Phonological and Language Disorders. 3 credits.
An introduction to phonological and language disorders in children and adults. Etiological and maintaining factors are discussed and an overview of assessment and rehabilitation procedures is presented. Prerequisite: CSD 200, 207, 300 or permission of instructor.

CSD 415. Introduction to Stuttering and Neuromotor Speech Disorders. 3 credits.
Introduces neurogenic communication disorders from a neuroanatomical approach; introduces characteristics of dysfluencies, theories of stuttering etiologies and common treatment approaches.

CSD 416. Organic Speech Disorders. 3 credits.
Clinical procedures in the areas of oral-facial and voice disorders are studied. Evaluative and remedial aspects are emphasized.

CSD 420. Introduction to Sign Language. 3 credits.
Provides an introduction to American Sign Language, the deaf community and English-based signed systems.
CSD 421. Sign Language II. 3 credits.
Focuses on developing conversational skills of students whose core vocabulary and knowledge of the grammar and pragmatics of sign language are basic; distinguishes ASL from English sign systems. Prerequisite: CSD 420 or permission of the instructor.

CSD 470. Methods and Observation. 3 credits.
Directed observation and participation in practical experiences. Introduction to the clinical process in speech-language pathology. Practical clinical methodology will be emphasized. Majors only. Must have a 3.0 average in CSD courses to enroll.

CSD 471. Methods and Observation in Audiology. 3 credits.
An introduction to the clinical process in audiology via directed observation and participation in laboratory and patient interactions. Practical clinical methodology is emphasized. Majors only with interest in graduate study in audiology. Permission of the instructor. Repeatable for credit up to 6 credits. A 3.0 average is required to enroll.

CSD 490. Special Studies in Communication Sciences and Disorders. 1-3 credits.
Provides students opportunity for independent study and/or small class instruction in elective topics.

CSD 499. Honors. 6 credits.
See catalog descriptions titled “Graduation with Distinction” and “Graduation with Honors.”

Dance
School of Theatre and Dance

DANC 109. Folk Dance Ensemble Repertory I (0, 4). 2 credits.
Rehearsal, performance and technical theater experiences in folk dance. Prerequisite: Permission of the instructor.

DANC 110. Associate Group Dance Repertory I (0, 4). 2 credits.
Introduction to group dance experiences through rehearsal, performance, dance technique training and technical theater practice. Prerequisite: Permission of the instructor and concurrent enrollment in a dance technique course.

DANC 140A, B, C, D. Elementary Modern Dance (0, 4). 2 credits.
Emphasis on modern dance technique and fundamentals of improvisation and choreography.

DANC 142A, B, C, D. Elementary Ballet (0, 4). 2 credits.
Fundamentals of ballet technique, basic vocabulary and combinations.

DANC 143A, B, C, D. International Folk Dance (0, 4). 2 credits.
Traditional folk dance steps and international folk dances. Emphasis on dances from eastern and western Europe, Mexico and Israel.

DANC 144. Ballroom Dance (0, 4). 2 credits.
Ballroom dance skills including steps, styling and leading and following for American and Latin ballroom dance forms.

DANC 146. Jazz Dance (0, 4). 2 credits.
Fundamentals of jazz technique, basic vocabulary and combinations.

DANC 147. Tap Dance (0, 4). 2 credits.
Fundamentals of tap dance, basic vocabulary and combinations.

DANC/THEA 171. Performance Production. 3 credits.
An introduction to the methods of the production of scenery, properties, costumes, lighting, sound and performance management for theater and dance performances. Instruction in the skills required for the operation of associated tools and equipment and instruction in the skills required for the operation of lighting and sound equipment will be taught.

DANC 209. Folk Dance Ensemble Repertory II (0, 4). 2 credits.
Intermediate rehearsal, performance and technical theater experiences in folk dance. Prerequisite: DANC 109 or the equivalent.

DANC 210. Associate Group Dance Repertory II (0, 4). 2 credits.
Practice in group dance experiences through rehearsal, performance, dance technique training and technical theater practice. Prerequisite: DANC 110 or the equivalent and concurrent enrollment in a dance technique course.

DANC 211. Contemporary Dance Ensemble Repertory I (0, 4). 2 credits.
Introduction to a modern dance ensemble with performance, choreographic and technical theater experiences. Prerequisite: Permission of the instructor and concurrent enrollment in a dance technique course.

DANC 212. Virginia Repertory Dance Company I (0, 4). 2 credits.
Rehearsal, performance and technical theater experiences in a modern dance company. Prerequisite: Permission of the instructor and concurrent enrollment in a dance technique course.

DANC 240A, B, C, D. Intermediate Modern Dance I (0, 4). 2 credits.
Intermediate skills in modern dance technique. Prerequisite: DANC 140 or permission of the instructor.

DANC 242A, B, C, D. Intermediate Ballet I (0, 4). 2 credits.
Intermediate skills in ballet technique. Prerequisite: DANC 142 or permission of the instructor.

DANC 245. Dance Improvisation (0, 4). 2 credits.
Development of individual, group and environmental awareness; extension of individual movement vocabulary; and theory and exploration of the interrelationships of the visual and theater arts through structured improvisation.
DANC 246. Intermediate Jazz. 2 credits.
Intermediate skills in jazz dance technique, vocabulary and movement combinations. Prerequisite: DANC 146 or permission of the instructor.

*DANC 248. History of Dance: Renaissance Through the 20th Century. 3 credits.
A survey of dance history in Western civilization from the Renaissance to the present. Emphasis is on the dance idioms of ballet and modern.

DANC 290. Anatomy and Somatic Studies for the Dancer. 3 credits.
An introduction to the structure and function of the human body, along with an overview of contemporary bodywork theories and techniques essential to the education of dancers. Emphasis will be on the application of knowledge within the context of dance technique.

DANC 309. Folk Dance Ensemble Repertory III (0, 4). 2 credits.
Advanced rehearsal, performance and technical theater experiences in folk dance. Prerequisite: DANC 209 or the equivalent.

DANC 311. Contemporary Dance Ensemble Repertory II (0, 4). 2 credits.
Intermediate-level experiences in performance, choreography and technical theater with a modern dance ensemble. Prerequisite: DANC 211 or the equivalent and concurrent enrollment in a dance technique course.

DANC 312. Virginia Repertory Dance Company II (0, 4). 2 credits.
Advanced rehearsal, performance and technical theater experience in a modern dance company. Prerequisite: Permission of the instructor and concurrent enrollment in a dance technique course.

DANC 340A, B. Intermediate Ballet II (0, 4). 2 credits.
Ballet technique on an accelerated intermediate level. Prerequisite: DANC 240 or permission of the instructor.

DANC 342A, B. Intermediate Ballet II (0, 4). 2 credits.
Ballet technique on an accelerated intermediate level. Prerequisite: DANC 240 or permission of the instructor.

DANC 345. Dance Composition I (2, 2). 3 credits.
Introductory studies of dance composition with focus on the learning and development of choreographic techniques and styles. Compositional movement studies and solo/duet dances will be utilized for exploring and developing the student's individual creativity. Prerequisite: DANC 245 or permission of the instructor.

DANC 346. Advanced Jazz/Musical Theater Styles. 2 credits.
A continuation of the jazz dance techniques in the dance program. Primary focus of this class will be on the study and training of historic and contemporary musical theater jazz movement. Prerequisite: DANC 246 or permission of instructor. Priority given to all music theater concentration students.

DANC 390. New Directions in Dance. 1-3 credits.
Study of selected timely topics in dance. May be repeated when course content changes. See Schedule of Classes for current topic.

DANC 409. Folk Dance Ensemble Repertory IV (0, 4). 2 credits.
Directing, reconstruction and advanced rehearsal, performance and technical theater experiences in folk dance. Prerequisite: DANC 309 or the equivalent.

DANC 411. Contemporary Dance Ensemble Repertory III (0, 4). 2 credits.
Advanced-level experiences in performance, choreography and technical theater with a modern dance ensemble. Prerequisite: DANC 311 or the equivalent and concurrent enrollment in a dance technique course.

DANC 412. Virginia Repertory Dance Company III (0, 4). 2 credits.
Advanced rehearsal, performance and technical theater experience in a modern dance company for the professional level dancer. Prerequisite: Permission of the instructor and concurrent enrollment in a dance technique course.

DANC 440A, B. Advanced Modern Dance II (0, 4). 2 credits.
Modern dance technique on an advanced level. Prerequisite: DANC 340 or the equivalent.

DANC 442A, B. Advanced Ballet (0, 4). 2 credits.
Ballet technique on an advanced level. Prerequisite: DANC 342 or the equivalent.

DANC 445. Dance Composition II (2, 2). 3 credits.
Dance composition study involving the development and use of complex choreographic structures with emphasis on creating small and large group dance compositions as well as the exploration of contemporary choreographic styles and techniques. Prerequisite: DANC 345 or permission of the instructor.

DANC 449. The Dance Professional. 2 credits.
Introduction to the professional dance world through lectures, discussions and research. Emphasis will be placed on the preparation of skills and materials necessary to pursue dance as a career. Contemporary dance trends and issues will also be explored.

DANC/THEA 471. Stage Management. 3 credits.
Study and analysis of stage management. Consideration given to the methods and strategies for successful stage management for theater, dance and other performances. Emphasis on developing management and organizational skills. Prerequisite: DANC 171.

DANC 479. Methods of Teaching Dance. 2 credits.
An introduction to the theory and practice of teaching dance. Course will provide introductory level teaching experiences and will encourage the development of the student's personal educational philosophy.

DANC 490A, B, C. Special Studies in Dance. 1-3 credits each semester.
Designed to give superior students in dance an opportunity to complete independent study and/or research under faculty supervision. Prerequisite: Permission of the dance program coordinator.
ECED 361. Practicum in the Introduction to Early Childhood Education (0, 4). 2 credits.

This initial field experience in early childhood education is designed to accompany ECED 362 as it provides students with the opportunity to observe, record and interact with your children and their teachers and apply their knowledge of child development and sound teaching practices. Prerequisite: Full acceptance into teacher education, current TB test and criminal records check. Corequisite: ECED 362.

ECED 362. Introduction to Early Childhood Education. 6 credits.

This course introduces students to the field of early childhood education and the development of the child from birth to age 8. The complimentary roles of teacher and learner are studied as they are affected by the diverse family and community contexts in which children grow. Prerequisite: Full acceptance into teacher education, current TB test and criminal records check. Corequisite: ECED 361.

ECED 401. Problems in Early Childhood Education. 1-3 credits.

Considers current problems and issues in early childhood education. Prerequisite: Permission of the program coordinator.

ECED 430. Literacy Practicum (0, 2). 1 credit.

This course is a supervised field experience tutoring below grade-level readers of primary age. It emphasizes informal assessment and appropriate instructional strategies for reading, spelling and writing for beginning readers and develops observational strategies for assessing growth and progress. Prerequisite: Grades of "C" or better in ECED 361 and ECED 362 and current TB test. Corequisite: ECED 431 and ECED 432.

ECED 431. Practicum in Learning (0, 2). 1 credit.

This course is a supervised field experience working in an early childhood laboratory classroom with prekindergarten-age children. It emphasizes application of age-appropriate guidance strategies for facilitating children's total development, including children with diverse needs. Observational strategies for assessing growth and progress are developed. Prerequisite: Grades of "C" or better in ECED 361 and ECED 362 and current TB test. Corequisite: ECED 430 and ECED 432.

ECED 432. Literacy and Learning in Early Childhood Education. 6 credits.

This course integrates child development theories, academic content knowledge and age/stage appropriate instructional strategies for teaching children prekindergarten through grade three. Emphasis on observational/assessment strategies and inquiry processes in all areas of literacy, math and science for instructional decisions. Explores family influences, diversity, special needs and professional responsibility. Prerequisite: Grades of "C" or better in ECED 361 and ECED 362. Corequisite: ECED 430 and ECED 431.


This all-day, primary-grade practicum allows students to demonstrate their educational decision-making skills through planning, implementing and evaluating appropriate activities for children of diverse interests, needs and abilities. Strategies to assess learning, guide behavior, work with professionals and family involvement are applied in this practicum and accompanying seminar. Prerequisite: ECED 361, ECED 362, ECED 430, ECED 431, ECED 432 and current TB test. Corequisite: ECED 452.

ECED 452. Math, Science and the Integrated Day. 6 credits.

This course addresses classroom schedule and physical space and the integration of curriculum through classroom routines, centers and thematic teaching with an emphasis on the natural and social sciences. Specific teaching methods and principles of math and science are also explored. Prerequisite: Grades of "C" or better in ECED 361, ECED 362, ECED 430, ECED 431 and ECED 432 and current TB test. Corequisite: ECED 451.

ECED 480. Student Teaching in Early Childhood Education. 8 credits.

Enables students to apply in public school classrooms those understandings, skills and attitudes acquired in all components of teacher education. Under the guidance of university supervisors and cooperating teachers, students engage in full-time teaching responsibilities. Prerequisite: Full acceptance into teacher education and grades of "C" or better in ECED 361, ECED 362, ECED 430, ECED 431, ECED 432, ECED 451, ECED 452, EDUC 360. Corequisite: ECED 482.

ECED 482. Seminar in Student Teaching. 2 credits.

This seminar experience provides support for students during their student teaching and reinforces skills and concepts being applied in the classroom. Prerequisite: Full acceptance into teacher education and grades of "C" or better in ECED 361, ECED 362, ECED 430, ECED 431, ECED 432, ECED 451, ECED 452 and EDUC 360. Corequisite: ECED 480.

ECED 490. Special Studies in Early Childhood Education. 1-3 credits.

Designed to give capable students opportunities to complete independent research on educational problems under faculty guidance. The plan for the study must be presented to the department head in prescribed form for approval prior to registration.

ECED 499. Honors in Early Childhood Education. 3 credits.
Economics

College of Business

*GECO 200. Introduction to Macroeconomics. 3 credits.
Behavior of economic systems at the national and international levels. Topics include the methodology of economics as a social science, supply and demand, definition and measurement of important macroeconomic variables and theoretical models of growth, inflation, interest rates, unemployment, business cycles, stabilization policy, exchange rates and the balance of payments.

Topics covered include supply and demand, consumer choice, economics of the firm and industry, production costs, distribution theory, international trade, comparative economic systems and the philosophy of economics.

ECON 222. Contemporary Economic Issues and Policy Alternatives. 3 credits.
Application of elementary economic theory to current economic issues. Special emphasis is placed on public policy alternatives. Prerequisite: ECON 201 and GECO 200.

ECON 225. Money and Banking. 3 credits.
Examines the economic role of money, banking and monetary policy within current institutional settings and under alternative theories explaining the interrelationships between money, the financial system and economic activity. Prerequisite: ECON 201 and GECO 200.

*GECO 270. International Economics. 3 credits.
A survey of the relationships among national economies, including trade theory, trade policy, international monetary relations and the balance of payments. Not open to students who are enrolled in or have already received credit in ECON 370 or 372. Prerequisite: ECON 201 and GECO 200.

ECON 300. Special Topics in Economics. 3 credits.
Examination of special topics in theoretical or applied economics not covered in the current economics curriculum. Specific topics to be determined by the instructor. Prerequisite: GECO 200 and ECON 201 or equivalent.

ECON 301. Economies in Transition. 3 credits.
A study of the evolution and operation of the post-Soviet Union economy. Special emphasis is given to the new independent states and their market reforms and foreign economic policies. Prerequisite: ECON 201 and GECO 200.

ECON 302. History of Economic Thought. 3 credits.
Major contributions within the history of economic thought are studied in relation to both the historical circumstances within which they arose and the role each played in shaping contemporary competing economic doctrines. Prerequisite: ECON 201 and GECO 200.

ECON 305. Environmental Economics. 3 credits.
An analysis of the problems of the environment, their causes and alternative proposed methods of solution. Air and water pollution will be stressed as case studies of environmental problems. Prerequisite: Three credits in economics.

ECON 306. The Economics of Women and The Family. 3 credits.
Examines facts and theories pertaining to the various economic roles of women in America. The economics of marriage, divorce and childbearing are examined as are empirical and theoretical explanations of occupational and wage differentials between the sexes. Prerequisite: ECON 201.

ECON 310. Economic History of the United States. 3 credits.
A survey of the economic growth and development of the United States from colonial times to the present. Prerequisite: ECON 201 and GECO 200.

ECON 312. Comparative Economic Systems. 3 credits.
An examination of the distinguishing characteristics, institutions and performances of the various types of major economic systems in the world today. Prerequisite: ECON 201 and GECO 200.

ECON 326. Public Finance. 3 credits.
Introduction to the field of public finance including theories and principles of taxation, government expenditure, public debt and fiscal administration. Studies interrelationships between federal, state and local finance, shifting and incidence of tax, the burden of public debt, government spending and taxation decisions as stabilization policies. Prerequisite: ECON 201 and GECO 200.

ECON 331. Intermediate Microeconomic Theory. 3 credits.
Intermediate analysis of the determination of price, resource allocation and product distribution in a free enterprise economy. Prerequisite: ECON 201, GECO 200 and MATH 203 or 235.

ECON 332. Intermediate Macroeconomic Theory. 3 credits.
Intermediate-level analysis of the major approaches to the determination of economic aggregates, with emphasis given to structuring a common analytic framework. Prerequisite: ECON 201, GECO 200 and MATH 203 or 235.

ECON 340. Economics of Natural Resources. 3 credits.
Emphasizes availability of exhaustible resources and optimum utilization rates. Examines questions of intertemporal allocation and costs of growth. Prerequisite: ECON 201 and GECO 200.

ECON 345. Industrial Organization. 3 credits.
An examination of contemporary U.S. industrial concentration both in the aggregate and within particular industries with emphasis on public policy implications. Alternative theories of the firm are considered in relation to different market structures. Prerequisite: ECON 201 and GECO 200.
ECON 360. Labor Economics. 3 credits.

Study of the economics of labor markets. Attention is given to the structure and operation of labor markets, wage determination, employment, unions and contemporaneous labor problems and policies. Prerequisite: ECON 201 and GECO 200.

ECON 365. Economic Development. 3 credits.

A study of the characteristics of under-development, theories of economic development and the underlying causes for varying standards of living among the world's people. Considerable time will be spent on studying social and cultural factors that influence economic growth and their potential effect on the economic progress of the less-developed countries. Prerequisite: ECON 201 and GECO 200.

ECON 370. International Trade and Trade Policies. 3 credits.

An examination of the classical and modern theories of international trade, the effects of such trade on the domestic economy, the effects of barriers to free trade and an appraisal of U.S. commercial policy since 1948. Prerequisite: ECON 201 and GECO 200.

ECON/FIN 372. International Finance and Payments. 3 credits.

Examines international financial markets, instruments and institutions; determination of spot and forward exchange rates, interest arbitrage, hedging and speculation; and alternative policies for achieving equilibrium in international payments. Prerequisite: ECON 201 and GECO 200.

ECON 382. Urban Economics. 3 credits.

A detailed examination of the economic aspects of urbanization with emphasis on metropolitan land use and location theory. Urban problems considered include housing, poverty, labor markets and municipal finances. Prerequisite: ECON 201 and GECO 200.

ECON 385. Econometrics. 3 credits.

Course discusses construction of models based on economic theory including identification of variables, development and testing of hypotheses for single- and multi-equation systems. Prerequisite: ECON 201, GECO 200 and COB 191 or MATH 220.

ECON/CIS/OM 386. Forecasting for Business and Economics. 3 credits.

For course description, see CIS/OM 386.

ECON 394. Economics Internship. 3 credits.

Academic credit for an approved internship experience. Registration for the course must be concurrent with the internship. An application showing how all requirements for the internship will be met must be approved prior to registration. Prerequisite: GECO 200 and ECON 201 or equivalent.

ECON 400. Advanced Topics in Economics. 3 credits.

Examination of special topics in theoretical or applied economics not covered in the current economics curriculum. Specific topics to be determined by the instructor. Prerequisite: ECON 331 and 332 or permission of instructor.

ECON 405. Political Economy. 3 credits.

Evaluation and critique of mainstream and nontraditional economic paradigms. The interaction of economics and politics in the United States as it affects the distribution of wealth and domestic and international economic policies. Prerequisite: ECON 201, GECO 200 and junior or senior standing.

ECON 426. Theory of Public Choice. 3 credits.

Examines the justification for and nature of public sector activity in a market-based mixed economy. Emphasis is placed on theories of market failure, voting models, conditions of production and provision in the public sector and models of bureaucratic behavior. Prerequisite: ECON 326 or 331 or permission of the instructor.

ECON 430. Monetary Theory. 3 credits.

Examines alternative theories of the relationships between money, interest rates, price levels, employment and output in order to assess the effectiveness of monetary policy for economic stabilization. Prerequisite: ECON 332 and MATH 205 or 235.

ECON 431. Advanced Theory. 3 credits.

Examines theories of general equilibrium and the distribution of income, welfare economics, capital theory and information theory. Prerequisite: ECON 331, 332 and MATH 205 or 235.

ECON 432. Stabilization Policies. 3 credits.

Examination of the role and scope of stabilization policies in a capitalistic economy. Primary emphasis will be given to the macroeconomic problems of cyclical fluctuations in aggregate economic activity, unemployment, price instability, disequilibrium in the balance of payments and inadequate rate of economic growth. Alternative stabilization policies will be identified and evaluated. Prerequisite: ECON 332 and MATH 205 or 235.

ECON 455. Economics of Regulated Industries. 3 credits.

A study of the rationale, methods and impact on industry behavior of government regulations including public utility regulation and antitrust policies relating to monopoly and competition in the United States. Prerequisite: ECON 331 or 345.

ECON 460. Human Resources. 3 credits.

Examines the role of education and training in enhancing productive skills, employment opportunities and income. Also focuses on American employment and health and welfare policies that relate to the labor market, giving attention to empirical studies. Prerequisite (one of the following): ECON 306, 331, 332 or 360.

ECON 475. Regional Economics. 3 credits.

A study of local and subnational economics viewed as integral parts of a unified system. Emphasis will be given to the basic economic forces associated with regional growth and decline and related public policy considerations. Prerequisite (one of the following): ECON 331, 340, 365, 370 or 382.
ECON 484. Mathematical Economics. 3 credits.

Course employs techniques of differentiation and integration for microeconomic and macroeconomic analysis at the intermediate level. Prerequisite: ECON 331, 332 or instructor permission and MATH 205 or 235.

ECON 490. Special Studies in Economics. 1-3 credits each semester.

Designed to give capable students in economics an opportunity to complete independent study under faculty supervision. Admission by recommendation of the instructor and written permission of the director of economics prior to registration. (May not be used toward fulfillment of the 400-level requirement for a major in economics.)

ECON 499. Honors. 6 credits. Year course.

See catalog description entitled “Graduation with Distinction” and “Graduation with Honors.” (Three credits of ECON 499 may be counted toward fulfillment of the 400-level requirement for a major in economics.)

Education

School of Education

EDUC 150. Information in Contemporary Society. 3 credits.

Concerns the individual’s need for information, especially that which will assist in solving problems related to everyday needs and interests, and with the agencies and resources which can help to meet those needs. (Will not count as social science course for teacher licensure.) (Formerly LSEM 150.)

EDUC 332. Single Camera TV Operation. 1 credit.

A basic understanding of the principles of video equipment along with skills in the use, set up and operation of one-half inch portable videocassette systems. (Formerly LSEM 332.)

EDUC 336. Photography in Education. 1 credit.

An introduction to the use and operation of 35mm SLR cameras. Note: All needed equipment will be supplied. (Formerly LSEM 336.)

EDUC 339. Production of Computer-based Materials for Education. 1 credit.

Creating educational material in a variety of media for computer-based presentations. Principles of creating visual messages will be examined. (Formerly LSEM 339.)

EDUC 360. Foundations of American Education. 3 credits.

A study of the practices and issues that affect American education. Consideration is given to such topics as philosophical approaches to education, history of American education and the organizational and cultural aspects of schools which influence educational practices.

EDUC 370. Instructional Technology. 3 credits.

Principles and procedures of a teaching/learning process designed to provide reliable, effective instruction to learners through systematic application of instructional technology. Includes selecting, producing, evaluating and utilizing nonprint media and equipment for application to instructional process.

EDUC 371. Methods in Teaching English as a Second Language. 3 credits.

This course is designed to provide preservice English as a Second Language teachers with experiences in designing and implementing instructional strategies to meet the linguistic needs of non-native students and utilizing assessment instruments to evaluate their progress with a contextualized focus.

EDUC 375. Selected Topics in Media. 1-2 credits.

An in-depth study of a narrowly defined topic or practice in media. May be repeated for credit when course content changes. (Formerly LSEM 375.)

EDUC 381. Field Experience in English as a Second Language. 3 credits.

The course provides supervised field experiences in working with English as a Second Language students, NK-12. Preservice teachers will demonstrate competencies developed in the English as a Second Language endorsement program and in consultation with a field supervisor. Prerequisite: Completion of ESL minor requirements.

EDUC 401. Problems in Education. 1-3 credits.

Workshop experiences for the development and training of secondary teachers. Prerequisite: EDUC 360 and permission of the program coordinator.

EDUC 410. Multicultural Education. 1 credit.

This course is designed to provide information about cultural and ethnic groups in the United States and to promote effective instruction for and about students from all cultural and ethnic groups found in the United States.

EDUC 416. School Discipline and Classroom Management. 1 credit.

Theory and practices in classroom management and discipline, including specific models and the various legal aspects will be examined.

EDUC 422. Concepts in Second Language Acquisition Research and Application. 3 credits.

This course will help students gain familiarity with second language acquisition research and practice, characteristics of second language learners, assessment and teaching strategies for second language acquisition.

EDUC 425. Cross-Cultural Education. 3 credits.

The course provides students with knowledge of the effects of socio-cultural variables in an instructional setting.

EDUC 428. Assessment for Curriculum Development in English as a Second Language. 3 credits.

The course provides students with a variety of assessment practices for profiling non-native students’ abilities and for developing appropriate curriculum and evaluating programs.
EDUC 480. Student Teaching. 3-12 credits.
Enables students to apply, in the public school classrooms and the comprehensive child development programs, those skills and attitudes acquired in all components of teacher education. Under the guidance of university supervisors, students are provided activities designed to familiarize them with the classroom teacher's role. Prerequisite: PSYC 160 and 270, EDUC 360, the appropriate methods courses and permission of the coordinator of field experiences.

EDUC 490. Special Topics in Education. 3 credits.
In-depth examination of selected topics which are of current importance in the field of education. Offered only with approval of School of Education director. May be repeated for credit when course content changes. Prerequisite: Junior standing or above and consent of instructor.

EDUC 499. Honors. 3-6 credits.
Independent research topic initiated and completed by qualified upper-division students. See catalog descriptions entitled "Graduation with Distinction" and "Graduation with Honors."

Elementary Education

School of Education

ELED 112. Introduction to Teaching Science to the Young Child. 1 credit.
Study of the connections between science content and the knowledge base for instruction in early and middle education. Corequisite: BIO 101.

ELED 113. Exploration of Instruction in Science. 1 credit.
Study of the connections among science content and early and middle grades instructional strategies, educational research and science teaching skills for the preservice education student. Corequisite: GEOL 100 or permission of the instructor.

ELED 114. Seminar in Mathematics Education. 1 credit.
Study of the connections between mathematics content, the NCTM Standards and the knowledge bases for instruction in the early and middle grades (K-8). Corequisite: MATH 107 or permission of the instructor.

ELED 401. Problems in Elementary Education. 1-3 credits.
Considers current problems and issues in elementary education as they relate to the professional education of teachers. Prerequisite: Permission of the program coordinator.

ELED 490. Special Studies in Elementary Education. 1-3 credits.
Designed to give capable students an opportunity to engage in the independent study of educational problems under faculty guidance. The plan for the study must be approved by the faculty adviser and the program coordinator prior to registration.

ELED 499. Honors in Elementary Education. 3 credits

English

Department of English

*ENG 231. Survey of Poetry. 3 credits.
Introduction to literature through selected examples of poetry.

*ENG 232. Survey of Drama. 3 credits.
Introduction to literature through selected examples of drama.

*ENG 233. Survey of Prose Fiction. 3 credits.
Introduction to literature through selected examples of prose fiction.

*GENG 235. Survey of English Literature: Beowulf to the 18th Century. 3 credits.
A general survey presented chronologically.

*GENG 235B. Survey of English Literature: Beowulf to the 18th Century. 3 credits.
A general survey presented chronologically.

*GENG 236. Survey of English Literature: 18th Century to Modern. 3 credits.
A general survey presented chronologically.

*GENG 236B. Survey of English Literature: 18th Century to Modern. 3 credits.
A general survey presented chronologically.

*GENG 238. Survey of World Literature: From the Ancient World Through the Renaissance. 3 credits.
Introduction to masterpieces of world literature through the 17th century, with emphasis on non-Western literature.

*GENG 238B. Survey of World Literature: From the Ancient World Through the Renaissance. 3 credits.
Introduction to masterpieces of world literature through the 17th century, with emphasis on non-Western literature.

*GENG 239. Survey of World Literature: 18th Century to Modern. 3 credits.
Introduction to masterpieces of world literature since the 17th century, with emphasis on non-Western literature.

*GENG 239B. Survey of World Literature: 18th Century to Modern. 3 credits.
Introduction to masterpieces of world literature since the 17th century, with emphasis on non-Western literature.

*GENG 247. Survey of American Literature: From the Beginning to the Civil War. 3 credits.
A general survey presented chronologically.

*GENG 248. Survey of American Literature: From the Civil War to the Modern Period. 3 credits.
A general survey presented chronologically.

ENG 250. Literature and Values. 3 credits.
A study of critical value problems facing humanity as expressed in selected literary works. Themes such as individual vs. society, Utopian explorations, alienation and community will provide the focus.
ENG 290. Intermediate Composition. 3 credits.
This course stresses the argumentative and persuasive essay as well as grammar and usage.

ENG 302. Special Topics in Literature and Language. 3 credits.
Study of a particular literary or linguistics topic. (May be repeated for credit when course content changes but not more than once, except with the approval of the department head.)

ENG 305. Mythology. 3 credits.
Study of the nature and meaning of Greek myths as interpreted and reinterpreted in significant works of ancient and modern literature.

ENG 306. The Bible for Students of Literature. 3 credits.
Study of Hebrew and Christian scripture as literary and cultural texts which have influenced subsequent literature and culture.

ENG 307. Medieval Literature. 3 credits.
307A: Study of works by selected medieval poets and prose writers with emphasis on historical context. 307B: Development of British drama from its liturgical foundation to the morality play. (May be repeated for credit when course content changes.)

ENG 310. Renaissance and 17th-Century British Literature. 3 credits.
310A: Poetry and prose of the early British Renaissance. 310B: Chief prose writers of the 17th century. 310C: Chief poets of the 17th century from Donne to the Restoration. 310D: Major works of British dramatists, excluding Shakespeare, from 1500-1660. (May be repeated for credit when course content changes.)

ENG 320. Restoration and 18th-Century British Literature. 3 credits.
320A: Literature from 1660 to 1798 with emphasis upon Dryden, Swift, Pope, Johnson, Boswell and Blake. 320B: Dramatists from Dryden and Wycherley to Goldsmith and Sheridan. 320C: Origins and development of the novel from its beginnings through late 18th century. (May be repeated for credit when course content changes.)

ENG 325. Romantic Poetry. 3 credits.
A study emphasizing selected works of major Romantic poets. Attention given to critical theories, intellectual and cultural movements and poetic forms.

ENG 327. The Gothic: Change and Continuity. 3 credits.
A study of the origins, influence and transformations of Gothic fiction from the 18th century to the present, with emphasis on the literary uses of the supernatural.

ENG 329. Victorian Literature. 3 credits.
Study of British literature of the Victorian period with primary emphasis on poetry and nonfiction prose.

ENG 330. The 19th-Century English Novel. 3 credits.
The development of the English novel in the 19th century and the study of representative works.

ENG 335. Modern and Contemporary Poetry. 3 credits.
335A: British and American poetry from 1900 to 1945. 335B: British and American poetry from 1945 to the present. (May be repeated for credit when course content changes.)

ENG 336. Modern and Contemporary Drama. 3 credits.
336A: Drama from 1900 to 1945. 336B: Drama from 1945 to the present. (May be repeated for credit when course content changes.)

ENG 339. Modern and Contemporary British Novel. 3 credits.
339A: The British novel from 1900 to 1945. 339B: The British novel from 1945 to the present. (May be repeated for credit when course content changes.)

ENG 345. Pre-20th-Century American Literature. 3 credits.
345A: Significant genres, writers and literary movements of the 17th and 18th centuries. 345B: Selected works of major figures such as Emerson, Thoreau, Hawthorne, Poe, Melville and Whitman. 345C: Selected works of major figures such as Dickinson, Twain, Howells, James, Crane, Norris and Dreiser. (May be repeated for credit when course content changes.)

ENG/TEA 347. Playwriting. 3 credits.
Study of the process of writing plays. Consideration of plot, character, thematic material, conflict and dramatic structure. Emphasis on individual writing assignments.

ENG 352. The American Novel to 1914. 3 credits.
A study of the development of the American novel from its beginnings to the modern period.

ENG 353. Modern and Contemporary American Fiction. 3 credits.
353A: The American novel from 1914 to 1945. 353B: A study of contemporary American novels and short stories written since 1945 with emphasis on current fiction. (May be repeated for credit when course content changes.)

ENG 355. Southern Literature. 3 credits.
Southern authors, especially those of the 20th century.

ENG 360. Major Black Writers. 3 credits.
360A: Selected works of fiction by major African-American writers of the 20th century. 360B: Selected works of poetry by major African-American writers of the 20th century. (May be repeated for credit when course content changes.)

ENG 365. Women's Literature. 3 credits.
365A: Literature by and about women. 365B: A study of the poetry of women which may be focused by time period and theme. 365C: A study of novels and short stories by women. (May be repeated for credit when course content changes.)
ENG 373. Anglo-Irish Literature. 3 credits.

373A: Selected writings in English by outstanding Irish poets, playwrights and novelists. 373B: Study of the works of one or more Anglo-Irish writers. (May be repeated for credit when course content changes.)

ENG 380. Film as a Narrative Art. 3 credits.

380A: Introduction to film which applies the concepts of literary study to an analysis of film as a form of narrative. 380B: Literary or critical study of major film genres. 380C: Literary or critical study of several major directors. (May be repeated for credit when course content changes.)

ENG 390. Literary Research Writing. 3 credits.

This course is a lecture/workshop gathering information for developing scholarly papers about literature, organizing research for written presentation and writing research papers using Modern Language Association style.

ENG 391. Introduction to Creative Writing. 3 credits.

391A: A basic workshop in reading and writing poetry. 391B: A basic workshop in reading and writing fiction. (May be repeated for credit when course content changes.)

ENG 396. Advanced Composition. 3 credits.

Extensive exercises in expository writing, with emphasis on rhetorical types of composition, designed to develop sophistication of style in the student.

ENG 401. Workshop: Cultural and Professional Studies in English and American Language and Literature. 1-3 credits.

Workshops designed to enhance present curriculum through study tours, programs on contemporary issues in scholarship in English and American literature and linguistics and practical in secondary and freshman teaching. (1-3 credit hours, depending on topic, may be allowed toward English major)

ENG 403. Studies in Old English. 3 credits.

The Old English language with readings in selected poetry and prose of the period. (Credit may not be earned in both ENG 403 and 503.)

ENG 405. Studies in Comparative Literature. 3 credits.

Comparative study of selected world literature.

ENG 408. Literary Criticism. 3 credits.

408A: Survey of the nature, function and development of literary criticism from Aristotle to Eliot. 408B: Study of the major debates in current critical discourse. (May be repeated for credit when course content changes; credit may not be earned for both 408A and 508 or 408B and 509.)

ENG 410. Major British or American Authors. 3 credits.

Study of the works of one or more major British or American authors. (May be repeated for credit when course content changes; credit may not be earned in both ENG 410 and 510 unless course content changes.)

ENG 412. Special Topic Seminar. 3 credits.

Study of a literary school, movement, genre or some other significant literary or linguistic topic. (May be repeated for credit when course content changes; credit may not be earned in both ENG 412 and 512 unless course content changes.)

ENG 417. English Linguistics. 3 credits.

417A: Introduction to English linguistics including sociolinguistics and psycholinguistics. 417B: Introduction to the historical study of English including its Indo-European origins. (May be repeated for credit when course content changes.)

ENG 420. English Grammar. 3 credits.

420A: Introduction to traditional grammar, probing its logic, system and history, with an examination of modern applications of conventional rules. 420B: Introduction to modern English grammar. (May be repeated for credit when course content changes.)

ENG 421. Studies in Caribbean Literature. 3 credits.

A survey of the literary achievement of novelists, poets and dramatists of the Caribbean.

ENG 451. Chaucer. 3 credits.

The Canterbury Tales and other major works of Chaucer.

ENG 455. Shakespeare. 3 credits.

455A: A study of selected comedies and tragic histories; nondramatic work may be considered. 455B: A study of selected tragedies and comic histories; nondramatic work may be considered. (May be repeated for credit when course content changes.)

ENG 458. Shakespeare on the Page and Stage in London. 3 credits.

Students will study the plays of Shakespeare currently in production in London and England with special emphasis on the productions of the Royal Shakespeare Company and the National Theatre. Course can be substituted for either ENG 455A or 455B but may not be taken for credit in addition to both.

ENG 461. Milton. 3 credits.

Major prose and poetical works of John Milton with special emphasis on Paradise Lost.

ENG 465. Women's Studies. 3 credits.

465A: Women's literary achievements in several cultural and historical contexts. 465B: An intensive study of feminist literary theory. Prerequisite: ENG 365. (May be repeated for credit when course content changes.)

ENG 481. Literary Form. 3 credits.

481A: Poetic forms for writers, with emphasis on theory and current practice. 481B: Narrative theory and current practices for writers. 481C: The history, development and meaning of poetic technique. Prerequisite: ENG 391 or permission of instructor. (May be repeated for credit when course content changes.)

ENG 490. Special Studies in English. 3 credits.

Independent study for students with high academic standing. Students may select work in (1) a literary type, period or author; (2) imaginative writing; or (3) linguistics. (Approval of department head required; may be repeated for credit when course content changes.)
ENG 491. Advanced Creative Writing. 3 credits.
491A: An advanced workshop with emphasis on developing sound poetic form, voice and vision. 491B: An advanced workshop with emphasis on developing sound narrative prose form, style and vision. Prerequisite: corresponding section of ENG 391 or permission of instructor. (May be repeated for credit when course content changes.

ENG 499. Honors. 6 credits. Year course.

Family Issues

Department of Social Work

FAM 133. The Contemporary Family. 3 credits.
Concepts of variations in forms and lifestyles of families. Consideration is given to the family life cycle and the interdependency between the family and society.

FAM 300. Child Development. 3 credits.
A study of the factors influencing the physical, cognitive, social and emotional growth of the young child. Emphasis is given to the importance of family relations and development of observational skills. Prerequisite: PSYC 101 or 160 or equivalent.

FAM 330. Family Relations. 3 credits.
A study of the relations in modern family living with emphasis on dating, courtship, marriage, marital adjustment and intergenerational relations.

FAM 335. Parents Throughout the Life Cycle.
3 credits.
Explores the realities of being a mother and father to infants, children, Teenagers, adults and aging adults. Considers parenting strategies and current issues of parenting.

FAM 400. Issues and Applications. 3 credits.
This seminar is designed to integrate and apply knowledge from the student’s major and the family issues minor. A substantial, in-depth individualized project will strengthen the student’s capabilities in research, information access and self-directed learning. Prerequisite: FAM 133 or SOCI 276, three additional courses in the family issues minor and junior or senior standing.

FAM 487. Special Topics in Family Issues. 3 credits.
Examination of selected topics that are of current importance to family studies. Course may be repeated for credit. Prerequisite: FAM 133 or SOCI 276.

FAM 490. Special Studies in Family Issues.
1-3 credits.
The course is designed to give capable students in family issues an opportunity to complete independent study under faculty supervision. Course may be repeated for credit. Prerequisite: FAM 133 or SOCI 276 and two additional courses in the family issues minor.

Finance

College of Business

FIN 210. Principles of Real Estate. 3 credits.
Emphasizes industry principles and economic factors influencing the real estate business. Subjects include contracts, deeds, valuation, financing and subdivision development.

FIN 225. Money and Banking. 3 credits.
For course description, see ECON 225.

FIN/MATH 328. Time Series Analysis. 3 credits.
Regression and exponential smoothing methods for forecasting nonseasonal and seasonal time series, stochastic processes, Box-Jenkins’ autoregressive and moving average models. Prerequisite: MATH 300 and MATH 318.

FIN 345. Managerial Finance. 3 credits.
Study of theoretical concepts and analytical techniques to aid management decisions on financial problems. Topics include: working capital and fixed asset management for profit, expansion. Prerequisite: COB 242, junior standing (56 hours) and a cumulative 2.0 grade point average in all courses taken at JMU.

FIN 360. Money and Capital Markets. 3 credits.
An examination of the domestic and international markets for financial products. Emphasis will be placed on the theoretical underpinnings of cash flow valuation and basic applications of financial price determination.

FIN 365. Intermediate Finance. 3 credits.
In-depth study of the theories of capital structure, long-term financing decisions, working capital management and current topics such as mergers and bankruptcy. Microcomputer applications. Prerequisite: FIN 345 or COB 300 and FIN 360.

FIN 370. Real Estate Finance. 3 credits.
A comprehensive examination of the decision-making processes involved in purchasing and financing real assets. The focus is on cost of funds and optimal financial structure of complex real estate projects. Prerequisite: FIN 345 or COB 300.

FIN 371. Principles of Investments. 3 credits.
The investor’s view of the operation of the capital markets. Theories and practice of investments, including analysis of financial instruments and real assets and their effective combination into portfolios. Prerequisite: FIN 345.

FIN/ECON 372. International Finance and Payments. 3 credits.
Examines international financial markets, instruments and institutions; determination of spot and forward exchange rates, interest arbitrage, hedging and speculation; and alternative policies for achieving equilibrium in international payments. Prerequisite: ECON 201 and GECO 200.
FIN 380. Elemental and Derivative Securities Analysis. 3 credits.
This course undertakes an in-depth examination of the broad array of financial instruments, traded in contemporary finance markets, which are available for financing, investing and managing financial price risk. Prerequisite: FIN 360.

FIN/MATH 395. Mathematical Finance. 3 credits.
This course presents an overview of mathematical concepts in financial applications. Topics include continuous time finance, optimization, numerical analysis and applications in asset pricing. Prerequisite: FIN 380.

FIN/MATH 405. Securities Pricing. 3 credits.
A quantitative treatment of the theory and method of financial securities pricing to include an examination of closed form pricing models such as the Black-Scholes and its various derivatives as well as numerical solution techniques such as binomial methods. Prerequisite: FIN/MATH 395.

FIN 415. Real Estate Valuation. 3 credits.
The process of estimating the market value of real assets is examined with emphasis on the valuation of income producing properties. Topics include income forecasting, capitalization rates and methods, market analysis and investment valuation methodology. Prerequisite: FIN 370.

FIN 416. Seminar in Real Estate Investment and Development. 3 credits.
An investigation of the investment process in real assets with emphasis on investment profitability. The real estate investment cycle is examined in detail to determine the sources of cash flow to the equity investor and how these cash flows may be maximized. Prerequisite: FIN 370.

FIN 434. Financing the Emerging Firm. 3 credits.
Various sources of financing for new and emerging ventures will be investigated including venture capital and initial public stock offerings. Emphasis will be on clinical studies to reinforce the theoretical principles. Prerequisite: FIN 345 or COB 300.

FIN 450. Financial Risk Management. 3 credits.
Forward contracts, futures, swaps and options are treated as the basic building blocks for creating financial risk management programs for companies subject to financial risks such as changes in exchange rates, commodity price fluctuations and changes in interest rates. Prerequisite: FIN 365 and FIN 380.

FIN 455. International Financial Management. 3 credits.
This course focuses on the financial decisions facing the multinational firm. Particular emphasis is placed upon global financial markets and instruments, exchange-rate risk management and asset-liability management in an international environment. Prerequisite: FIN 365 or FIN/ECON 372.

FIN 460. Commercial Banking. 3 credits.
A study of the objectives, functions, policies, organizational practices and government regulation of commercial banks. An intensive study is undertaken of the asset and liability structure of commercial banks. Special emphasis is placed on how banks are adapting to the dramatic changes in their operating and regulatory environments. Prerequisite: FIN 360.

FIN/MATH 465. Seminar in Actuarial Science I. 3 credits.
The course covers the theory and application of contingency mathematics in the areas of life and health insurance and annuities from both a probabilistic and deterministic approach. Together with FIN/MATH 466, the two-course sequence helps to prepare the student for the professional actuarial examinations. Prerequisite: FIN/MATH 395 or consent of instructor. Prerequisite or corequisite: MATH 426.

FIN/MATH 466. Seminar in Actuarial Science II. 3 credits.
A continuation of FIN/MATH 465 with additional coverage of contingency mathematics in the areas of life and health insurance, annuities, pensions and risk theory from both a probabilistic and deterministic approach. The two-course sequence helps to prepare the student for the professional actuarial examination. Prerequisite: FIN/MATH 465. Prerequisite or corequisite: MATH 427.

FIN 471. Advanced Topics in Investments. 3 credits.
Application of investment concepts within a case format. The course focuses on investment management, bringing together economics, capital markets and valuation to form a basis for decision making in financial asset selection, risk/reward analysis, portfolio selection and formulation. Prerequisite: FIN 365.

FIN 480. Seminar in Financial Engineering. 3 credits.
Financing engineering is the process of adapting existing financial instruments and developing new ones to meet the needs of participants in domestic and international financial markets. This process is taught within a case and project format in order to simulate actual market participation as closely as possible. Prerequisite: FIN 450 and FIN/MATH 405.

FIN 488. Advanced Financial Policy. 3 credits.
The financing of a new business enterprise or expansion and the financial condition of existing firms is examined within a case format. The objective of this examination is to elicit a policy decision which effectively addresses the issues identified in the case. Prerequisite: FIN 365.

FIN 490. Special Studies in Finance. 1-3 credits.
Designed to give capable students in finance an opportunity to complete independent study under faculty supervision. Admission by recommendation of the instructor and permission of the director. (Forms may be obtained in the department office before registration.)
FIN 494. Business Practicum. 3 credits.
A course to be taken by graduating seniors to give students an opportunity to work in and with local industry in order to gain insight into the real side of modern business. (May not be included as a finance or business law elective for the finance major. Applications may be obtained in finance/business law office.)

FIN 499. Honors. 6 credits. Year course.
See catalog description entitled “Graduation with Distinction” and “Graduation with Honors.”

Foreign Language
Department of Foreign Languages and Literatures

FL 267. The Literature of Opera in Translation. 3 credits.
A survey of the literature of opera from the 17th century to the present. All lectures and readings are in English.

FL 309.** Civilization: Travel-Study. 1-3 credits.
A directed program of travel-study designed to augment a student’s knowledge of a particular civilization. Arrangements must be made with the faculty member designated by department head. Permission of the department head is required prior to enrollment in the program.

FL 446.** Special Topics in Linguistics, Literature or Civilization. 1-3 credits.
Study of a particular topic in linguistics, literature or civilization. May be taught in English or in the language but cannot be counted for major, minor or licensure unless taught in the language. Course may be repeated. **Prerequisite: Permission of the instructor.

FL 490.** Special Studies in Foreign Languages. 1-4 credits each semester.
Allows superior students an opportunity to complete independent study under faculty supervision. Work may be done in all languages offered in the department but may not replace course offerings. **Prerequisite: Permission of the department head.

FL 499.** Honors. 6 credits.
**These courses are taught in the various languages offered by the department. The title of the course will designate the specific language studied.

French
Department of Foreign Languages and Literatures

FR 101-102. Elementary French (4, 1). 4 credits each semester.
The fundamentals of French through listening, speaking, reading and writing. Practice in pronunciation and development of comprehension. One hour’s work a week in the language laboratory.

Reviews: elementary French grammar, reading, writing, speaking and listening skills in French. One hour’s work a week in the language laboratory. For students who have had no more than two or three years of French in high school and qualify through the placement exam. Prerequisite: Permission of department head.

FR 111-212. Intensive French. 6 credits each semester.
The fundamentals of French through listening, speaking, reading and writing. The first semester is the equivalent of FR 101-102 and the second of FR 231-232.

FR 231-232. Intermediate French. 3 credits each semester.
A thorough review of grammar, vocabulary building, conversation, composition and reading. Prerequisite: One year of college French or equivalent.

FR 266. French Literature in Translation. 3 credits.
French literature, 1800 to the present. All lectures and readings are in English. Does not count toward a major, minor or licensure in French.

FR 300. French Conversation and Composition. 3 credits.
Intensive training in the use and comprehension of modern, everyday French with emphasis on conversation and composition to give students confidence to express themselves in idiomatic French. Instruction is in French. Prerequisite: FR 232 or equivalent.

FR 307. History of French Civilization. 3 credits.
A study of the social, economic, political and artistic development of France from the Middle Ages to the present. Instruction is in French. Prerequisite: FR 300.

FR 308. Contemporary French Civilization. 3 credits.
A study of French life and culture with emphasis on contemporary France. Instruction is in French. Prerequisite: FR 300.

FR 315. French Phonetics. 3 credits.
Intensive drill in French sounds and intonation patterns. Instruction is in French. Prerequisite: FR 232 or equivalent.

FR 320. Advanced French Grammar. 3 credits.
Advanced course in morphology and syntax with extensive practice in composition. Instruction is in French. Prerequisite: FR 300 or equivalent.

FR 330. Business French. 3 credits.
A study of commercial and technical vocabulary and trade customs in conjunction with practice in the art of commercial communication including interviews, letter writing and simultaneous interpretation. Instruction is in French. Prerequisite: FR 320.

FR 335. Introduction to French Literature. 3 credits.
A study of the main literary schools from Classicism to the Nouveau Roman. Textual analysis of sample writings representative of the most important literary movements. Instruction is in French. Prerequisite: FR 320. Required for majors.
   339A: A thorough analysis of selected passages from important authors of the Middle Ages and the Renaissance. 339B: A thorough analysis of selected passages from important authors of the 17th Century. 339C: A thorough analysis of selected passages from important authors of the Age of Enlightenment. Instruction is in French. Prerequisite: FR 335.

FR 400. Advanced Conversation. 3 credits.
   Discussions deal with topics of current interest. Prerequisite: FR 320.

FR 405. 19th-Century French Literature. 3 credits.
   FR 405A: French literature of the first half of the 19th century with special emphasis on the works of Hugo, Lamartine, Vigny and Musset. 405B: French literature of the second half of the 19th Century with special emphasis on the works of Balzac, Stendhal, Flaubert and Zola. Instruction is in French. Prerequisite: FR 339.

FR 420. Advanced Genre Studies. 3 credits.
   FR 420A: A study of French theater, from the Middle Ages to the 20th Century. 420B: A study of French poetry, from the Middle Ages to the 20th Century. 420C: A study of French narrative fiction, from the Middle Ages to the 20th Century. Instruction is in French. Prerequisite: FR 339.

FR 425. 20th-Century French Literature. 3 credits.
   FR 425A: A study of the works of major French writers of the first half of the 20th century. 425B: A study of contemporary French novels written since 1950 with the emphasis on current fiction. Instruction is in French. Prerequisite: FR 339.

FR 440. Stylistics and Translation. 3 credits.
   An intensive course in writing and translation from and into English and French. Contemporary topics taken from various fields. Comparative terminology. Prerequisite: FR 320.

   A study of French cinematography from 1930 to 1980. Emphasis given on the following directors: Renoir, Pagnol, Carné-Prévert, Cocteau, Vadim, Chabrol, Resnais, Godard, Rohmer, Lelouch, Truffaut and Malle. Instruction is in French. Counts as a culture course, not as a literature course. Prerequisite: FR 320.

General Business

College of Business

GBUS 150. Introduction to Business. 3 credits.
   A general survey of the institution of business with emphasis on the history of business, the basic forms of business organization, ownership, finance, management, wages and labor relations.

General Education

Courses within brackets [ ] are not offered in the General Education program for the 1999-2000 academic year.

*ARTS 101. Introduction to the Fine Arts. 3 credits.
   This course offers an interdisciplinary approach to the fine arts disciplines of cinema, dance, music, theater and the visual arts. This course introduces students to the basic knowledge and perceptual skills necessary for developing appreciation of each of the fine arts disciplines, revealing both the interrelationships and the uniqueness of each art form.

*GANT 195. Cultural Anthropology. 3 credits.
   An introduction to the nature of culture and its relationship to language, economics, politics, kinship and other institutions in diverse cultures. The course also provides an overview of the theories, methods and ethical responsibilities involved in the study of cultural systems and ethnographic writing.

*GART 200. Art in General Culture. 3 credits.
   An exploratory course which aims to develop a non-technical, general, cultural understanding of the space arts, such as architecture, painting, sculpture and industrial design. Emphasis is on the contemporary.

*GARH 205B. Survey of World Art I: Prehistoric to Renaissance. 3 credits.
   An introduction to the art and architecture of the world from cave painting through European Pre-Renaissance art. Includes ancient through medieval art in Europe and the Near East as well as Asian and African arts.

*GARH 206B. Survey of World Art II: Renaissance to Modern. 3 credits.
   An introduction to the art and architecture of the world from the Renaissance through Modern ages. Includes European Renaissance, Baroque, Enlightenment, 19th and 20th centuries as well as Asian and African art.

*GBUS 160. Business Decision Making in a Modern Society. 3 credits.
   This course introduces the concepts of basic technology literacy, information retrieval via electronic and hard copy; along with critical thinking skills. Basic business principles will be introduced to reinforce these concepts and their relationships. The course provides opportunity for applying the skills of oral and written communication to a variety of learning activities.

*GCOM 121A, B, C, D, E. Basic Human Communication. 3 credits.
   Study of the basic process of oral human communication. Emphasis on oral skills in message composition, analysis of subject matter, listening, definition of communication purposes and participation skills in a variety of oral communication contexts. The class will focus on dyadic, small group and public communication events.

*GECO 200. Introduction to Macroeconomics. 3 credits.
   Behavior of economic systems at the national and international levels. Topics include the methodology of economics as a social science, supply and demand, definition and measurement of important macroeconomic variables and theoretical models of growth, inflation, interest rates, unemployment, business cycles, stabilization policy, exchange rates and the balance of payments.
*GECO 270. International Economics. 3 credits.
A survey of the relationships among national economies, including trade theory, trade policy, international monetary relations and the balance of payments.

*GEIC 101C. Individuals in the Human Community I. 3 credits.
An introductory study of how individuals develop and function in the human community. Emphasis on personal identity, health and wellness, conflict communication and citizen leadership. Consideration of social influence, ethical behavior and relationship between individual and community.

*GEIC 102C. Individuals in the Human Community II. 3 credits.
The study of principles and practices of participation in healthy organizations, institutions and communities. Emphasis on dynamics of organizational and community change, diversity and patterns of communication and conflict, citizen-leadership and social responsibility. Consideration of ethics and cultural distinctions in communities, influences on health behaviors, social freedoms and responsibilities and community conflict mediation.

*GENG 101. Reading and Composition. 3 credits.
Reviews the principles of grammar and usage in standard written English, directs reading and analysis of selected examples and in frequent compositions stresses logical relation and arrangement of ideas, clarity and interest. Procedures are introduced for using the library efficiently and for preparing a research paper. Students must earn credit for GENG 101 before they are eligible to take GENG 102 in a Cluster One package. Both of these courses or the equivalent are prerequisites for all courses in English numbered 200 or above.

*GENG 102 A, B, C, E. Reading and Composition. 3 credits.
Reviews the principles of grammar and usage in standard written English, directs reading and analysis of selected examples and in frequent compositions stresses logical relation and arrangement of ideas, clarity and interest. Procedures are introduced for using the library efficiently and for preparing a research paper. Students must earn credit for GENG 101 before they are eligible to take GENG 102 in a Cluster One package. Both of these courses or the equivalent are prerequisites for all courses in English numbered 200 or above.

*GENG 235B. Survey of English Literature: From Beowulf to the 18th Century. 3 credits.
A general survey presented chronologically.

*GENG 236B. Survey of English Literature: 18th Century to Modern. 3 credits.
A general survey presented chronologically.

*GENG 238B. Survey of World Literature. Ancient World through the Renaissance. 3 credits.
Introduction to masterpieces of world literature through the 17th century, with emphasis on non-Western literature.

*GENG 239B. Survey of World Literature: 18th Century to Modern. 3 credits.
Introduction to masterpieces of world literature since the 17th century, with emphasis on non-Western literature.

*GENG 247. Survey of American Literature: From the Beginning to the Civil War. 3 credits.
A general survey presented chronologically.

*GENG 248. Survey of American Literature: From the Civil War to the Modern Period. 3 credits.
A general survey presented chronologically.

*GENG 260. Survey of African-American Literature. 3 credits.
Survey of literature by African-American authors from the 18th century to the present.

*GFR 233C. French for Oral Communication. 3 credits.
This course aims to prepare the student, with basic language skills and knowledge, for comprehension and oral communication in the target foreign language. Vocabulary, video, audio, printed materials and in-class activities will focus on the practical application of theories and concepts developed in package companion courses.

*GGEO 120. Human and Physical Landscapes. 3 credits.
An investigation of the diversity of people, places and activities in the global community. Special emphasis is placed on the study of the spatial organization of people and their interaction with the physical environment.

*GGEO 200. Geography: The Global Dimension. 3 credits.
This course promotes global understanding through the study of humans, their institutions and processes and the resulting interactions between humans and the environment. The course will include the study of western and non-western peoples and their social, cultural, political and economic relationships.

*GGER 233C. German for Oral Communication. 3 credits.
This course aims to prepare the student, with basic language skills and knowledge, for comprehension and oral communication in the target foreign language. Vocabulary, video, audio, printed materials and in-class activities will focus on the practical application of theories and concepts developed in package companion courses.

*GHIS 101B. World Culture to 1650. 3 credits.
A survey of important historical developments from pre-historic times to the mid-17th century. Emphasis is given to the rise and decline of great global civilizations and to their lasting contributions to humanity.

*GHIS 102B. World Culture Since 1650. 3 credits.
A survey of important historical developments from the mid-17th century to the present. Emphasis is given to the growth of nationalism, the development of colonialism and to global events, problems and conflicts of the present century.
*GHIS 199D. Seminar in Thinking and Writing: An Introduction to the 21st Century. 4 credits.

This course examines issues in recent history as a means to introduce, develop and enhance critical thinking, research and writing skills. The seminar format allows for careful examination of issues and frequent writing exercises that emphasize the articulation of well reasoned arguments in an organized and grammatically acceptable prose.

*GHIS 225. United States History. 4 credits.

A survey of U.S. history from the colonial period to the present, emphasizing the development of American civic life, the involvement of the U.S. in world affairs and the cultural richness of the American people. This course stresses the analysis and interpretation of primary sources.

*GHIS 100A. Personal Wellness. 3 credits.

Emphasizes lifestyle behaviors contributing to health promotion and disease prevention. General areas affecting health status are identified and suggestions made as to how health-related behaviors, self-care and individual decisions contribute to wellness and influence dimensions of health. An one-hour weekly individual physical wellness lab is included.

*GIDS 154D. Information Sources and Tools. 3 credits.

This course will acquaint students with printed and digitized information sources found in the university library as well as through computer-accessed systems; will offer guided experiences in their use in the research process and an experience in using various computer productivity programs in obtaining, storing and reporting research information.


This course introduces current topics in the life science technologies through lecture and laboratory exercises. Topics include focus on advances in genetic engineering, the hierarchy of life and the rise of infectious diseases. Prerequisites: GIST 112B.

*GIST 112B. Environmental Issues in Science and Technology (2, 2). 3 credits.

This course integrates the study of biology, chemistry and statistics within the context of environmental issues that include ozone depletion, acid rain, global warming, waste management and biodiversity. Corequisites: GIST 141B, or permission of instructor.

*GIST 141B. Analytical Methods I (3, 2). 4 credits.

This course introduces the student to science and the scientific method; introductory statistics and graphical data analysis, with emphasis on using the computer for managing data and for empirical modeling; functions for modeling real-world systems; critical thinking skills for analyzing arguments involving data; project management. Corequisites: GIST 112B, or permission of instructor.

*GHUM 102. God, Meaning and Morality. 3 credits.

A study of the ways in which various communities perceive and understand the basis of knowledge, reality, meaning and purpose, ethics and aesthetics. Students will explore religious and nonreligious approaches to these issues.

*GHUM 120. What is an American? 3 credits.

A cross-disciplinary investigation into the complexities of constructing American identities. Will discuss topics such as cultural conflicts and crossings, immigration, assimilation and alienation, as well as religious, philosophical and historical origins of American identities.

*GHUM 200. Great Works. 3 credits.

An intensive examination of great literary works that focus on key issues of knowledge and reality, meaning and purpose, ethics and aesthetics. Discussion, analysis and intensive writing are required. Texts will vary by section and instructor.

*GHUM 250. Past Cultures. 3 credits.

An interdisciplinary study within the modern period of arts and humanities. Students will examine the interrelationships among history and the arts, philosophy, religion and the intellectual ideas of the time. Topics will vary by section.

*GHUM 251. Modern Perspectives. 3 credits.

An interdisciplinary study within the modern period of arts and humanities. Students will examine the interrelationships among history and the arts, philosophy, religion and the intellectual ideas of the time. Topics will vary by section.

*GHUM 252. Cross-Cultural Perspectives. 3 credits.

An interdisciplinary study to broaden awareness of one’s own culture and that of others. Issues raised will show how people have responded to the human condition in varied ways throughout history, from different religious or philosophical points of view or from different artistic media.

*GKIN 100B. Lifetime Fitness and Wellness (2, 2). 3 credits.

This course is designed to help students adopt and maintain the behaviors associated with an active and healthy lifestyle. Through this course students will learn the importance of maintaining wellness through a physically active lifestyle. Through lectures and labs, students study and develop the behavioral patterns consistent with the current knowledge base in fitness and wellness.

*GMAD 150E. Mediated Communication: Issues and Skills. 3 credits.

Study of how mediated communication shapes the content, meaning and impact of spoken, written and pictorial messages. Emphasis on the skills required to integrate speech, text and imagery into mediated presentations. Consideration of issues involving the critical evaluation of mass-mediated communication, their effectiveness and influence.

*GMTH 115E. Environmental Mathematics. 4 credits.

A course emphasizing the nature of mathematical thinking and the relation between abstract concepts and real world problems. Special attention is given to applications in environmental science.
*GMUS 200. Music in General Culture. 3 credits.
    Designed to increase the student's perceptual ability in listening to music and to encourage an interest in both familiar and unfamiliar music. Primary study will be on music from the classic, western heritage. Folk, jazz, popular and non-Western music may also be considered. Meets fine arts general education requirement.

*GMUS 203. Music in America. 3 credits.
    Knowledge and skills to increase the student's perceptual ability in listening to music with a survey of American music; examining relationships between popular and classical music styles. Meets fine arts and American studies general education requirements.

*GMUS 205. Global Music to 18th Century. 3 credits.
    A survey of the musical traditions of Asia, Europe, Africa and the Americas. The course will focus on aesthetics, musical forms and styles and the relationship of music to the other arts. Emphasis will be placed on historical, religious and cultural events and their influence on the development of music.

*GMUS 206. Global Music 18th Century to Present. 3 credits.
    A survey of the musical traditions of Asia, Europe, Africa and the Americas.

*GPHL 101. Introduction to Philosophy. 3 credits.
    An introduction to the basic problems and concepts of philosophy—the nature of man and the self, ethics, theories of knowledge, philosophy of religion, etc. as revealed in the writings of the major philosophers.

*GPHL 120A. Critical Thinking. 3 credits.
    An introduction to the techniques for analyzing and evaluating information in everyday experience. The functions of language will be discussed. Techniques for judging the strengths of arguments and the probable truth of the arguments' premises will be examined.

*GPHL 205A. American Political System. 4 credits.
    An examination of institutions, processes and intellectual concepts which structure American political activity. The interaction of the political system with the changing American society and America's changing role in world affairs are also treated. The course provides an introduction to quantitative methodology. Not open to students who have received credit for POSC 225 or POSC 226.

*GPSY 101. General Psychology. 3 credits.
    A study of the nervous system, sensation, perception, consciousness, learning, memory, language, intelligence, motivation, emotion, life span development, personality, psychopathology, psychotherapy, social psychology and the scientific method.

*GPSY 160. Life Span Human Development. 3 credits.
    An introduction to human development. Emphasis is on life span processes within physical, emotional, cognitive, psychosexual, social, personality and moral development.

*GSCI 101A. Physics, Chemistry and the Human Experience (3, 0). 3 credits.
    A survey of the fundamental concepts, principles and ideas of chemistry and physics. Particular emphasis is placed on understanding the development of the principles and their application in understanding the world around us. Prerequisite or co-requisite: One of the following, MATH 103, 107, 205, 220 or 235.

*GSCI 102A. Environment: Earth (3, 0). 3 credits.
    A study of geological processes causing global change and their impact on human thought. The relationship between some geological processes and life on the Earth is also considered. Prerequisite: GSCI 101A. Students having credit for GEOC 100 or its equivalent may not receive credit for GSCI 102A. Not available for major or minor credit in geology.

*GSCI 103A. Discovering Life (3, 0). 3 credits.
    An introduction to major concepts in biology, with an emphasis on understanding science as a method for obtaining knowledge. Relationships between some biological and geological processes are also considered. Prerequisite: GSCI 101A. Students having credit for BIO 101 may not receive credit for GSCI 103A. Not available for major or minor credit in biology.

*GSCI 104A. Scientific Perspectives (0, 2). 1 credit.
    A study of topics selected to allow students to participate in mathematical and scientific problem solving approaches to knowledge. Prerequisite or corequisite as indicated in the schedule of classes. GSCI 101A, 102A or 103A.

*GSCI 115E. Earth Systems, Cycles and Human Impact. 3 credits.
    Earth System science views the Earth as a single system consisting of processes operating at time scales from seconds to the age of the Earth. Earth System science integrates aspects of geology, meteorology, oceanography and biology in which humans are an integral part of the system.
    Earth System science provides an important tool for understanding the relationship between humans and the Earth. From the Earth Systems perspective, humans are a part of the Earth System, dependent on it, impacting it and responding to its variability. The systems of the Earth have been in dynamic equilibrium for billions of years, cycling matter, gases and energy through a set of complex reservoirs (atmosphere, hydrosphere, biosphere, lithosphere and near space environment). During the last few thousand years, humans have assumed an even larger role in Earth processes.
*GSCI 116E. Human Ecology. 3 credits.

An introduction to the study of humans (Homo sapiens) as part of the natural world, with important relationships with other species and subject to the natural laws that influence all life on earth. Human ecology is the study of humans in their environmental context and this course examines the ways that ecosystems, both natural and human-modified, have profoundly affected human biology, both in the past and in the present. Interactions between human biology and the myriad environments in which they live (and have lived) are driven by the forces of evolution, and the emphasis here is on the ways that humans have adapted to environmental change.

*GSCI 121F. The Physical Nature of Light and Sound (3, 1). 4 credits.

A study of the physical properties of light and sound waves. Topics include production, propagation and spectral analysis of waves. Applications to be covered include musical instruments, sound reproduction, room acoustics, optical instruments (cameras, projectors, lasers) and color in art and nature. The course will include outside-of-class experiential activities.

*GSCI 122F. The Science of Vision and Audition (3, 1). 3 credits.

A study of human interaction with sound and light waves. Topics include basic neuroanatomy, anatomy of the auditory and visual systems, visual perception (color vision, object perception, perceptual illusions), auditory perception (pitch, loudness, sound localization), visual deficiencies. The course will include outside-of-class experiential activities. Prerequisite: GSCI 121F and either MATH 103, MATH 205, or MATH 235.

*GSOC 110E. Social and Cultural Dimensions of U.S. Society. 3 credits.

Social and Cultural Dimensions of U.S. Society examines social and cultural dimensions critically in order to demonstrate that we as individuals contribute to the construction of the social reality in which we participate. This unified course will introduce students to a social perspective which helps them to understand the extent to which their lives and experiences are influenced by and contribute to social structuring and contextualizing culture.


An examination of current global social issues, such as industrialization, economy, work, inequality, social movements and socio-political change. Addresses questions of definition, nature, history, patterns and consequences of various issues, using sociological perspectives to examine and critique proposed social policies.

*GSPN 233C. Spanish for Oral Communication. 3 credits.

This course aims to prepare the student, with basic language skills and knowledge, for comprehension and oral communication in the target foreign language. Vocabulary, video, audio, printed materials and in-class activities will focus on the practical application of theories and concepts developed in package companion courses.

*GTHE 210. Introduction to Theater. 3 credits.

Study of the theater as an art form. Emphasis on introducing students to a broad spectrum of theatrical activity and opinion. Consideration of the components that comprise a theater event including acting, directing, design, costuming, lighting and playwriting.

Geography

Center for Geographic Information Science

*G GEO 120. Human and Physical Landscapes. 3 credits.

An investigation of the diversity of people, places and activities in the global community. Special emphasis is placed on the study of the spatial organization of people and their interaction with the physical environment.

GEOG 130. Geographic Tools and Techniques. 2 credits.

An introduction to the primary software packages used in the geography program. Students will be introduced to word processing, spreadsheets, evaluating geographical data with SPSS and gathering geographical information on the World Wide Web. An overview of digital mapping, digital image processing and geographic information systems will be presented.

GEOG 185. Introduction to Aerial Imagery Interpretation (1, 2). 2 credits.

Introduction to techniques and methods of interpreting aerial imagery. The student will utilize the instruments of the photo interpreter (e.g., computerized graphics and high power stereo optics). Includes an understanding of data collection and reporting of military facilities using photo interpretation keys.

*GGEO 200. Geography: The Global Dimension. 3 credits.

This course promotes global understanding through the study of humans, their institutions and processes and the resulting interactions between humans and the environment. The course will include the study of western and non-western peoples and their social, cultural, political and economic relationships.

GEOG 210. Physical Geography (2, 2). 4 credits.

The physical aspects of man’s environment. World distributions of land forms, weather and climate, natural vegetation, soils, minerals and the interrelationships between these factors. Also considered are earth-sun relationships and map projections.

GEOG 215. Map Reading and Interpretation. 3 credits.

An introduction to a wide variety of maps used by the educator, layman and public official with critical analysis of various cartographic techniques used to represent and present information.
GEOG 230. Quantitative Methods in Geography. 3 credits.
This course focuses on research methods and quantitative techniques used in geographic analysis. Topics include quantitative research design, hypotheses testing, identifying when to employ univariate and/or bivariate analysis, spatial autocorrelation, index number development, unobtrusive measures in geography, shape and density measurement, cluster analysis, analysis of variance, correlation and linear regression.

GEOG 240. Natural Resource Conservation. 3 credits.
Examines the basic principles of resource use including geographic, economic, social and political processes. Explores concepts underlying such issues as resource consumption and conservation, environmental perception, resource and environmental conflict, population growth and control, carrying capacity and the evolution of the environmental movement.

GEOG 245. Introduction to Global Positioning Systems. 2 credits.
The course will provide basic training in the use of Global Positioning Systems. It will include instruction in the use of GPS field units, creation and use of data dictionaries, preplanning fieldwork, and post-processing of field data.

GEOG 250. Agricultural Systems and Global Food Production. 3 credits.
This course concentrates on the geographic study of various agricultural systems and emphasizes how social, cultural and economic behavior and the physical environment influences global food production. Issues on the interconnection between world hunger, the place-to-place differences in farming practices, agricultural policies and the environment will be covered.

GEOG 265. Thematic Cartography (2, 2). 4 credits.
Thematic cartography introduces each student to basic cartographic theory and computer mapping techniques. Emphasis is placed on using maps for spatial analysis and geographic research. Using computer mapping software, students examine basic concepts of thematic map development, elementary cartometrics, map evaluation and map publication. Prerequisite: GEOG 130.

GEOG 280. Introduction to Cultural Geography. 3 credits.
The course themes are human culture, cultural variations over the face of the earth and how these variations are related to selected global issues. Topics covered include world demographics, world religions and languages, patterns of human migration, political systems and human conflict, agricultural systems and impact on the physical world.

GEOG 285. Aerial Photograph Interpretation (2, 2). 4 credits.
Study of the characteristics, quality, geometry and physical properties of aerial photographs. Data collection and interpretation of the relationship between physical and cultural geography will be emphasized. Prerequisite: GEOG 130.

GEOG 295. Population Geography. 3 credits.
An introduction to population measurement, sources of population data and modern population problems. Topics include distribution, the changing age structure and migration issues affecting the U.S. At the global scale topics include distribution, global migration patterns, the refugee crisis and prospects for feeding the rapidly increasing human population.

GEOG/GEOL 310 A-D. Environmental Impact. 2-3 credits, repeatable to total of 6 credits.
Focuses on a selected environment realm. The course will examine the interface between human activities and environmental systems. It will address the impacts of social, economic and political activities on the environment. GEOG/GEOL 310 A-Atmosphere (air pollution); B- Biosphere (vegetation/wildlife); C-Hydrosphere (water); D- Lithosphere (geologic hazards/land issues). Prerequisite: GEOG 210, GEOL 100 or GEOL 110.

GEOG 315A-B. Field Studies in Geography. 3 credits.
To expose the student, by field work in geography, to the operational techniques of observation, interviewing and collection of data necessary for problem solving in physical and cultural geography. GEOG 315A-Physical; GEOG 315B-Cultural.

GEOG 335. Geography of Africa. 3 credits.
The physical environment, natural resources and human geographic patterns of Africa.

GEOG 336. Geography of North America. 3 credits.
A study of the physical environment of North America followed by an analysis of the spatial structures of the area's population and economy. The basis for the regional differentiation is considered, followed by a region-by-region analysis of each of these unique interactions of physical and cultural phenomenon.

GEOG 337. Geography of Latin America. 3 credits.
A study of countries in Latin America which includes their physical landforms, weather and climate, biogeography, natural resource base, attitudes toward the physical environment, characteristics of the economy, the current political role in international activities and population characteristics that include growth rate, distribution, migration and ethnicity.

GEOG 340. Ecological Biogeography. 3 credits.
Examines the distribution of plants and animals on Earth and the factors contributing to the existence and alteration of these patterns. The ecological and human processes shaping the natural environment are examined.

GEOG 345. Economic Geography. 3 credits.
A systematic economic-geographic survey of primary, secondary and tertiary production. Emphasis will be placed on mining, manufacturing, trade and agriculture.

GEOG 346. Geography of Europe. 3 credits.
Geographic assessment of regional and national characteristics of the European nations.
GEOG 348. Russia and the Former U.S.S.R. 3 credits.
A study of the people and culture of Russia with an emphasis on their social, economic and political processes and situation. An analysis of how the interaction of geographic, social, political and economic factors affect the lives of the Russian people.

GEOG 349. Geography of East Asia. 3 credits.
A survey of the physical and cultural environments of China, Taiwan, Japan, the Koreas, Indochina and the countries of Southeast Asia. Topics covered include weather and climate, physiography, natural resources, population characteristics, political systems, aspects of the economy and the role that each country plays on the regional and world stage.

GEOG 365. Advanced Thematic Cartography (2, 2). 4 credits.
Using automated mapping techniques, statistical software and the World Wide Web, students will examine advanced cartographic design theory, thematic map construction and investigate the use of maps for conducting spatial analysis within the discipline of geography. Laboratory work will require students to reproduce a publishable-quality map for a client.

GEOG 366. Geographic Information Systems. 3 credits.
An introduction to the theory and practice of building a geographic information system. Computer-aided design is used to digitize, edit and plot spatial data. Attribute data and spatial data are combined in a GIS and fundamental GIS analysis functions are performed.

The study of the characteristics and qualities of non-conventional remote sensing imagery as it applies to the inventory and assessment of various environmental conditions. Prerequisite: GEOG 285.

GEOG 390. Independent Study. 3 credits.
An opportunity for in-depth study in the student’s particular sub-field within the discipline. All students will conclude with a research project.

GEOG 410. Urban Geography. 3 credits.
Study of the city in its geographic setting, giving perspective of modern urban problems, origin and growth of cities and influence of location on city functions. Looks at the internal structure of cities and the influence of the internal structure on its population groups.

GEOG 415. Climatology. 3 credits.
The systematic study of the atmosphere with emphasis on such phenomena as temperature, pressure, humidity, air masses and fronts; the occurrence of these phenomena on a global basis; and a detailed survey of the worldwide distribution of climate types.

GEOG 440. Wilderness Techniques. 3 credits.
Wilderness legislation, legal mandates and wilderness issues are examined. Human impacts due to overuse or conflicting uses are studied, as are the philosophical aspects of wilderness ethics. (This course is taught entirely in the field. Camping and hiking and permission of the instructor are required.)

GEOG 450. Topics in Geography. 1-3 credits.
Examination of geographic topics that are of current interest. Can be repeated as course content changes.

GEOG 466. Geographic Databases (2, 2). 4 credits.
An introduction to digital spatial data used by industry and government. Integration of large spatial data sets into the geographic information system, data management, data exchange and the geodetic transformation of data sets are emphasized. Digital elevation models, land use data, population data, digital topographic map and street network data will be used. Prerequisite: GEOG 366.

GEOG 467. Applied Geographic Information Systems. 3 credits.
The course advances the knowledge of GIS in theory and practice. Spatial databases and complex attribute data will be created. Analytical GIS functions will be used to create new data sets. The results of the GIS analysis will be transferred to a professional presentation tool. Prerequisite: GEOG 366.

GEOG 475. Political Geography. 3 credits.
Geopolitical conflicts and issues are examined. Concepts such as territoriality, nationalism, religious and ethnic struggle, environmental degradation and freedom and justice are discussed in the context of political unrest. Significant geopolitical theories and social and economic processes are explored.

GEOG 486. Applied Digital Image Processing. 3 credits.
This course advances the knowledge and theory of digital image processing of remote sensed imagery. Analytical functions will be applied to projects relevant to further study and issues faced by clients. Prerequisite: GEOG 285 or 385.

GEOG 490. Special Studies in Geography. 1-3 credits each semester.
Designed to give capable students in geography an opportunity to complete independent study under faculty supervision. Prerequisite: Admission by recommendation of the instructor and permission of the department head.

GEOG 491. International Studies - Capstone. 3 credits.
This course fulfills the capstone experience requirement for students majoring in geography. Students will make arrangements for the international experience. A research project or work-study project will be designed by the student and faculty member prior to departure. The research or work will be carried out in the country of travel.
GEOG 495. Internship in Geography. 3-6 credits.
Practical experience in and observation of a public agency utilizing geographic methodology. Work experience will be supervised by an official of the agency and a faculty member. Periodic seminars and written reports are required. Prerequisite: Geography major of junior or senior standing, with permission of department coordinator.

GEOG 499. Honors. 6 credits.
Year course.

Geology

Department of Geology and Environmental Studies

GEOL 100. The Earth and Man (3, 2, 3, 0 alternating). 3 credits.
A study of the earth. Major topics will include minerals and rocks and internal and surface processes which create constant change in the planet. The evolution of scientific thought and the impact of geology on man and man’s impact on the earth will be emphasized.

*GEOL 110. Physical Geology (3, 2). 4 credits.
A systematic study of earth materials including the internal and external processes that affect earth structure and landforms. Topics include the genesis/properties of rocks and minerals, plate tectonics and the agents of change that drive surface processes and land-form development.

GEOL 200. Environmental Geology. 2 credits.
The course examines Earth processes as they interrelate with human activities. It includes natural hazards (earthquakes, volcanoes, landslides and floods), geological aspects of pollution and waste disposal, mineral and energy resources and global change. Emphasis is placed on understanding how geological processes affect human activities and how humans impact the Earth's natural systems.

GEOL 211. Introduction to Oceanography. 3 credits.
An introduction to the oceanography of coastal environments including barrier islands, estuaries and tidal marshes. The physical, geological and biochemical characteristics of coastal waters will be discussed in the context of the economic and social pressures brought to bear on these areas by an increasing global population.

GEOL 220. Genetic Mineralogy (2, 2). 3 credits.
A study of mineral genesis. Emphasis is directed toward mineralogical environments, mineral associations and the geology/mineralogy of classical localities. An appreciation of mineral value and aesthetics is incorporated throughout the course.

GEOL 230. Evolution of Earth (3, 2). 4 credits.
An introduction to the evidence, methods and assumptions used by scientists to unravel the earth’s origin and history. Emphasis on rock analysis/interpretation, modern and ancient processes of mountain building, origin and evolution of life and the history of the North American continent. Prerequisite: GEOL 110 or permission of instructor.

GEOL 232. Planetary Geology. 3 credits.
A survey of currently developing ideas in planetology including origin of the planets, meteorites and planetary interiors. Also included are geologic processes and land forms on the moon and terrestrial planets, their modification under various planetary environments and analogies to familiar earth land forms. Prerequisite: GEOL 100 or 110.

GEOL 235. Soils and Land Use (2, 2). 3 credits.
The origin, distribution and properties of soils are emphasized in the lecture, laboratory and field. These aspects are used to determine the value of various soil types for such uses as agriculture, forestry, recreation, urban development and structural foundations. Prerequisite: GEOL 100 or 110 and CHEM 131 or permission of the instructor.

GEOL/BIO 350. Invertebrate Paleontology (3, 2). 4 credits.
The history of nonvertebrate life from its origin, through evolving biogeochemical cycles, origin of eukaryotes and multicellularity, evolutionary records of all major groups and theoretical issues such as major group origins, adaptive radiation patterns, extinctions, functional adaptations and paleoecology. Prerequisite: GEOL 230, a general zoology course or permission of the instructor.
GEOL 355. Geochemistry of Natural Waters (2, 2). 3 credits.
Study of chemical theory and reactions important in natural water systems. The role of atmospheric, geologic and biological inputs in determining the geochemistry of streams, rivers and oceans. Prerequisite: CHEM 131-132 or equivalent.

GEOL 364. Stratigraphy and Basin Analysis (3, 3). 4 credits.
Lecture emphasizes application of sedimentologic and stratigraphic principles to identifying and interpreting depositional systems and examines how eustasy (sequence theory) and local tectonics influence the distribution of depositional systems under different plate tectonic regimes. Lab emphasizes critical field observation, application of theory to stratigraphic analysis and writing scientific papers. Prerequisite: GEOL 230.

GEOL 365. Structural Geology (3, 2). 3 credits.
Major and minor structures of the earth’s crust. Mechanical principles involved in folding, faulting, jointing and penecontemporaneous structures. The causes and results of mountain building processes. Preparation and interpretation of geologic maps. Prerequisite: GEOL 110; GEOL 230 recommended.

GEOL 385. Geomorphology (2, 2). 3 credits.
The description, classification, analysis, origin and evolution of land forms. The physical and chemical processes that have formed the present landscape. Advanced interpretation of topographic maps. (This course is required by the U.S. Civil Service Commission for employment as a geologist in the federal government.) Prerequisite: GEOL 100, 110 or GEOG 210.

GEOL 390. Laboratory Techniques in Geology (2, 2). 3 credits.
An elective course for science majors. A study of the basic theories and techniques of laboratory methods and instrumentation. Implementation and application of techniques to geological problems. Prerequisite: GEOL 280 and permission of the instructor.

GEOL/MATS 395. Geologic Perspectives in Materials Science & Engineering. 3 credits.
A one-semester course which emphasizes the commonalties between the geological sciences and materials science. Course includes topics from mineralogy, crystallography, petrology and structural geology which are also important in metallurgy and ceramics. Prerequisite: An introductory course in any physical science or integrated science and technology (i.e., GEOL 110, CHEM 131, PHYS 140 or ISAT 141) and at least one additional advanced course in the major.

GEOL 398. Topics in Geology. 1-4 credits.
Study of selected topics in geology at the upper-division level. Prerequisite: Permission of the instructor. May be repeated for credit with change of topic.

GEOL 399. Field Geology. 6 credits.
Field methods include use of Brunton compass, telescopic alidade and plane table and compass traversing. A synthesis of geologic concepts and principles leading to the construction and interpretation of geologic and topographic maps. Prerequisite: GEOL 364 and 365 or permission of the instructor.

GEOL/BIO 405. Vertebrate Paleontology (3, 1). 3 credits.
A study of the origin and evolution of the vertebrates. Emphasis will be on understanding how the processes of earth evolution and biological evolution have interacted through time to produce a coherent picture of vertebrate history. Prerequisite: GEOL 230, a general zoology course or permission of the instructor.

GEOL 410. Engineering Geology (2, 2). 3 credits.
Study of the applications of geology to engineering practice. Topics include soil mechanics, foundations, engineering classification of soils, slope stability and mineral aggregates. Prerequisite: GEOL 340 and MATH 205 or 235 or equivalent.

A systematic survey of the tectonic evolution of the North American continent and the corresponding evolution of depositional basins and paleoenvironments. Prerequisite: GEOL 364 and 365 or permission of the instructor.

GEOL 450. Geology Seminar. 1 credit.
An in-depth study of a particular problem in geology e.g., plate tectonics, astrogeology, low-temperature geochemistry, etc.) Scientific literature will be reviewed and discussed. Prerequisite: 20 credits in geology.

GEOL 460. Geohydrology (2, 2). 3 credits.
Basic concepts of subsurface water as a part of the hydrologic cycle. Topics include storativity and permeability in porous media, principles of flow, computer applications, groundwater exploration, mapping and environmental aspects of groundwater. Prerequisite: GEOL 100 or 110 and two semesters of calculus or permission of the instructor.

GEOL 489. Quantitative Methods in Geology (2, 3). 3 credits.
A mathematical approach to the treatment of geological problems. Emphasis is placed on the techniques for the management and analysis of geological data. Prerequisite: Computer programming or permission of the instructor.

GEOL 491. Geological Literature Research. 3 credits.
Provides instruction in the definition of geological problem, sources and strategies for a literature search and the preparation of both written and oral reports. Prerequisite: Geology major (senior standing) and permission of the instructor.
GEOL 493. Geophysics (2, 2). 3 credits.
A survey of applied geophysics and the relationship of geophysics to the earth as a whole. Topics include seismology, gravity, magnetism, electrical methods and additional selected subjects. The laboratory will stress reduction and interpretation of geophysical data. Prerequisite: GEOL 100 or 110 and two semesters of calculus or permission of the instructor.

GEOL 497. Problems in Geology. 1-3 credits each semester.
An undergraduate research course in one of the fields of geology. Open to advanced students who have adequate preparation. Prerequisite: Permission of the instructor.

GEOL 499. Honors in Geology. 6 credits.
Year course.

German

Department of Foreign Languages and Literatures

GER 101-102. Elementary German (4, 1). 4 credits each semester.
The fundamentals of German through listening, speaking, reading and writing. Practice in pronunciation and development of comprehension. One hour’s work a week in the language laboratory.

GER 231-232. Intermediate German. 3 credits each semester.
A thorough review of grammar, vocabulary building, conversation, composition and reading. Prerequisite: One year of college German or equivalent.

*GER 265. German Literature of the 18th and 19th Centuries in Translation. 3 credits.
A survey of German literature of the 18th and 19th centuries, with an emphasis on Classicism and Romanticism. All lectures and readings are in English. Does not count toward a major, minor or licensure in German.

*GER 266. Contemporary German Literature in Translation. 3 credits.
German literature from the 1920s to the present. All lectures and readings are in English. Does not count toward a major, minor or licensure in German.

GER 300. German Conversation and Composition. 3 credits.
Intensive training in the use and comprehension of modern, everyday German with emphasis on conversation and composition to give students confidence to express themselves in idiomatic German. Instruction is in German. Prerequisite: GER 232 or equivalent.

GER 307. German Civilization to 1800. 3 credits.
A study of society, economics, politics and the arts in central Europe from Indo-European beginnings to 1800. Instruction is in German. Prerequisite: GER 300.

*GER 308. German Civilization Since 1800. 3 credits.
A study of German life and culture and the outstanding contributions of German-speaking people. Instruction is in German. Prerequisite: GER 300.

GER 320. Advanced German Grammar. 3 credits.
Advanced course in morphology and syntax with extensive practice in composition. Instruction is in German. Prerequisite: GER 300 or equivalent.

GER 330. Business German. 3 credits.
A study of commercial and trade vocabulary and customs in conjunction with practice in commercial communication, including letter writing, interviews and interpretation. Instruction is in German. Prerequisite: GER 300.

GER 400. Advanced Conversation. 3 credits.
Discussions deal with topics of current interest. Prerequisite: GER 300 or equivalent.

GER 405. The Age of German Classicism. 3 credits.
Reading and interpretation of significant works of Lessing, Schiller and Goethe. Instruction is in German. Prerequisite: Three years of college German or equivalent.

GER 415. German Romanticism and Realism. 3 credits.
A study of romanticism and realism with emphasis on romantic poetry and the realistic novel. Instruction is in German. Prerequisite: Three years of college German or equivalent.

GER 426. Modern German Literature. 3 credits.
A study of the works of major German writers of the 20th century. Instruction is in German. Prerequisite: Three years of college German or equivalent.

Gerontology

Department of Social Work

GERN/SOCI 280. Social Gerontology. 3 credits.
An interdisciplinary introduction to the study of aging. The course provides an overview of issues surrounding aging in contemporary society: personal, familial, communal and societal.

GERN 305. Programs and Services for the Elderly. 3 credits.
A review of the programs and services provided for the elderly in the public and private sectors of America. Observations and participation in local programs for the elderly will be required. Prerequisite: GERN/SOCI 280.

GERN 400. Skills and Techniques in Gerontological Assessment. 3 credits.
The study of the skills and techniques used in assessing the elderly client. Assessment is made from the holistic approach: physical, psychological and social. Prerequisite: GERN/SOCI 280.
GERN 487. Special Topics in Gerontology. 3 credits.
Examination of selected topics in gerontology that are of current importance in the field of gerontology. Course may be repeated for credit.

GERN 490. Special Studies in Gerontology. 1-3 credits.
Independent study in gerontology under faculty supervision. Limited to gerontology minors. Can be repeated for credit. Prerequisite: GERN/SOCI 280, GERN 305 and 400.

GERN 495. Field Experience/Seminar in Gerontology (1, 6). 3 credits.
Supervised field experience in gerontology settings that allows observation and experience with the well and frail elderly. A minimum of six hours in the assigned setting each week and one hour seminar on campus. Prerequisite: GERN/SOCI 280, GERN 305 and 400, major elective and approval of the gerontology minor adviser.

**Graphic Design**

**School of Art and Art History**

GRPH/ART 243. Computer Graphics (0, 6).
3 credits.
Introduction to graphics on the computer. Students will explore hardware and software that relate to the presentation of graphic design projects and computer generated imaging. Prerequisite: ART 140 and 160 or permission of instructor.

GRPH 244. Design Methodology (0, 9). 3 credits.
Exploration of strategies for conceptualizing, analyzing and solving design problems. Emphasis is placed on graphic presentation of ideas and the creative process. Prerequisite: ART 140.

GRPH 246. Introduction to Typography (0, 9).
3 credits.
Introduction to the study of letter-forms for their aesthetic and communicative value. Emphasis will be placed on the form and function of basic type including a fundamental understanding of electronic prepress. Prerequisite: GRPH 243, Computer Graphics.

GRPH/SMAD 339. Web Design. 3 credits.
Introduction to web design through theory and practical application. Assignments will focus on the unique form, content and structures associated with designing for the World Wide Web. Special emphasis on the creative process and the graphic presentation of ideas. Prerequisite: GRPH 243, Computer Graphics.

GRPH/ART 343. 3-D Computer Modeling (0, 9).
3 credits.
An exploration of computer aided visualization combining three-dimensional modeling and rendering software. The applications involve the creation and manipulation of 3-D images in virtual space. Prerequisite: ART/GRPH 243 or GRPH/ART 243.

GRPH 345. Advertising Design (0, 9). 3 credits.
Through theory and practical application, the student learns to communicate a message using advertising design principles, the creative process, and the message/client/consumer relationship. Prerequisite: GRPH 243.

GRPH 346. Intermediate Typography (0, 9).
3 credits.
Continued study of letter-forms for their aesthetic and communicative value. Emphasis will be placed on historical and sociological issues. Prerequisite: GRPH 246.

GRPH 347. Package Design (0, 9). 3 credits.
Through theory, demonstrations and practical application students learn to design in three-dimensions. Focus will be placed on aesthetics, as well as the form and function of a product's housing. Prerequisite: ART 240, GRPH 243 and 246. (Formerly GRPH 447)

GRPH 349. Illustration (0, 9). 3 credits.
Through demonstrations, theory, and practical application, students are introduced to numerous media and illustrative techniques. Encouraged experimentation is tempered by an understanding of problem solving and conceptualization. Prerequisite: ART 140 and 160.

GRPH/ART 390. Topics in Art or Graphic Design. 1-3 credits.
Studies in selected topics in art and graphic design. May be repeated when course content changes. See Schedule of Classes for current topics.

GRPH 444. Survey of Graphic Design History. 3 credits.
A survey of the history of graphic design from the Paleolithic period to the present day. The course emphasizes the past 100 years of Western design. Prerequisite: ARTH 205 and ARTH 206.

GRPH 446. Advanced Typography (0, 9). 3 credits.
Advanced study of letter-forms for their aesthetic and communicative value. Emphasis will be placed on creative solutions reflecting knowledge of contemporary typography and design issues. Prerequisite: GRPH 346.

GRPH 447 Type and Image (0, 9). 3 credits.
This course emphasizes creative solutions of type and image in visual communication. Prerequisite: GRPH 446. (Formerly GRPH 446)

GRPH/ART/ARTH 490. Independent Studies in Art or Art History or Graphic Design. 1-3 credits each semester.
Independent activity such as research or studio practice under supervision. Projected studies in any area of the school's offerings must be arranged with the instructors who will direct them. (Offered only with consent of the director.)

GRPH/ARTH 495. Internship in Art or Art History or Graphic Design. 1-8 credits.
An off-campus program prepared and monitored on an individual basis. Internships are designed to provide practical experience in the arts. ARTH 494 is a prerequisite for internships in museums and galleries. Prerequisite: Permission of instructor and director.
GRPH 498. Graphic Design Portfolio. 3 credits.

An examination of the business of graphic design, employment strategies and freelance opportunities. Focus is placed on solidification of the portfolio for employment and/or graduate school. This course is strongly recommended for the last semester prior to graduation. Prerequisite: GRPH 446. Prerequisite/co-requisite: GRPH 447.

GRPH/ART/ARTH 499. Honors (1, 3, 2). 6 credits total for three semesters.

Greek

Department of Foreign Languages and Literatures

GRK 101-102. Elementary Greek. 4 credits each semester.

Designed to provide a reading knowledge of Classical Greek as well as New Testament koiné. Greek life, thought and culture are stressed. Especially recommended for science, English and philosophy majors.

GRK 231-232. Intermediate Greek. 3 credits each semester.

An intensive reading course. Selections from Classical Greek writers and/or the New Testament. Prerequisite: One year of college Greek or equivalent.

Hebrew

Department of Foreign Languages and Literatures

HEBR/REL 131-132. Elementary Biblical Hebrew. 4 credits each semester.

An introductory course for students who intend to acquire the ability to read the Massoretic text of the Bible. Systematic study of the fundamentals of grammar, with emphasis on reading, pronunciation and translation.

HEBR/REL 231-232. Intermediate Biblical Hebrew. 3 credits each semester.

An intensive reading course. Selections from the Masoretic text of the Bible. An introduction to the critical apparatus used within the Massoretic text as well as the variant reading apparatus printed in the Biblia Hebraica Stuttgartensia. Prerequisite: One year of college biblical Hebrew or equivalent.

History

Department of History

*GHIS 101B. World Culture to 1650. 3 credits.

A survey of important historical developments from prehistoric times to the mid-17th century. Emphasis is given to the rise and decline of great global civilizations and their lasting contributions to humanity.

*GHIS 102B. World Culture Since 1650. 3 credits.

A survey of important historical developments from the mid-17th century to the present. Emphasis is given to the growth of nationalism, the development of colonialism and to global events, problems and conflicts of the present century.

HIST 201. Europe to 1789. 3 credits.

An examination of Europe from 1000 to 1789 with emphasis on the formation of indigenous European institutions through the rise of national monarchies, the Renaissance, Reformation, age of exploration, Scientific Revolution and Enlightenment. Emphasis is given to the intellectual developments of Europe that created a dynamic modern civilization.

HIST 202. Europe 1789 to the Present. 3 credits.

An examination of Europe from 1789 to the present with emphasis upon the democratic and industrial revolutions, the rise of nation states, building of global empires, World War I, the Russian Revolution, totalitarianism, World War II, decolonization, the Cold War and European integration.

*GHIS 225. United States History. 4 credits.

A survey of U.S. history from the colonial period to the present, emphasizing the development of American civic life, the involvement of the U.S. in world affairs and the cultural richness of the American people. This course stresses the analysis and interpretation of primary sources.

HIST 263. Africa. 3 credits.

Emphasis is placed on the social and cultural aspects, as well as the emerging role the continent plays in contemporary world history.

HIST 267. Latin America. 3 credits.

A survey of the history of Latin America examining the pre-Columbian Indian civilizations, the Spanish and Portuguese conquests, the colonial era and its impact, the wars of independence and selected case studies of the early national period.

HIST 268. Contemporary Latin America. 3 credits.

A survey of the historical development of Latin America during the 20th century with emphasis on selected nations which have played a significant role in Latin American affairs.

HIST 270. Modern Middle East. 3 credits.

A survey of the political evolution of the modern Middle East. Emphasis is placed on the impact of Western imperialism, problems of Arab nationalism, origins of the Arab-Israeli conflict and involvement of the Soviet Union and the United States in the Middle East today.

HIST 273. Asia to 1600. 3 credits.

A broad survey of Eastern civilizations from their beginnings to about 1600, with emphasis on their distinctive aesthetic and intellectual traditions as well as the development of their political, social and economic institutions.

HIST 274. Modern Asia. 3 credits.

A historical survey of East, South and Southeast Asia with emphasis on the impact of the West on the traditional societies and governments of the Eastern World, as well as nationalism, colonialism, wars, revolutions and industrialization in Asia in modern times.
HIST 300. U.S. Military History. 3 credits.
A survey of the evolution of the American way of war from the Colonial era to the post-Cold War period emphasizing the development of military and naval institutions, U.S. strategic doctrine and the social legacies of the U.S. military establishment.

HIST 301. European Military History. 3 credits.
A survey of European military history (including Russia/Soviet Union) from the Hellenistic period through the 1982 Falklands-Malvinas War. The evolution of strategic doctrine and military institutions, their effect upon European society and their role in Europe imperialism will be emphasized.

HIST 310. American Business History. 3 credits.
A survey of the role of business in the United States from the Colonial period to the present, with emphasis on the entrepreneurial spirit, business developments and innovations and the relationship between the federal government and commerce.

HIST 315. History of Sport in America. 3 credits.
An interpretive survey that examines the social and cultural history of America from the late 19th century to the present through sports.

HIST 320. Women in U.S. History. 3 credits.
A survey of the role of women in the United States from the Colonial period to the present. Attention is given to contributions of the ordinary women, the Women’s Rights movements, the impact of women on reform and political movements and the changing status of women in society.

HIST 321. European Women’s History. 3 credits.
A survey of the gendered history of European women from the Classical to the Modern Era. Attention will focus on women in England, France, Germany and Central Europe, but material will also be presented on women of the Baltic, Mediterranean and Slavic regions.

HIST 323. The Old South. 3 credits.
Economic, cultural and social history of the antebellum South, 1790-1860. The region’s political history will serve as a supporting part of the course.

HIST 324. History of Western Science. 3 credits.
An intellectual and social survey of Western science from the pre-Socratic philosophers of the Near East to contemporary U.S. “Big Science.” Topics include Classical, Medieval and Renaissance natural philosophy; the Scientific Revolution; Enlightenment science, the 19th-century organizational and research revolutions; and science in America. No scientific knowledge assumed.

HIST 325. Technology and Western Society. 3 credits.
A survey of the interaction between technology and Western society since the Middle Ages. Topics include Medieval, Renaissance, Enlightenment, 19th-century British and continental technologies, intercultural technology transfer, the American mass production ethos, technology within modern totalitarian and national security states and technological futurism. No technical knowledge assumed.

HIST 330. U.S. Diplomatic History. 3 credits.
A survey of major themes, events and forces shaping the development of American foreign relations throughout our history. Key documents such as the Monroe Doctrine will be examined, as will significant issues including manifest destiny, the United States as a world power, origins of Cold War and detente.

HIST 339. Selected Themes in U.S. History. 3 credits.
Selected themes are studied in depth. See Schedule of Classes for current classes. Course may be repeated when content changes.

HIST 340. Internship in History. 3 credits.
Provides students with practical experience in using historical skills in a public or private agency. Periodic student reports and seminars required. This course may be repeated with permission of department head. Prerequisite: Junior or senior standing, HIST 395 (History Seminar) and permission of the department head.

HIST 341. Selected Themes in World History. 3 credits.
Selected themes are studied in depth. See Schedule of Classes for current classes. Course may be repeated when content changes.

HIST 350. Virginia. 3 credits.
An interpretive survey of the history of Virginia from its Colonial beginnings to the present time.

HIST 353. Trans-Mississippi West. 3 credits.
A survey of the United States west of the Mississippi from the early Spanish exploration and settlement through the progressive waves of explorers, trappers, miners, soldiers and farmers as they encountered the western environment, the Indians and one another.

HIST 355. Afro-American History to 1865. 3 credits.
A survey of the experience and changing status of African-Americans in the United States from 1619 through the Civil War, with attention to the West African background, cultural developments, social and political movements, slavery and the slave trade, dual-consciousness and emancipation.

HIST 356. Afro-American History Since 1865. 3 credits.
A survey of the experience and changing status of African-Americans in the United States from Reconstruction to the present, emphasizing the strengthening of social and cultural institutions; Afro-American leadership; the impact of segregation; the Great Migration; labor, protest and cultural movements; pan-Africanism; the Civil Rights Movement; and contemporary issues.

HIST 371. India. 3 credits.
A survey of India from the earliest times to the attainment of national independence following World War II. Particular attention is given to traditional Indian civilization, its impact on India’s Asian neighbors, its response to the intrusion of Western power, the British in India and the struggle for independence.
HIST 383. Early England. 3 credits.
A survey of English history from the earliest times to the late 17th century. Particular attention is given to the rise of Parliament and the growth of limited monarchy.

HIST 384. England and the Empire-Commonwealth. 3 credits.
A survey of English history from the late 17th century to the present. Particular attention is given to the growth of British democracy, the industrial revolution and the rise and fall of the British Empire.

HIST 385. Russia to 1855. 3 credits.
A survey of Russian history from the origins of the Russian state down through the reign of Nicholas I. Attention is given to such topics as the Kievan state, the Muscovite state, the rise of Imperial Russia and the emergence of Russia as a Western European power.

HIST 386. Russia Since 1855. 3 credits.
A survey of Russian history from the reign of Alexander II to the present. Attention is given to such topics as the decline of Imperial Russia, the rise of the revolutionary movement and the emergence and consolidation of the Soviet state.

HIST 387. Germany to 1871. 3 credits.
A survey of the German-speaking lands of Central Europe from the end of the Thirty Years War to the creation of the Second Reich. Emphasis is given to political, diplomatic and military affairs, although social, economic and cultural developments are included.

HIST 388. Germany Since 1871. 3 credits.
A survey of German history during the Second Reich, World War I, the Weimar Republic, the Third Reich and the post-World War II periods of Cold War and Detente. Emphasis is given to political, diplomatic and military affairs, although social, economic and cultural developments are included.

HIST 389. France to 1789. 3 credits.
A survey of French history from the Capetians to the end of the old Regime, 987-1789. Particular attention is given to France's medieval heritage; the impact of the Renaissance; the Protestant revolt; the policies of Richelieu, Colbert and Louis XIV; and the background of the French Revolution.

HIST 390. France Since 1789. 3 credits.
A study of the social and political events which determined the course of French history from the Revolution through the Fifth Republic. Particular attention is given to the social, economic and cultural currents which have contributed to the making of contemporary France.

HIST 391. Travel Studies Seminar. 3 credits.
Designed to encourage the student to augment the regular academic program through independent investigation including organized travel-study. Prearrangements must be made with a designated faculty member who will direct the study with preparatory instructions and final requirements. Prerequisite: Permission of the department head.

HIST 395. History Seminar. 3 credits.
A seminar to introduce history as an academic discipline and acquaint the student with the work of major historians and problems of historical interpretation. Students will be required to complete assignments designed to develop basic skills in historical research and writing. Open to all students, but required of history majors.

HIST 399. Special Studies in History. 3 credits.
Designed to give capable students in history an opportunity to complete independent study under faculty supervision. Prerequisite: Permission of the department head.

HIST 402. Workshop in Colonial American Life. 3 credits.
A comparative study of life in 18th-century Virginia and Massachusetts. Colonial Massachusetts is studied through the use of printed materials, films and lectures. Published sources, lectures and a four-day study visit to Colonial Williamsburg are used for the study of Virginia. Supplemental fee required. Prerequisite: HIST 395 (instructor's permission required to waive HIST 395 prerequisite for non history majors).

HIST 411. Colonial America. 3 credits.
An interpretive survey of England's mainland colonies from 1558-1776. Prerequisite: HIST 395 (instructor's permission required to waive HIST 395 prerequisite for non history majors).

HIST 420. U.S. History, 1763-1800. 3 credits.
An interpretive study of the political, economic, social and cultural history of the United States from the French and Indian War through the Federalist period. Prerequisite: HIST 395 (instructor's permission required to waive HIST 395 prerequisite for non history majors).

HIST 422. U.S. History, 1789-1848. 3 credits.
An interpretive study of the political, economic, social, intellectual and cultural history of the United States from the ratification of the Constitution through the Mexican-American War. Prerequisite: HIST 395 (instructor's permission required to waive HIST 395 prerequisite for non history majors).

HIST 425. Civil War and Reconstruction. 3 credits.
A study of the background, development, personalities and aftermath of the Civil War. Special attention is given to the coming of the war and different explanations of its causes and to the policies and significance of Reconstruction, with varying interpretations thereof. Prerequisite: HIST 395 (instructor's permission required to waive HIST 395 prerequisite for non history majors).

HIST 430. The Gilded Age: U.S. History, 1877-1901. 3 credits.
An interpretive study of the United States from the conclusion of the Civil War until the assassination of William McKinley, with special emphasis on industrialization, urbanization, western and overseas expansion, early reform movements and politics. Prerequisite: HIST 395 (instructor's permission required to waive HIST 395 prerequisite for non history majors).

An interpretive study of U.S. history from the rise of Theodore Roosevelt through the 1920s. Emphasis is placed on the reform movements of the period and the problems and issues generated by the nation’s emergence as a world power and an industrial, urban society. Prerequisite: HIST 395 (instructor’s permission required to waive HIST 395 prerequisite for non history majors).


An interpretive study of U.S. history from the onset of the Great Depression in 1929 through the inauguration of John Kennedy in 1961. Emphasis is given to the New Deal, World War II and the early years of the Cold War. Prerequisite: HIST 395 (instructor’s permission required to waive HIST 395 prerequisite for non history majors).


An interpretive study of U.S. history from the inauguration of John Kennedy in 1961 through the present. Emphasis is given to the Kennedy-Johnson administrations, Vietnam, the counterculture and student movement, Watergate and the Reagan years. Prerequisite: HIST 395 (instructor’s permission required to waive HIST 395 prerequisite for non history majors).

HIST 439. Selected Topics in American History. 3 credits.

Selected topics are studied in depth. See Schedule of Classes for current topic. Course may be repeated for credit when content changes. Prerequisite: HIST 395 (instructor’s permission required to waive HIST 395 prerequisite for non history majors).

HIST 445. Latin America and the United States. 3 credits.

An examination of the diplomatic relations between Latin America and the United States from the era of the Latin American revolutions for independence to the present. Emphasis is placed on the Monroe Doctrine and its extensions, as well as the development of the Pan-American system. Prerequisite: HIST 395 (instructor’s permission required to waive HIST 395 prerequisite for non history majors).

HIST 446. Mexico, Central America and the Caribbean. 3 credits.

A study of the nations of the area with special attention given to Mexico, Panama and Cuba. Prerequisite: HIST 395 (instructor’s permission required to waive HIST 395 prerequisite for non history majors).

HIST 447. South America. 3 credits.

Historic development of the continent with special attention to selected nations since the early national period of the 19th century. Prerequisite: HIST 395 (instructor’s permission required to waive HIST 395 prerequisite for non history majors).

HIST 450. Studies in Military History. 3 credits.

A seminar addressing topics in U.S. or European military and naval history such as military operations, strategic theory, institutional evolution, the nature of modern war, technology and the warrior ethos, military-industrial-academic relations and military ethics and the laws of war. Prerequisite: HIST 300 or HIST 301 depending on the seminar topic offered.

HIST 455. World Political and Social Thought to Early Modern Times. 3 credits.

A study of the most significant political and social ideas from around the world. Emphasis will be both on the classics and popular ideas from Western Asia, China, Greece, India, Rome, Japan and the developing states of Europe from ancient times through the 18th century. Prerequisite: HIST 395 (instructor’s permission required to waive HIST 395 prerequisite for non history majors).

HIST 460. Modern Japan. 3 credits.

The development of Japan from around the mid-19th century to the present. Attention is given to the collapse of isolation, the end of the Shogunate, the creation of a modern state, the years of party government, the rise of militarism, the Pacific war, the occupation and the new Japan. Prerequisite: HIST 395 (instructor’s permission required to waive HIST 395 prerequisite for non history majors).

HIST 461. Europe in the Era of World War II. 3 credits.

An examination of the origin, conduct and immediate aftermath of World War II in Europe. Attention is given to Germany’s early wartime successes, Hitler’s “New Order” in Europe and the emergence and ultimate victory of the Allied “Ground Alliance.” The major military campaigns are discussed as are collaboration, resistance and liberation. Prerequisite: HIST 395 (instructor’s permission required to waive HIST 395 prerequisite for non history majors).

HIST 462. The Rise and Fall of Nazi Germany, 1918-1945. 3 credits.

An advanced study of the period of Nazi domination in Germany covering the Weimar Republic, the rise of the NSDAP, the Third Reich and World War II. The nature of totalitarianism, the character of Adolph Hitler and the general Weltanschaung of Germany under the Third Reich are emphasized. Prerequisite: General education history or equivalent; and Prerequisite: HIST 395 (instructor’s permission required to waive HIST 395 prerequisite for non history majors).

HIST 463. Tudor-Stuart England. 3 credits.

A study of the economic, intellectual, political and religious development of the English people from 1485 to 1714, with special attention to the constitutional struggles of the 17th century. Prerequisite: General education history or equivalent; and Prerequisite: HIST 395 (instructor’s permission required to waive HIST 395 prerequisite for non history majors).
HIST 464. Renaissance and Reformation. 3 credits.
A study of High Medieval civilization as an introduction to the history of Modern Europe. Attention is given to the Italian and Northern Renaissance, fragmentation of Western christendom, intellectual impact of Luther and Calvin on Western thought and structure of Tudor despotism in England. Prerequisite: HIST 395 (instructor's permission required to waive HIST 395 prerequisite for non history majors).

HIST 465. 20th-Century Britain. 3 credits.
An examination of the major themes of British history in the 20th century, with attention to political, social, economic, diplomatic and imperial topics from the pre-World War I through post-World War II decades. Prerequisite: General education history or equivalent; and Prerequisite: HIST 395 (instructor's permission required to waive HIST 395 prerequisite for non history majors).

HIST 466. The Family, 1400-1800. 3 credits.
An examination of the bibliography, methods and substance of family history in Europe and America. Emphasis will be on sources, structure, patterns of change and continuity and stages of family life to the Industrial Revolution. Prerequisite: HIST 395 (instructor's permission required to waive HIST 395 prerequisite for non history majors).

HIST 469. The History of Flight: The Jet and Rocket Era. 3 credits.
A survey of the history of aviation in the era of jet and manned space flight. This course examines the origins and development of jet flight, considers its impact on military and commercial aviation and traces the course of manned space flight from its beginning to the present. Prerequisite: HIST 395 (instructor's permission required to waive HIST 395 prerequisite for non history majors).

HIST 470. Modern Africa. 3 credits.
Africa in the 20th century, with special emphasis on Senegal, Ivory Coast, Gold Coast (Ghana), Nigeria and Zaire. Prerequisite: HIST 395 (instructor's permission required to waive HIST 395 prerequisite for non history majors).

HIST 472. Greece and Rome. 3 credits.
Advanced study of Greek and Roman history from the Minoans to the fall of the Roman Empire. Emphasis is given to political, military, social and cultural development of each civilization. Prerequisite: HIST 395 (instructor's permission required to waive HIST 395 prerequisite for non history majors).

HIST 473. The Islamic World. 3 credits.
The rise of Islam and spread of the Ottoman Empire. A survey of the Middle East from the pre-Islamic period to World War I. This course provides a background for understanding the present situation in the Middle East. Prerequisite: HIST 395 (instructor's permission required to waive HIST 395 prerequisite for non history majors).

HIST 474. The Byzantine Empire. 3 credits.
A survey of the political, economic, military and religious history of the Byzantine Empire, 330-1453. Prerequisite: HIST 395 (instructor's permission required to waive HIST 395 prerequisite for non history majors).

HIST 475. Soviet Russia. 3 credits.
A study of Soviet Russia from the 1917 Revolution to the present. Readings and discussion will emphasize significant political, economic, social and cultural developments. Prerequisite: HIST 395 (instructor's permission required to waive HIST 395 prerequisite for non history majors).

HIST 476. Ancient History. 3 credits.
A survey of the rise and fall of ancient civilizations of the Near East and Mediterranean area. Prerequisite: HIST 395 (instructor's permission required to waive HIST 395 prerequisite for non history majors).

HIST 477. Medieval Europe. 3 credits.
Attention is focused on Europe in the Middle Ages, with a concentration on social and intellectual aspects and the development of parliamentary institutions. Prerequisite: HIST 395 (instructor's permission required to waive HIST 395 prerequisite for non history majors).

HIST 478. Eastern Europe. 3 credits.
A study of the lands between Germany and Russia, from the Baltic to the Balkans. Emphasis is on the Hapsburg Empire and its successor states, the origins of the World Wars, the post-World War II communist governments and the cultural and intellectual contributions of the Eastern European people. Prerequisite: HIST 395 (instructor's permission required to waive HIST 395 prerequisite for non history majors).

HIST 480. Modern China. 3 credits.
China since 1840, with special emphasis on China's response to the West, the disintegration of imperial China, the abortive experiments in republicanism, the origin and nature of Chinese Communism. China under Mao and post-Mao developments. Prerequisite: HIST 395 (instructor's permission required to waive HIST 395 prerequisite for non history majors).

HIST 481. Early Modern Europe: The New Worlds of Exploration and Science. 3 credits.
A study of the major changes in world view brought about by exploration and science in the 15th, 16th and 17th centuries in Europe. Attention is given to the causes, individuals and technology involved in each movement. Prerequisite: HIST 395 (instructor's permission required to waive HIST 395 prerequisite for non history majors).

HIST 483. Baroque and Revolutionary Europe, 1648-1815. 3 credits.
A study of the unfolding of European civilization from the Baroque through the Napoleonic era. Attention is given to the Old Regime and its institutions, the causes of popular revolts, the Enlightenment, the beginnings of industrialism and urbanism and the impact of the French Revolution on Europe. Prerequisite: HIST 395 (instructor's permission required to waive HIST 395 prerequisite for non history majors).
HIST 484. 19th-Century European Civilization, 1815-1914. 3 credits.

An interpretive study of European history from the Congress of Vienna to the outbreak of World War I. Particular attention is given to the intellectual climate of the period, with emphasis on liberalism, nationalism, socialism and nihilism. Prerequisite: HIST 395 (instructor's permission required to waive HIST 395 prerequisite for non history majors).

HIST 485. The Arab Middle East, 1945 to Present. 3 credits.

A survey of the special problems which have beset the Arab Middle East since World War II. Special emphasis will be given to Palestinian Nationalism and the Arab-Israeli conflict, the origins of civil conflict in Lebanon, Iraqi and Syrian Baathism and the revival of Islamic fundamentalism in the area. Prerequisite: HIST 395 (instructor's permission required to waive HIST 395 prerequisite for non history majors).

HIST 486. Europe Since 1914. 3 credits.

An interpretive study of European history from World War I to the Cold War, with special emphasis on the revolutions of 1917-19, the rise of totalitarianism, the origins of the Second World War and the continuing crisis of values. Prerequisite: HIST 395 (instructor's permission required to waive HIST 395 prerequisite for non history majors).

HIST 489. Selected Topics in World History. 3 credits.

Selected topics are studied in depth. See Schedule of Classes for current topic. Course may be repeated for credit when content changes. Prerequisite: HIST 395 (instructor's permission required to waive HIST 395 prerequisite for non history majors).

HIST 491. Editing Historical Documents. 3 credits.

A seminar in the techniques of analyzing manuscript collections in order to create an edition of historical documents. Study will address the theory and practice of historical documentary editions, including collecting, selecting, transcribing, annotating, proofing, illustrating, indexing and publishing. Prerequisite: HIST 395 (instructor's permission required to waive HIST 395 prerequisite for non history majors).

HIST 493. Historic Preservation. 3 credits.

An introduction to the philosophy and techniques of historic preservation, guidelines for restoration, state and National Register forms and procedures, historic architecture, structural analysis, restoration techniques as well as the business aspects of historic preservation projects. Field trips are a major component of the course. Prerequisite: HIST 395 (instructor's permission required to waive HIST 395 prerequisite for non history majors).

HIST 494. Introduction to Museum Work. 3 credits.

(Crosslisted as ARTH 494.)

The practice and philosophy of museum work, including the areas of design, conservation, registration, education and administration. Subject is taught from the perspective of the museum profession and is applicable to diverse disciplines and types of collections. Prerequisite: HIST 395 (instructor's permission required to waive HIST 395 prerequisite for non history majors).

HIST 498. Marshall Scholars Seminar. 3 credits.

A research intensive seminar based on the manuscript collections and other primary sources of the Marshall Library. Students may choose any subject involving twentieth century diplomatic and military history and political affairs from 1900 to 1960 - the approximate dates of George C. Marshall's public service. Prerequisite: HIST 395 and acceptance into the course prior to the beginning of the semester in which they take this course.

HIST 499. Honors. 6 credits.

Year course. Prerequisite: HIST 395 (instructor's permission required to waive HIST 395 prerequisite for non history majors).

Human Resource Development

School of Education

HRD 240. Principles of Human Resource Development. 3 credits.

An introduction to the role and scope of human resource development with particular emphasis on required competencies for HRD professionals. Critical moral and ethical issues are introduced.

HRD 245. Leadership in Organizational Settings. 3 credits.

An examination of the principles of leadership and their application to group settings. Emphasis will be placed on the critical appraisal of the facets of leadership through the use of cases and readings.

HRD 370. Occupational Analysis and Assessment in Human Resource Development. 3 credits.

This course is designed to provide the basic skill level for students in the area of occupational analysis and subsequent assessment. Particular emphasis is placed on actual analysis and assessment situations with application to program and curricular design.

HRD 380. Development of Materials and Programs. 3 credits.

Designed to provide students with the basic skills necessary to design and develop skill-based training programs and courses. Emphasis will be placed on the actual design and development of training materials. Prerequisite: HRD 240, EDUC 370 or permission of the instructor.

HRD 400. Occupational Internship. 3 credits.

A structured occupational internship experience designed to provide students with the opportunity to observe within an actual occupational setting the role and scope of human resource development efforts. Minimum 400-hour experience approved by the program coordinator. (Credit may not be earned for both HRD 400 and 401)
HRD 401. Practicum in Human Resource Development. 3 credits.
A structured placement in a private sector or community-based human resource development setting with an HRD professional. The placement is designed to provide a mixture of part- and full-time placement with a total placement equivalent to three full-time weeks. Program coordinator permission only. (Credit may not be earned for both HRD 400 and 401.) Prerequisite: Permission of the program coordinator.

HRD 475. Seminar in Leadership. 3 credits.
Designed to provide senior-level students with the opportunity to face some of the dilemmas of leadership. Students will be encouraged to critically examine leaders and organizations to draw from real events the ambiguities of leadership. Course will involve extensive reading, case work and a range of guest speakers. Prerequisite: HRD 245.

HRD 480. Learning in Adulthood. 3 credits.
A study of the learning processes of the adult learner with an emphasis on adaptations of the instructional process to accommodate the differences inherent in the adult learning environment. Practical applications to actual adult learning situations are included. (Formerly HRD 450.)

HRD 490. Special Study in Human Resource Development. 3 credits.
Designed to provide in-depth and up-to-date exposure to the topics/issues pertinent to Human Resource Development and allows students to explore topics of special interest in human resource development. Prerequisite: HRD 240 or permission of the instructor.

Health

Department of Health Sciences

HTH 151. Foundations of the Health Sciences. 3 credits.
Review of the basic competencies and foundations of the health sciences including academic planning, professionalism, writing and presentation skills, information literacy, foundational principles and the roles and responsibilities of selected health science fields. This is intended to be the first course that a student takes in the health sciences major.

**HTH 204. Emergency Health Care (2, 2). 3 credits.
A survey of various dimensions of the legal aspects of emergency care, cardiopulmonary resuscitation emergencies, hemorrhage control, wounds, shock, heat injuries and other health emergencies. Selected American Red Cross and American Heart Association certifications available.

HTH 205. Prevention and Care of Athletic Injuries (2, 2). 3 credits.
Basic preventive procedures and treatment for athletic injuries. Methods of wraps and applying protective padding with wrapping and taping will be included.

HTH 205A. Therapeutic Exercise: Upper Extremity. (2, 2). 3 credits.
The rehabilitation process of upper-extremity muscular and joint injuries related to athletic activities. Additional topics include prevention of athletic injuries and aquatic rehabilitation. Prerequisite: BIO 290.

HTH 205B. Therapeutic Exercise: Lower Extremity. (2, 2). 3 credits.
The rehabilitation process of lower-extremity muscular and joint injuries related to athletic activities. Additional topics include rehabilitation facility design, budget preparation and pre-season assessment. Prerequisite: HTH 305A.

HTH 252. Sexually Related Diseases. 1 credit.
Sexually transmitted diseases and other sexual systems problems (breast and testicular cancer), nonveneral diseases, chromosomal anomalies, sexual disorders of the genitalia and urinary system problems.

HTH 270. Personal Health Promotion. 3 credits.
A survey of principles for the promotion of optimum individual, family and community health through intelligent self-direction of health behavior. Topics include the physical, mental and social dimensions of health economics; disease control; human sexuality; chemical abuse; injury control; and nutrition.

HTH 278. Alcohol: Use and Abuse. 1 credit.
Survey of the drug alcohol. Topics include pharmacological effects, patterns of use, potential for abuse, treatment programs and prevention of alcohol abuse and alcoholism.

HTH 300. Medical Terminology. 3 credits.
Study of terms that relate to body systems, anatomical structures, medical processes and procedures and a variety of diseases/disorders that afflict human organisms. Prerequisite: Permission of instructor.

HTH 302. The Language of Medicine. 1 credit.
This course introduces the student to the vocabulary of medicine through learning the prefixes, roots and suffixes used to construct medical terms.

The second course in the athletic training curriculum includes advanced study of athletic injuries/illnesses, musculoskeletal disorders and inflammatory conditions. Other topics include the importance of physical examinations and screening procedures and the relationships athletic trainers build with administrators, coaches and parents. Prerequisite: BIO 290 and HTH 205.

HTH 304A. Sports Medicine Laboratory. 3 credits.
Systematic evaluation and functional testing of athletic– and exercise–induced injuries to the upper extremities, including head and neck. Other topics include management of life-threatening situations related to athletic participation, training room design and budget preparation. Prerequisite: HTH 205 and 303.

HTH 304B. Sports Medicine Laboratory. 3 credits.
Systematic evaluation and functional testing of athletic– and exercise–induced injuries to the lower extremities. Other topics include crisis management, drug testing and the effects of anabolic steroids. Prerequisite: HTH 205 and 303.

HTH 305. Prevention and Care of Athletic Injuries (2, 2). 3 credits.
Basic preventive procedures and treatment for athletic injuries. Methods of wraps and applying protective padding with wrapping and taping will be included.
HTH 306. Therapeutic Modalities (3, 2). 4 credits.
Injury and healing process, neurophysiology applied to physical activity-related musculoskeletal injuries. Theory, application and decision-making processes using therapeutic physical modalities during the rehabilitation process will be emphasized. Prerequisite: HTH 303.

HTH 308. Therapeutic Assessment. 3 credits.
The purpose of this course is to present an overview of established and current knowledge in the major content areas in therapeutic assessment by examining the impact of work and the working environment on human body systems as they relate to health and wellness. Prerequisite: BIO 290.

HTH 310. Medical Interviewing and Physical Examination I. 1 credit.
This is the first in a four-course series that presents fundamental concepts in the physician assistant/patient relationship, skills needed to conduct complete medical histories and physical examinations of patients of all ages, systematic approaches to clinical problem solving and methodologies commonly used to communicate medical information. Prerequisite: Admission to Physician Assistant concentration or permission of program director.

HTH 311. Medical Interviewing and Physical Examination II. 1 credit.
This is the second in a four-course series that presents fundamental concepts in the physician assistant/patient relationship, skills needed to conduct complete medical histories and physical examinations of patients of all ages, systematic approaches to clinical problem solving and methodologies commonly used to communicate medical information. Prerequisite: Admission to the Physician Assistant concentration and successful completion of all previous courses in the concentration or permission of the program director.

HTH 313. Preventive Medicine. 1 credit.
The course presents strategies that physician assistants employ in promoting health and well being among the people they serve. It also examines public health strategies focused on early discovery of disease, prevention of disease and stopping the spread of disease. Prerequisite: Admission to the Physician Assistant concentration and successful completion of all previous courses in the concentration or permission of the program director.

HTH 315. Pathophysiology for Physician Assistants. 2 credits.
This course studies alterations in body functions that underlie diseases in humans. It serves as a foundation for courses in clinical medicine. Prerequisite: Admission to the Physician Assistant concentration and successful completion of all previous courses in the concentration or permission of the program director.

HTH 317. Clinical Laboratory Medicine. 2 credits.
This course presents the clinical laboratory tests used to detect and monitor common diseases and disorders. It focuses on selecting and interpreting the appropriate tests for each body system as well as performing selected tests. Prerequisite: Admission to the Physician Assistant concentration and successful completion of all previous courses in the concentration or permission of the program director.

HTH 320. Statistical Methods for Health Science Research. 3 credits.
This course reviews statistical concepts and techniques with special reference to their relation to health science applications and issues. It also reinforces the logical processes associated with statistical decision making, again with particular reference to health and medical research methods. Prerequisite: MATH 220 and HTH 354.

HTH 323. Safety and Consumer Health Issues. 3 credits.
This course contains an in-depth study of injuries, the leading cause of death for Americans ages 1 to 44. Students will analyze all major factors that contribute to personal injury and evaluate safety interventions.

HTH 330. Theories and Principles in Occupational Therapy. 2 credits.
This course introduces the student to the history, philosophy and development of the profession of occupational therapy. A variety of theoretical approaches will be examined and applied to the meaning and dynamics of purposeful activity to enhance occupational performance. Use of professional uniform terminology will be emphasized. Prerequisite: Admission to Occupational Therapy concentration.

HTH 332. Analysis of Therapeutic Process and Interaction. 1 credit.
Introduction to processes of functional groups and how individuals contribute to group dynamics and effective change within groups. Components of effective individual and group interaction aimed at achieving therapeutic goals will be explored. The foundations of self-awareness, therapeutic use of self, therapeutic observation and interviewing will be examined. Prerequisite: Admission to Occupational Therapy concentration.

This course provides an in-depth examination of conditions impeding occupational performance from birth through adolescence. Instruction of assessment and intervention strategies to be used to address functional deficits will be studied. An analysis of theory, treatment planning, uniform terminology, documentation and partnerships with other professionals provided. Prerequisite: Satisfactory completion of previous course work in concentration.

HTH 338. Analysis and Application of Therapeutic Media and Technology (1, 3). 2 credits.
This course will provide a thorough overview of therapeutic application of craft media, adaptive equipment and advanced technology utilized in practice. Introduction in activity analysis and compensatory strategies in regard to therapeutic methods and occupational performance tasks will be examined. The relationship of activity to professional theory will be discussed. Prerequisite: Satisfactory completion of previous concentration course work.
HTH 340. Perspectives in Motor Function (1, 3). 2 credits.

This course will examine principles of movement, biomechanics and motor control and their relationship to occupational performance. Traditional and contemporary approaches to assessment and intervention will be explored. Prerequisite: Satisfactory completion of previous concentration course work.

HTH 342. Seminar in School Based Practice (1, 3). 2 credits.

This course will examine the history and roles of occupational therapy personnel in school based settings. Skills related to school based practice will be addressed. Interdisciplinary collaboration and important public policy issues will be explored. Prerequisite: Satisfactory completion of previous concentration course work.

HTH 344. Functional Neuroscience (2, 4). 3 credits.

This course will examine functional performance of all aspects of the human nervous system. Specific nervous system conditions will be introduced and their impact on occupational performance, performance components and environmental contexts discussed. Prerequisite: Satisfactory completion of previous concentration course work.

HTH 346. Level One Fieldwork I. 1 credit.

This course provides a contextual setting for the application of skills and information gained from didactic course work. Participants will have the opportunity to design and implement courses of intervention under close supervision in a human services setting. Prerequisite: Satisfactory completion of previous concentration course work.

HTH 352. Environmental Health. 3 credits.

An investigation of environmental factors and their effects on the health of the individual, community and society.

HTH 354. U.S. Health Care System. 3 credits.

This course examines the structure and organization of the health care delivery system in the United States. The components, functions, financing and resources of this system are described.

HTH 355. AIDS and Other Sexually Transmitted Diseases. 1 credit.

Discussion includes theories of origins, statistics and characteristics of the causative pathogen, incubation, illness patterns, transmission, prevention and treatment of AIDS and other STDs. AIDS and other STDs in relation to prisons, children, schools, global concerns, health care systems and legal factors will be considered.

HTH 357. Coping With Stress. 1 credit.

Identifying causes and personal symptoms associated with stress and individual methods of handling stress.

HTH 358. Health Administration. 3 credits.

A study of administrative skills as they are applied in the health care setting. Unique legal perspectives of the health care system will be considered. Prerequisite: HTH 354 or permission of the instructor.

HTH 359. Leadership in Health. 3 credits.

This course will introduce students to the concept of leadership, provide opportunities to develop leadership skills, relate leadership to ethics and personal values, and assist students in creating a bridge between leadership theory and practice.

HTH 360. Health Care Marketing. 3 credits.

This course introduces the role, functions, and tasks of health care marketing. Attention is devoted to understanding basic marketing principles; using oral, written and visual electronic communications media; and developing marketing plans for health care organizations.

HTH 363. Health Economics. 3 credits.

This course explains how economic forces affect the health service sector and how economic tools can be used to assess and improve health industry performance. Efficiency and equity trade-offs are considered. Prerequisite: ECON 131 or equivalent.

HTH 365. Values in Health Care. 3 credits.

This course provides an overview of health law and its development. This basis is then used in discussion of topics in biomedical and managerial ethics.

HTH 366. Health Politics and Policy. 3 credits.

An introductory course intended to familiarize students with state and federal health policy and their relationships to politics. Emphasis is placed on the development and impact of government programs for financing, providing and regulating personal health services. Prerequisite: HTH 354.

HTH 367. Comparative International Health Systems. 3 credits.

This course concentrates on various approaches used to provide public and personal health services around the world. Strengths and weaknesses of different health care systems in terms of availability, accessibility, acceptability, cost effectiveness, continuity and quality of services will be considered.

HTH 368. International Health and Nutrition Studies. 3 credits.

This course involves participation with an interdisciplinary team which will travel outside of the United States to observe and experience the health care challenges in a developing nation.

HTH 370. School Health Program. 2 credits.

A study of health services and environmental factors which contribute to the promotion of health and prevention of disease and their interrelationships with health instruction. Emphasis is given to health appraisals and scientific bases for a healthful environment. A grade of "C" or above is required in this course.

HTH 372. Sexuality of Young Adults. 3 credits.

An in-depth study of the sexuality of college students. Emphasis will be placed on the development of sexuality with attention given to the psychological, physiological and sociological implications.

HTH 375. Pregnancy Control and Abortion. 1 credit.

An in-depth study of four areas concerning the following sexual aspects of living: contraception, abortion, sterilization and fertility-enhancing methods. The biochemical, physiological, legal, cultural and ethical aspects are considered.
HTH 378. The Use and Effects of Drugs. 3 credits.
A study of the use and pharmacological properties of popular legal and illegal drugs and their effects on the health of individuals and society.

HTH 389. Practicum in Health Education. 1-3 credits.
Selected practicum experiences which provide students with supervised practicum experiences.

HTH 390. Selected Topics in Health Science. 1-3 credits.
Study of selected topics in health science. Consult Schedule of Classes for specific topics. May be repeated for credit when course content changes.

HTH 405. Organization and Administration in Athletic Training. 3 credits.
This course is an overview of current managerial issues including staffing, budgeting, purchasing and legal concerns within the athletic training profession. In addition, this course provides a variety of experiences culminating in the knowledge and skills needed to meet entry-level competencies set by the National Athletic Trainers’ Association. Prerequisite: Permission of the instructor.

HTH 408. Managing and Interpreting Health Research Information. 2 credits.
This course will present an overview of the role of research application, interpretation and communication as related to the decision-making processes in health care fields. Prerequisite: Satisfactory completion of previous concentration course work.

HTH 410. Medical Interviewing and Physical Examination III. 2 credits.
This is the third in a four-course series that presents fundamental concepts in the physician assistant/patient relationship, skills needed to conduct complete medical histories and physical examinations of patients of all ages, systematic approaches to clinical problem solving and methodologies commonly used to communicate medical information. Prerequisite: Admission to Physician Assistant concentration and successful completion of all previous courses in the concentration or permission of the program director.

HTH 411. Clinical Problem Solving. 2 credits.
This is the fourth in a four-course series that presents fundamental concepts in the physician assistant/patient relationship, skills needed to conduct complete medical histories and physical examinations of patients of all ages, systematic approaches to clinical problem solving and methodologies commonly used to communicate medical information. Prerequisite: Admission to Physician Assistant concentration and successful completion of all previous courses in the concentration or permission of the program director.

HTH 413. Pharmacology for Physician Assistants I. 3 credits.
This is the first of two courses that provide the base of information necessary for clinical prescribing of medications. It includes pharmacokinetics, pharmacodynamics and pharmacotherapeutics. Within each class of therapeutic drugs, the course examines drug actions, interactions, reactions and contraindications. The course will also include principles of prescribing and patient compliance. Prerequisite: Admission to Physician Assistant concentration and successful completion of all previous courses in the concentration or permission of the program director.

HTH 414. Pharmacology for Physician Assistants II. 3 credits.
This is the second of two courses that provide the base of information necessary for clinical prescribing of medications. It includes pharmacokinetics, pharmacodynamics and pharmacotherapeutics. Within each class of therapeutic drugs, the course examines drug actions, interactions, reactions and contraindications. The course will also include principles of prescribing and patient compliance. Prerequisite: Admission to Physician Assistant concentration and successful completion of all previous courses in the concentration or permission of the program director.

HTH 417. Clinical Medicine I. 3 credits.
This is the first of a three-course series that examines the etiology, presentation, diagnosis and treatment of diseases and disorders common to primary care physician assistant practice. This course serves as preparation for the clinical rotations in internal medicine and family medicine. Prerequisite: Admission to Physician Assistant concentration and successful completion of all previous courses in the concentration or permission of the program director.

HTH 418. Clinical Medicine II. 5 credits.
This course provides an introductory knowledge base in pediatrics, women’s medicine and behavioral medicine. It prepares students for clinical rotations in these specialties. Prerequisite: Admission to Physician Assistant concentration and successful completion of all previous courses in the concentration or permission of the program director.

HTH 419. Clinical Medicine III. 3 credits.
This course provides an introductory knowledge base in general surgery and emergency medicine. It prepares students for clinical rotations in these specialties. Emphasis is on the primary care aspects pertinent to physician assistant practice. Prerequisite: Admission to Physician Assistant concentration and successful completion of all previous courses in the concentration or permission of the program director.

HTH 420. The Physician Assistant Profession. 1 credit.
This course will explore the principles of the PA profession, its history and place in the spectrum of health care professions. Economic, legal and societal factors influencing the profession will be discussed. Prerequisite: Admission to Physician Assistant concentration and successful completion of all previous courses in the concentration or permission of the program director.
HTH 421. Transition to Physician Assistant Practice. 1 credit.

This course examines issues related to the shift from the role of a PA student to that of a practicing PA. Topics include medical liability and risk management, business aspects of clinical practice, credentialing processes and career development. Prerequisite: Admission to Physician Assistant concentration and successful completion of all previous courses in the concentration or permission of the program director.

HTH 422. Advanced Clinical Skills. 1 credit.

This course focuses on the skills needed to provide appropriate care for individuals and groups who have specific needs based on culture, lifestyle or temporary circumstance. Prerequisite: Admission to Physician Assistant concentration and successful completion of all previous courses in the concentration or permission of the program director.

HTH 423. Pediatric Clinical Rotation. 2 credits.

During this four-week clinical rotation the student gains knowledge, experience and skill in interviewing and examining children, diagnosing and treating disorders and educating and counseling children and parents through participation in these activities while under the supervision of an experienced clinician practicing pediatric medicine. The course will also include assigned readings and exercises. Prerequisite: Admission to Physician Assistant concentration and successful completion of all previous courses in the concentration or permission of the program director.

HTH 425. Obstetrics and Gynecology Clinical Rotation. 2 credits.

During this four-week clinical rotation the student gains knowledge, experience and skill in interviewing and examining women, diagnosing and treating disorders and educating and counseling women through participation in these activities while under the supervision of an experienced clinician practicing obstetric and gynecologic medicine. The course will also include assigned readings and exercises. Prerequisite: Admission to Physician Assistant concentration and successful completion of all previous courses in the concentration or permission of the program director.

HTH 427. Internal Medicine Clinical Rotation. 4 credits.

During this eight-week clinical rotation the student gains knowledge, experience and skill in interviewing and examining children, diagnosing and treating disorders and educating and counseling patients through participation in these activities while under the supervision of an experienced clinician practicing internal medicine. The course will also include assigned readings and exercises. Prerequisite: Admission to Physician Assistant concentration and successful completion of all previous courses in the concentration or permission of the program director.

HTH 429. Family Medicine Clinical Rotation. 4 credits.

During this eight-week clinical rotation the student gains knowledge, experience and skill in interviewing and examining patients of all ages, diagnosing and treating disorders and educating and counseling patients and families through participation in these activities while under the supervision of an experienced clinician practicing family medicine. The course will also include assigned readings and exercises. Prerequisite: Admission to Physician Assistant concentration and successful completion of all previous courses in the concentration or permission of the program director.


This course provides an in-depth examination of conditions impeding occupational performance during adult and geriatric periods. Analysis of appropriate assessment and intervention strategies to be used to address functional deficits will occur. An exploration of therapy, treatment planning, uniform terminology, documentation and partnerships with other professionals will be provided. Prerequisite: Satisfactory completion of previous concentration course work.

HTH 432. Health, Wellness and Alternative Therapeutic Approaches (1, 3). 2 credits.

This course will provide instruction and practical application as to how health promotion, disease prevention and alternative therapeutic techniques can be integrated into practice. Occupational Therapy theory and literature regarding health, wellness and disease prevention will be explored. Myofascial release, cranial-sacral therapy, Feldenkrais and other contemporary approaches will be examined. Prerequisite: Satisfactory completion of previous concentration course work.

HTH 434. Level One Fieldwork II. 1 credit.

This course provides a contextual setting for the application of skills and information gained from didactic course work. Participants will have the opportunity to design and implement courses of intervention under close supervision in a human services setting. Prerequisite: Satisfactory completion of previous concentration course work.

HTH 436. Seminar in Community Based Practice. 3 credits.

As a result of current emphasis on health promotion and prevention, it is important for the occupational therapist to be cognizant of community resources and how they serve the needs of individuals with disabilities. This course will expose the student to community based models and provide practicum experiences in a local agency. Prerequisite: Satisfactory completion of previous concentration course work.
HTH 438. Administrative Functions in Occupational Therapy. 2 credits.
This course examines the roles and responsibilities of the occupational therapist in administration and management in a variety of service areas. The aspects of budgeting, staffing, program development, productivity, recruitment, ethics, utilization of OT personnel, program evaluation and working with other disciplines will be explored. Prerequisite: Satisfactory completion of previous concentration course work.

HTH 440. Preaffiliation Seminar (2, 8). 4 credits.
This course will provide final intensive preparation of the student for Level Two Fieldwork, which will begin in the same semester. Continued examination of professionalism, clinical skills, critical thinking, administration, ethics, research and fieldwork performance evaluation will be provided. Prerequisite: Satisfactory completion of previous concentration course work.

HTH 441/KIN 407. Rehabilitative Biomechanics. 3 credits.
This course is designed to introduce the student to a variety of biomechanical concepts and applications as related to the health professions. Specific attention will be given to the biomechanical aspects of the musculoskeletal system. Prerequisite: BIO 290.

HTH 442. Chronic Diseases. 3 credits.
This course examines the pathophysiological effects of chronic diseases on health and well-being. Discussions include various strategies which improve the functional status and health of individuals at risk. Prerequisite: KIN 302.

HTH 444. Level Two Fieldwork I. 8 credits.
Organized and designed by the university and fieldwork site, this course offers the opportunity for the student to participate in a variety of experiences to develop entry-level competence. Areas of assessment, planning, intervention, problem solving, administration, supervision of personnel and professional responsibilities will be intensively addressed. Prerequisite: Satisfactory completion of previous concentration course work. Level Two Fieldwork must be completed within 24 months of completion of didactic course work.

HTH 446. Level Two Fieldwork II. 8 credits.
Organized and designed by the university and fieldwork site, this course offers the opportunity for the student to participate in a variety of experiences to develop entry-level competence. Areas of assessment, planning, intervention, problem solving, administration, supervision of personnel and professional responsibilities will be intensively addressed. Prerequisite: Satisfactory completion of previous concentration course work. Level Two Fieldwork must be completed within 24 months of completion of didactic course work.

HTH 448. Postaffiliation Seminar. 4 credits.
This course will focus on dissemination of student experiences from recently completed Level Two Fieldwork. Analysis of professional development through review of actual case studies involving clinical competency, critical thinking, interdisciplinary processes, administration, ethics and research. Orientation to the national certification exam and state registration requirements will be reviewed. Prerequisite: Satisfactory completion of previous concentration course work.

HTH 450. Epidemiology. 3 credits.
A study of the causation and prevention of the major diseases that affect the quality of an individual's life. Practical skills utilized by practicing epidemiologists are emphasized.

HTH 451. Strategies for Health Change. 3 credits.
Factors which influence health behavior and characteristics of these individuals and groups. Analysis of previous programs designed to change these behaviors and the formulation of new health modification programs are included. Prerequisite: Permission of the instructor.

HTH 452. Hospital Organization and Administration. 3 credits.
An in-depth study of hospital organization and management practices including basic administrative skills. Prerequisite: HTH 358 or permission of the instructor.

HTH 454. Internship in Health Organizations. 3 credits.
Full-time directed field experience in a health organization. Opportunity provided to work in an appropriate setting. Student furnishes off-campus living and traveling expenses. Prerequisite: Permission of the instructor and a 2.5 grade point average.

HTH 455. Long Term Care Organization and Administration. 3 credits.
This course provides an in-depth examination of the organization and administration of long term care programs: nursing homes, home health services and hospice. This course is recommended for students planning careers in this area and/or intending to become licensed nursing home administrators. Prerequisite: HTH 358 and GERN 280 or permission of the instructor.

HTH 456. Ambulatory Care Services: Organization and Administration. 3 credits.
This course provides an in-depth examination of the staffing, organization, budgeting and administration of ambulatory services including the medical group practice, community- and hospital-based clinics, adult day care services and ambulatory surgery. Administration of health maintenance organizations, ambulatory care services and other managed care systems will also be discussed. Prerequisite: HTH 358 or permission of the instructor.

HTH 457. Health Status in Developing Countries. 3 credits.
An investigation of the common diseases and conditions present in individuals and communities in developing countries around the world. Emphasis is given to specific disease conditions and current trends in prevention.
HTH 458. Health Program Planning (2, 2). 3 credits.
This lecture and laboratory course introduces students to principles and the techniques employed to plan, implement and evaluate health promotion programs. Students will conduct a campus-wide event and write a grant proposal.

HTH 459. Multicultural Health Promotion. 3 credits.
This course will examine the relationship of culture on health behaviors, health statistics and program planning. The focus is to assist health professionals to develop the attitudes and skills for designing and implementing culturally sensitive health promotion strategies.

HTH 462. Managed Care. 3 credits.
The growing influence of managed health care on the organization and delivery of health services in the United States is addressed in this course. Structural and operational characteristics of managed care organizations and plans, including HMOs, PPOs and other plans are explored, as are the implications of managed care plans for the management of hospitals and other health care organizations. Prerequisite: HTH 358 or permission of the instructor.

HTH 464. Funding in Health Care. 3 credits.
General financial analysis is covered in terms of its application to health care entities. Concepts, issues and tools related to health care funding are covered. Prerequisite: CS 128, ACTG 241 and FIN 345.

HTH/SEED 470. Clinical Techniques—Health Education Methods. 3 credits.
Specific techniques and methods for students in health sciences. Competencies to be developed will include daily and unit planning, instructional methods, evaluation of student learning, micro-teaching experiences and others.

HTH 471. Health Aspects of Gerontology. 3 credits.
Promotion of health in the aged; physiological aspects of the aging process; community, state and federal health programs and services for the aged.

HTH 480. Health Assessment Techniques. 3 credits.
Examination of health risk appraisals and metabolic assessments used to implement strategies for behavioral change and improved overall wellness. Other topics include programming and group dynamics used to promote healthy lifestyle behaviors.

HTH 481. Behavioral Medicine Clinical Rotation. 2 credits.
During this four-week clinical rotation the student gains knowledge, experience and skill in interviewing and examining patients, diagnosing and treating disorders and educating and counseling patients and family members through participation in these activities while under the supervision of an experienced clinician practicing behavioral medicine. The course will also include assigned readings and exercises. Prerequisite: Admission to the Physician Assistant concentration and successful completion of all previous courses in the concentration or permission of the program director.

HTH 482. Advanced Health Assessment Techniques. 3 credits.
Skill acquisition of current health assessment techniques. These assessments are used to determine risk factors which play a role in heart disease, selected chronic diseases, and to evaluate current health status. Prerequisite: HTH 480.

HTH 483. Surgery Clinical Rotation. 2 credits.
During this four-week clinical rotation the student gains knowledge, experience and skill in interviewing and examining patients, diagnosing and treating disorders and educating and counseling children and patients through participation in these activities while under the supervision of an experienced clinician practicing surgery. The course will also include assigned readings and exercises. Prerequisite: Admission to the Physician Assistant concentration and successful completion of all previous courses in the concentration or permission of the program director.

HTH 485. Emergency Medicine Clinical Rotation. 2 credits.
During this four-week clinical rotation the student gains knowledge, experience and skill in interviewing and examining patients, diagnosing and treating disorders and educating and counseling patients and family members through participation in these activities while under the supervision of an experienced clinician practicing emergency medicine. The course will also include assigned readings and exercises. Prerequisite: Admission to the Physician Assistant concentration and successful completion of all previous courses in the concentration or permission of the program director.

HTH 487. Elective Clinical Rotation I. 2 credits.
This four-week rotation is devoted to an area of study of the student's choosing and the faculty's approval. It might be additional time in a specialty already introduced through another rotation, a different medical specialty of interest or a non-clinical area associated with the PA profession such as education, professional practice issues, etc. The course will also include assigned readings and exercises. Prerequisite: Admission to the Physician Assistant concentration and successful completion of all previous courses in the concentration or permission of the program director.

HTH 489. Elective Clinical Rotation II. 2 credits.
This four-week rotation is devoted to an area of study selected by the student from a menu of options offered by the PA program. The purpose is to provide the student with experience with a broader social context for PA practice. Options might include experience with patient populations of various cultural or socioeconomic backgrounds, inner city or rural medically underserved populations or multicultural or interdisciplinary team practices. The course will also include assigned readings and exercises. Prerequisite: Admission to the Physician Assistant concentration and successful completion of all previous courses in the concentration or permission of the program director.

HTH 482. Advanced Health Assessment Techniques. 3 credits.
Skill acquisition of current health assessment techniques. These assessments are used to determine risk factors which play a role in heart disease, selected chronic diseases, and to evaluate current health status. Prerequisite: HTH 480.

HTH 483. Surgery Clinical Rotation. 2 credits.
During this four-week clinical rotation the student gains knowledge, experience and skill in interviewing and examining patients, diagnosing and treating disorders and educating and counseling children and patients through participation in these activities while under the supervision of an experienced clinician practicing surgery. The course will also include assigned readings and exercises. Prerequisite: Admission to the Physician Assistant concentration and successful completion of all previous courses in the concentration or permission of the program director.

HTH 485. Emergency Medicine Clinical Rotation. 2 credits.
During this four-week clinical rotation the student gains knowledge, experience and skill in interviewing and examining patients, diagnosing and treating disorders and educating and counseling patients and family members through participation in these activities while under the supervision of an experienced clinician practicing emergency medicine. The course will also include assigned readings and exercises. Prerequisite: Admission to the Physician Assistant concentration and successful completion of all previous courses in the concentration or permission of the program director.

HTH 487. Elective Clinical Rotation I. 2 credits.
This four-week rotation is devoted to an area of study of the student's choosing and the faculty's approval. It might be additional time in a specialty already introduced through another rotation, a different medical specialty of interest or a non-clinical area associated with the PA profession such as education, professional practice issues, etc. The course will also include assigned readings and exercises. Prerequisite: Admission to the Physician Assistant concentration and successful completion of all previous courses in the concentration or permission of the program director.

HTH 489. Elective Clinical Rotation II. 2 credits.
This four-week rotation is devoted to an area of study selected by the student from a menu of options offered by the PA program. The purpose is to provide the student with experience with a broader social context for PA practice. Options might include experience with patient populations of various cultural or socioeconomic backgrounds, inner city or rural medically underserved populations or multicultural or interdisciplinary team practices. The course will also include assigned readings and exercises. Prerequisite: Admission to the Physician Assistant concentration and successful completion of all previous courses in the concentration or permission of the program director.
HTH 490. Special Studies in Health Education. 1-3 credits each semester.
   Designed to give the superior student in health education an opportunity to complete independent study and/or research under faculty supervision. Prerequisite: Permission of the department head.

HTH 499. Honors. 6 credits. Year course.
   ** The American Red Cross registration fees.

Hospitality and Tourism Management

College of Business

HTM 100. Hospitality and Tourism Executive Lecture Series. 1 credit.
   A series of lectures given by non-resident speakers prominent in the hospitality and tourism industry.

HTM 250. Introduction to Hospitality and Tourism Management. 3 credits.
   An orientation to the hospitality and tourism industry, its objectives, means of achieving these objectives and opportunities for career development.

HTM 260. Contract Services Management. 2 credits.
   A study of the contract services segment of the hospitality and tourism industry. The course content will focus on the type and diversity of contract venues, the nature of and components of contracts, career paths and issues and applications within contract service venues. Prerequisite: HTM 250.

HTM 268. Commercial Food Production and Service I. 2 credits.
   Introduction to food production, service and merchandising in both a classroom and laboratory environment designed to simulate a commercial food service enterprise.

HTM 269. Commercial Food Production and Service II. 1 credit.
   Advanced theory and practice in food production and service in both a classroom and laboratory environment to simulate a commercial food service enterprise.

HTM 360. Hotel Operations and Engineering. 3 credits.
   Hotel operations with emphasis on the effective management of the front office, reservations, housekeeping and maintenance management. Course includes the study of each physical system, with emphasis on safety, energy control, financial planning and design. Prerequisite: Junior standing.

HTM 362. Hospitality Industry Accounting. 3 credits.
   A study of cost control of food and beverage as it applies to the hospitality industry. Prerequisite: HTM 250, COB 242 and junior standing.

HTM/MKTG 386. Hospitality and Services Marketing. 3 credits.
   Application of marketing principles to the services sector, including the hospitality industry. The course focuses on review of customer demand for and assessment of services; the employee/customer interface; services operation management; review of the services marketing mix; and development of marketing plans for service organizations. Prerequisite: MKTG 380 or COB 300.

HTM 425. Hospitality Industry Management. 3 credits.
   Organization, management, personnel and labor as they contribute to the successful operation of the hospitality business. Prerequisite: MKT 300 or COB 300 and senior standing.

HTM 460. Hospitality and Tourism Internship. 3 credits.
   Students engage in supervised work experience in an approved hospitality and tourism organization. During this time they complete a management audit of the entire operation. The focus of the internship includes both the operational and strategic aspects of the organization. Prerequisite: Permission of the internship director and the director of hospitality and tourism management.

HTM 468. Commercial Food Production Management. 3 credits.
   Course in food service management in which students are responsible for planning and executing various food service-related functions on given dates at specified locations. Prerequisite: HTM 268, HTM 269 and HTM 362.

HTM 469. Beverage Management and Marketing. 3 credits.
   This course enables future hospitality and tourism managers to make rational decisions concerning the evaluation, purchasing, storage, pricing, merchandising and service of beverages. Beverages are examined from the points of view of production, control, import, wholesale and retail. Prerequisite: Junior standing and permission of the instructor.

HTM 485. Tourism Management and Marketing. 3 credits.
   An examination of the travel and tourism component of the industry at the local, state, national and international levels. Examines motivations of tourism and the environmental and economic impact of tourism. Management and marketing of principal industry components including transportation, intermediaries and destinations and linkages to lodging and food service are examined. Prerequisite: Junior standing.

HTM 490. Special Studies in Hospitality and Tourism Management. 1-3 credits.
   Designed to give capable students in hospitality and tourism management an opportunity to complete independent study under faculty supervision. Prerequisite: Permission of the instructor and director prior to registration.
HTM 498. Special Topics in Hospitality and Tourism Management. 3 credits.
This course is designed to allow explorations of areas of current topical concern or to exploit special situations. Course content will vary. For current course content consult your adviser. Prerequisite: Permission of the instructor.

HTM 499. Honors. 6 credits
Year course.

International Business
College of Business

IBUS 480. International Business Theory and Policy. 3 credits.
The course is designed to serve as an application of theory for business students to allow them to put the total picture of international business together. Prerequisite: Senior standing and permission of instructor(s).

IBUS 490. Special Studies in International Business. 1-3 credits.
Designed to give capable students in international business an opportunity to complete independent study under faculty supervision. Prerequisite: GPA of 2.8, recommendation of the instructor and approval of the director prior to registration.

IBUS 494. International Business Practicum. 3-6 credits.
A course available to juniors, seniors and special students which would give the student an opportunity to work in and with an organization both in the U.S. and abroad in order to gain insight into the practical side of modern international business operations. Prerequisite: Approval of director of international business and student’s major department head.

IBUS 498. Special Topics in International Business. 3 credits.
An advanced course designed to allow exploration of current topics in international business. Course content will vary. See the program director for current content. Prerequisite: Permission of the instructor.

IBUS 499. Honors. 6 credits. Year course.
See catalog description entitled “Graduation With Distinction” and “Graduation With Honors.”

International Liberal Studies
Division of Academic Affairs

ILS 290. Selected Topics in International Liberal Studies. 3 credits.
Directed exploration of the literature, history, contemporary life and general culture in London, Paris, Florence, Martinique, Salamanca and other international studies programs sponsored by JMU. Approved topics will vary.

Interior Design
School of Art and Art History

INDE 110. Introduction to Interior Design. 3 credits.
Vocabulary terminology concerning design principles, elements, materials, aspects, concepts and professional applications of the field of interior design.

INDE 145. Design Drafting (1, 5). 3 credits.
An introductory course composed of problems in drafting including isometric and oblique pictorial representation, light construction principles, floor plans, elevations and perspective drawing.

INDE 210. Interior Components and Techniques (2, 2). 3 credits.
Practical application of knowledge and skills needed to carry out an interior design plan. Emphasis on product knowledge, resource file development and material quality estimation. Prerequisite: INDE 110.

INDE 260. Design I: Residential (0, 6). 3 credits.
Residential design requiring comprehensive solutions involving program analysis, space planning, determination of interior architectural materials and design for single or multi-family dwellings. Prerequisite: INDE 145 and 210.

INDE 310. Color and Lighting. 3 credits.
Color theory and systems; light theory. Technical, mathematical and practical aspects of lighting design including calculations and fixture selections. Prerequisite: INDE 260.

INDE 330. Structural Methods (2, 2). 3 credits.
Fundamental methods and types of construction including structural components, support systems and finish materials. Prerequisite: INDE 145 and 210.

INDE 348. Presentation Techniques (0, 6). 3 credits.
(Cross-listed as GRPH 448.) The exploration of two dimensional media: pencil, ink, watercolor, design markers. Problems encourage exploration and control in a variety of design directions. Prerequisite: INDE 260.

INDE 360. Design II: Office (0, 6). 3 credits.
Commercial design involving the design, planning and analysis of office environments through programming objectives, materials and finishes and product selection and specification exploration of CAD. Prerequisite: INDE 260.

INDE 370. History of Interior Design. 3 credits.
Survey of the evolution of design in interiors from ancient to modern times with emphasis on period and furniture styles and architectural backgrounds.

INDE 380. Design III: Residential (0, 6). 3 credits.
Applications of residential design principles to the non-traditional residential structure such as hotel/motel design, hospital design, retirement homes and day care facilities. CAD fundamentals. Prerequisite: INDE 260.
INDE 420. Design IV: Contract (0, 6). 3 credits.
Contract design including nonoffice spaces such as schools, restaurants, retail stores, factories, banks and medical facilities. Use of the computer as a design and drafting tool. Prerequisite: INDE 380.

INDE 460. Design V: Open Plan Systems (0, 9).
1-3 credits, repeatable.
Commercial office design involving extensive use of open office systems. Use of computer-aided drafting techniques is emphasized. Prerequisite: INDE 360.

INDE 480. Design VI: Specialties (0, 9). 1-3 credits, repeatable.
Special purpose interiors including barrier free, adaptive reuse, historic preservation and design for the 21st century. Prerequisite: INDE 420.

INDE 490. Special Studies in Interior Design.
1-3 credits.
Exploration of special student interests regarding research and development of aspects in the field. Independent work with faculty members’ supervision.

3 credits.
Procedures and practices involved in the interior design profession. Prerequisite: INDE 480.

INDE 495. Internship (0, 12). 3 credits.
Actual working experience with a professional designer. Minimum of 12 hours each week for a period of eight weeks will be spent in a professional design studio under supervision of a design professional. Prerequisite: INDE 492.

International Affairs
College of Arts and Letters

INTA 295. Cross-National Research Skills. 4 credits.
Students learn how to conduct research from theory formulation through data collection and hypothesis testing in the field of international affairs. Special emphasis on research and computer literacy. Prerequisite: MATH 220.

INTA 489. Seminar in International Affairs. 4 credits.
This is the capstone course in the international affairs major. It provides an interdisciplinary overview of the fields within international affairs and an opportunity for students to complete individual research projects on international problems. Prerequisite: Completion of all courses in the core requirement of the major and senior standing.

Integrated Science and Technology
College of Integrated Science and Technology

Freshman – Sophomore Sequence

This course introduces current topics in the life science technologies through lecture and laboratory exercises. Topics include focus on advances in genetic engineering, the hierarchy of life and the rise of infectious diseases. Prerequisite: GIST 112B.

"GIST 112B. Environmental Issues in Science and Technology (2, 2). 3 credits.
This course integrates the study of biology, chemistry and statistics within the context of environmental issues that include ozone depletion, acid rain, global warming, waste management and biodiversity. Corequisite: GIST 141B or permission of instructor.

ISAT 131. Connections I (1, 2). 2 credits.
This connections course addresses how science, technology and society interact with respect to ethics and the economy. The class explores ethical dilemmas associated with science and technology and how economic factors influence technical decision-making. All topics are discussed in the context of contemporary issues in science and technology.

"GIST 141B. Analytical Methods I (3, 2). 4 credits.
This course introduces the student to science and the scientific method; introductory statistics and graphical data analysis, with emphasis on using the computer for managing data and for empirical modeling; functions for modeling real-world systems; critical thinking skills for analyzing arguments involving data; project management. Corequisite: GIST 112B or permission of instructor.

ISAT 142. Analytical Methods II (2, 2). 3 credits.
This course includes the use of calculus through differentiation and an introduction to integration in order to model continuous systems in the physical sciences; modeling of one- and two-dimensional motion, use of the computer to numerically solve selected problems in mechanics. Prerequisite: ISAT 141 or permission of instructor.

ISAT 180. Topics in Integrated Science and Technology. 1-4 credits.
Special topics in integrated science and technology which are of interest to the entry-level student. May be repeated for credit when course content changes. Students should consult the instructor prior to enrolling for the course. Prerequisite: Permission of instructor.
ISAT 211. Issues in Modern Production (2, 2). 3 credits.
This course introduces the student to manufacturing terminology and how automation and other technologies are impacting this discipline. Discrete service and continuous-process manufacturing will be addressed. Chemistry and statistics concepts pertinent to manufacturing will be covered. Prerequisite: ISAT 141 or consent of instructor.

ISAT 212. Energy Issues in Science and Technology (2, 2). 3 credits.
Introduction to scientific and economic concepts relevant to energy. Concepts are taught within the context of three or four themes, e.g. residential energy efficiency, renewable energy sources, “make-or-buy” fossil energy application and space power systems. Themes may change from year to year reflecting contemporary issues and opportunities to link with industry and government agencies. Prerequisite: ISAT 241 or consent of instructor.

ISAT 231. Connections II. 3 credits.
An in-depth treatment of the political and policy-making dynamics related to science and technology issues. The U.S. and global political systems are explored; critical reflection on the role of science and technology in society and the tensions between science, technology and democratic processes is emphasized.

ISAT 241. Analytical Methods III (2, 2). 3 credits.
This course is a continuation of ISAT 142 with a focus on single-variable calculus (including an introduction to differential equations) to model systems involving work, energy, waves, electricity and magnetism. Applications are made to lasers and optics. Prerequisite: ISAT 142 or equivalent.

ISAT 242. Analytical Methods IV (2, 2). 3 credits.
Use of formal logic to represent and assess properties of natural language constructs important to scientific inquiry, with application to the development and use of knowledge-based systems; introduction to procedural programming and its uses for producing and tailoring information systems supporting scientific, technical and business problem solving. Prerequisite: Sophomore standing and ISAT 141.

ISAT 280. Projects in Integrated Science and Technology. 1-4 credits.
Projects or special topics in integrated science and technology which are of interest to the lower-division student. May be repeated for credit when course content changes. Projects or topics selected may dictate prerequisites. Students should consult the instructor prior to enrolling for the course. Prerequisite: Permission of instructor.

Junior – Senior Sequence

ISAT 300. Foundations of Instrumentation and Measurement (2, 2). 3 credits.
Fundamental nature of measurement in the practice of science, how and why measurements are taken and representative instrumentation. Data collection in science (measuring physical properties and biometrics), statistical tools for analyzing data and visualization of data. Prerequisite: ISAT 241.

ISAT 301. Instrumentation and Measurement in Energy (0, 2). 1 credit.
Instrumentation is used to acquire data from representative systems that include mechanical, thermal, solar, chemical and nuclear energy. Students analyze the data to enhance understanding of these forms of energy. Energy transport processes are also characterized. Computer-based data acquisition is emphasized. Prerequisite: ISAT 212 and ISAT 300 or permission of instructor.

ISAT 302. Instrumentation and Measurement of the Environment (0, 2). 1 credit.
Traditional and contemporary analytical laboratory and field techniques used in environmental quality monitoring are surveyed. Emphasis is placed on understanding the physical, chemical and biological basis of these techniques. Hands-on laboratory and field work will be emphasized, in addition to quality control/assurance of environmental data. Corequisite: ISAT 320 or permission of instructor.

ISAT 303. Instrumentation and Measurement in Biotechnology (0, 2). 1 credit.
Instrumentation is used to acquire data from representative systems that are relevant to modern manufacturing processes. Process control instrumentation is also studied. Topics include shop floor data collection, electronic sensors and actuators, pneumatics and hydraulics. Computer-based data acquisition is emphasized. Prerequisite: ISAT 211 and 300 or permission of instructor.

ISAT 305. Instrumentation and Measurement in Biotechnology (0, 2). 1 credit.
This course provides a hands-on experience of the techniques and instrumentation used in the modern biotechnology laboratory. Topics include aseptic techniques for establishing microbial cultures, detection and analysis of recombinant DNA molecules, protein purification, SDS gel electrophoresis and the use of PCR technology for genetic analysis. Prerequisite: ISAT 300 and ISAT 350 or permission of instructor.

ISAT 306. Transmission Electron Microscopy. 3 credits.
This practical laboratory course provides hands-on experience in the preparation and examination of biological specimens with the transmission electron microscope. Techniques to be mastered include support film preparation for negative staining of bacteria and viruses, fixation, embedding and thin sectioning of tissues, electron optical alignment and microscope operation. Prerequisite: ISAT 300 or permission of instructor.

ISAT 310. Energy Fundamentals. 3 credits.
This course covers the integration of fundamental concepts from physics, chemistry, mathematics and engineering within the context of energy applications. Principles governing energy transformations, transport and conversion, including laws of thermodynamics, chemical and nuclear reactions and thermal science. Prerequisite: ISAT 212 or consent of instructor.
ISAT 311. Role of Energy in Modern Society. 3 credits.

This course covers the role of energy in the U.S. and world economies. Geology of energy-valued natural resources; size, quality and economics of domestic and world resource base. Models for energy use by different sectors. The role of energy in global climate change; other energy-related environmental concerns; and the implications for national and international security will be studied. Prerequisite: ISAT 212 or consent of instructor.

ISAT 320. Fundamentals of Environmental Science and Technology I. 3 credits.

This course provides the student with a basic understanding of environmental pollution, processes and control technologies. The course begins with a review and extension of the basic sciences supporting environmental science. Water and wastewater quality, management and treatment are then addressed, culminating in independent team projects in this area. Prerequisite: ISAT 112 or permission of instructor.

ISAT 321. Fundamentals of Environmental Science and Technology II. 3 credits.

This course continues to build on the student's basic understanding of environmental pollution, processes and control technologies. The course considers solid and hazardous waste and its management, discusses the principles of environmental risk assessment and addresses air quality analysis and management, culminating in independent team projects in this area. Prerequisite: ISAT 320 or permission of instructor.


The course will introduce students to the various manufacturing systems within a manufacturing organization. The systems studied will be selected from the following areas: (a) manufacturing/production management = batch and continuous (b) resources utilization, (c) material management and (d) scheduling and inventory control. Prerequisite: ISAT 142 and 211 or permission of instructor.

ISAT 331. Automation in Manufacturing. 3 credits.

This course offers an in-depth treatment of the structure and function of computer integrated manufacturing processes; integration and automation in design and manufacturing; product and process design, computer-aided design and computer-aided manufacturing, process planning, robotics and flexible manufacturing systems; production planning and product data management. Prerequisite: ISAT 142 and 211 or permission of instructor.

ISAT 340. Software Development. 3 credits.

This course is an introduction to the processes, methods and techniques of efficient and effective software application development. Students will create or enhance software systems in a sophisticated development environment. Prerequisite: ISAT 242.

ISAT 341. Modeling and Simulation. 3 credits.

The development and use of models to understand, analyze and improve systems in several areas of science and technology. Students will use computer simulation in a variety of modeling projects. Prerequisite: Junior standing and ISAT 340 or CS 139 or permission of instructor.

ISAT/CS 344. Intelligent Systems. 3 credits.

In-depth introduction to current and future intelligent systems, including expert systems, neural networks, hybrid intelligent systems and other intelligent system technologies and their development, uses and limitations. Prerequisite: Junior standing and ISAT 340 or CS 139.

ISAT/CS 345. The Software Industry. 3 credits.

The process by which software products are developed is examined. This process includes requirement, analysis and specification, design methods, automated support systems, testing and measurement of software and project planning and management. Prerequisite: ISAT 340 or CS 139.

ISAT/CS 348. The Multimedia Industry. 3 credits.

Students are introduced to a variety of tools for viewing multimedia and to the issues in designing effective human-computer interactions. This includes an introduction to the many forms of media that occur in computing systems (text, graphics, images, sound, animation) and to the characteristics of well-produced media. Prerequisite: CS 139, or ISAT 340 or permission of the instructor.

ISAT 350. Biotechnology for the New Millennium I. 3 credits.

This course covers the scientific foundations and historical development of biotechnology. Specific topics include: living system nanotechnology; cell structure and function; origins of genetic engineering; and recombinant DNA technology. Prerequisite: ISAT 111 or equivalent.

ISAT 351. Biotechnology for the New Millennium II. 3 credits.

This course is a continuation of ISAT 350 and describes applications of biotechnology in agriculture, industry and medical science as well as associated social, ethical and philosophical issues. Topics include: study of an emerging infectious disease; energy transduction in living systems; and novel applications of biotechnology. Prerequisite: ISAT 350. Corequisite: ISAT 305.

ISAT 401. Advanced Computer-Based Instrumentation I. 3 credits.

This is largely a laboratory course in which students build and program their own instruments. Topics include programming techniques for real-time instrumentation programming; buffered analog and digital input and output; timing considerations; passive analog filters and active analog filters; digital-filtering techniques; and real-time programming issues. Prerequisite: ISAT 300 and ISAT 242 or permission of instructor.
ISAT 402. Advanced Computer-Based Instrumentation II. 3 credits.

Students design and build their own instruments. Topics include representative sensor techniques as applied to physical, chemical and biological systems as well as basic and advanced circuits for signal manipulation: buffers, amplifiers and active and passive filters. An instrument design project is the capstone of the course. Prerequisite: ISAT 300 and 242 or the consent of the instructor.

ISAT 410. Sustainable Energy Development. 3 credits.

This course is concerned with science and the applications of solar and other renewable technologies, e.g. solar thermal electric, photovoltaics, wind power, biomass-derived alcohols, solar hydrogen and ocean thermal energy conversion. Energy storage systems and materials, combined renewable-conventional systems for peaking and load management and alternative energy sources for transportation will be studied. Prerequisite: ISAT 310 or consent of instructor.

ISAT 411. Energy Economics and Policy. 3 credits.

This course is concerned with methods for analyzing the economics, environmental and societal benefits of energy technologies. Topics include: optimization techniques, utility planning and finance, cost-benefit techniques, discounting for time and risk, econometric models and input-output analysis. The role of government in determining energy costs supply and markets will be considered. Prerequisite: ISAT 311 or consent of instructor.

ISAT 412. Dynamic Control of Energy Systems. 3 credits.

This course considers methods for developing dynamic models of energy processes and technologies to achieve improved process control and increased efficiency with applications of differential equations and discrete math equations. Dynamic models are used to evaluate load management strategies and to develop computer control algorithms for building energy systems. Prerequisite: ISAT 310 or consent of instructor.

ISAT 413. Options for Energy Efficiency. 3 credits.

This course makes detailed examination of new technologies to increase the efficiency of energy conversion, transportation systems and end-use technologies. Examples include MHD, combined-cycle systems, advanced nuclear reactors, intelligent transportation systems, high-efficiency lighting, energy management and utilization of low-temperature heat. Consideration is made of the socioeconomic and governmental barriers to energy efficiency. Prerequisite: ISAT 310 and 311 or consent of instructor.

ISAT 416. International Energy Studies. 3 credits.

Study-abroad course examining international energy problems and providing team-oriented project experiences. Course addresses energy issues associated with economic and social development. Project participation, tours and meetings with local experts illustrate energy-related problems that are compared with those in the United States. Prerequisite: ISAT 212 and ISAT 300.

ISAT 420. Environmental Analysis and Modeling. 3 credits.

This course explores applications of mathematical techniques and computer models to the environmental field. The course introduces the principles underlying environmental analysis and modeling, including limitations and pitfalls. Several environmental models and analytical systems are then discussed and applied, using a variety of computational platforms. Prerequisite: ISAT 321 or permission of instructor.

ISAT 421. Environmental Policy and Regulation. 3 credits.

This course will familiarize students with basic environmental laws and regulations. The course discusses the purpose of environmental policy, the role of environmental economics in policy decisions and the policies of other instruments available to environmental regulators. Current federal and state statutes affecting waste disposal, air quality and water quality are discussed. Corequisite: ISAT 321 or permission of instructor.

ISAT 422. Environmental Management. 3 credits.

This course addresses environmental issues faced by industry, including such topics as waste management, chemical inventories, pollution prevention and discharge permitting. Industrial ecology is introduced as an approach to the development of a sustainable industrial society, including treatment of life cycle analysis, design for environment, environmentally conscious manufacturing and ISO14000.

ISAT 423. Environmental Remediation. 3 credits.

This course examines the principles of environmental chemistry which apply to the remediation of contaminated soils and water, including the properties of soil systems and the factors controlling mass transport, partitioning and chemical fate. Current and emerging remediation technologies and their limitations in soil and ground water restoration are reviewed. Prerequisite: ISAT 320 or permission of instructor.

ISAT 424. Environmental Hydrology. 3 credits.

This course integrates the study of surface water and ground water hydrology and examines current technologies used to assess the behavior and quality of water in the environment. Topics include monitoring and management at the watershed level, the influence of wetlands on water quality and the impact of current regulations. Prerequisite: ISAT 320 or permission of instructor.

ISAT 426. International Environmental Issues. 3 credits.

This summer-session study abroad course examines international environmental problems through field study. The environmental issues associated with economic growth and development are discussed. Case studies and tours are used to illustrate issues and problems. Environmental management problems particular to the host nation will be studied in detail. Prerequisite: Permission of instructor.
ISAT 427. Industrial Hygiene. 3 credits.

This course provides an introductory survey of the field of Industrial Hygiene. Chemical hazards are addressed first, focusing on respiratory and dermal exposures, followed by a treatment of physical hazards including sound, radiation and temperature. The course includes industrial case studies illustrating administrative and engineering controls in common use.

ISAT/MATS 430. Manufacturing Processes. 3 credits.

This course provides an introduction to the processes used for fabricating parts, such as machining, grinding and casting and sheet-metal fabrication, including both traditional and nontraditional processes. Topics include interaction of materials, processing and design, economics of manufacturing, design for improved processing. Manufacturing processes for metals, plastics and composites are addressed. Prerequisite: ISAT 431 or permission of instructor.

ISAT/MATS 431. Materials Science in Manufacturing. 3 credits.

This course is the study of engineering materials used in the fabrication of products including metals, polymers, ceramics, composites and elastomers. Topics include physical, mechanical and electrical properties of materials, elements of strength of materials, failure criteria and materials selection. Prerequisite: ISAT 211 and 142 or permission of instructor.

ISAT/MATS 432. Selection and Use of Engineering Materials and Manufacturing Processes. 3 credits.

This course deals with the interplay between engineering product specification, design, economics, environment, energy, materials selection, fabrication route, manufacturing cost and product service requirements. Students will be taught how to perform design projects that involve understanding the behavior of materials and selection of materials for a specific function. Prerequisite: ISAT 211 or permission of instructor.

ISAT 433. Selected Problems in Manufacturing. 3 credits.

This course addresses selected problems in manufacturing and their solutions. Materials, processes and systems will be stressed. Solutions may involve laboratory experiments and/or other analytical tools, such as modeling, system selection and evaluation and process selection and improvement. Case studies and current projects from industry will be used. Prerequisite: ISAT 330 or permission of instructor.

ISAT 435. Integrated Product and Process Development. 3 credits.

This course focuses on the integrated approach for developing products simultaneously with manufacturing processes. Students learn about successful product development techniques and effective organization of product development teams. Topics include design for manufacturing, design for the environment, rapid prototyping, economics of product development and managing of development projects. Prerequisite: ISAT 331 or permission of instructor.

ISAT/MATS 436. Micro-Nanofabrication and Applications. 3 credits.

This course examines processes used in the manufacture of microelectronic devices (VLSI integrated circuits, optoelectronic devices, flat panel displays), microelectromechanical devices (micromotors, microactuators), data storage media (magnetic and optical disks, including CDs), optical fibers and some sensors and transducers. Principles of operation of semiconductor and other devices are also studied. Prerequisite: ISAT 300 or PHYS 150 or PHYS 250 or permission of instructor.

ISAT 440. Seminar in Knowledge Management. 3 credits.

Philosophical, ethical, social and political issues in information and knowledge management, the information and knowledge management industries and information and knowledge management systems. Prerequisite: Senior standing.

ISAT 450. Biotechnology and the Environment. 3 credits.

This course will examine the impact of biotechnology on the environment, biotechnology solutions to environmental challenges as well as associated regulatory, ethical and legal issues. Topics include bioremediation, biosensors, release of engineered organisms and risk assessment. Prerequisite: ISAT 320 or ISAT 350.

ISAT 451. Biotechnology in Industry and Agriculture. 3 credits.

This course illustrates the applications of biotechnology in agriculture and industry, linking scientific discoveries to business and manufacturing practices. Topics include pharmaceutical product development, genetic engineering in agriculture, biotechnology in food processing and regulatory issues. Prerequisite: ISAT 330 or ISAT 350.

ISAT 452. Medical Biotechnology. 3 credits.

This course will survey the research development and implementation of select biomedical technologies, including genetic-based medical technologies, biomedical diagnostics, bioengineering at the macroscopic and microscopic levels, imaging technologies, lasers in medicine and relevant regulatory and legal issues. Prerequisite: ISAT 351 or permission of instructor.

ISAT 453. Energy and Living Systems. 3 credits.

The potential of living systems as alternative energy sources will be explored by describing energy production and transduction in living systems in the context of current and anticipated applications of biotechnology to energy production. Prerequisite: ISAT 310, ISAT 351 or permission of instructor.

ISAT 454. Computer Applications in Biotechnology. 3 credits.

Students learn how complex biological molecules support and regulate processes in living systems through building interactive computer models of protein and nucleic acid structures. Other computer applications include: image processing, genome data manipulation and NMR data processing. Written and oral presentations are also required. Prerequisite: ISAT 350 or permission of instructor.
ISAT 455. Regulatory Issues in Biotechnology. 3 credits.
This course examines the policies and guidelines of federal government agencies that regulate the use of recombinant DNA technology, genetically engineered organisms and the manufacturing of biotechnology products. Issues of product safety, product labeling, physical and biological containment, environmental release and mammalian cloning are presented. Prerequisite: ISAT 351 or permission of instructor.

ISAT/CS 460. Local Area Networks. 3 credits.
An overview of LAN hardware, LAN topology and design, and LAN protocols. Installation and management of LAN operating systems and LAN services (address management, name management, file and print sharing, account management). Prerequisite: CS 350 or CIS 320 or equivalent. (Formerly CS 451.)

ISAT/CS 461. Internetworking. 3 credits.
Wide Area Network (WAN) and Metropolitan Area Network (MAN) design. Audio, voice, data and TV transmission over ATM/B-ISDN networks. The SONET signal hierarchy and Q3 standard interface model. Network security. Performance analysis of a given network. Prerequisite: ISAT/CS 460.

ISAT/CS 462. Network Applications Development. 3 credits.
Design and implementation of network-based applications using languages and architectures such as sockets, JAVA, TL1 and CORBA. Concepts in distributed processing, including synchronization of interprocess communication and management of replicated data. Analysis of performance issues related to distributed applications. Prerequisite: CS 239 or CIS 344, and ISAT/CS 460.

ISAT/CS 463. Network Analysis and Design. 3 credits.
In-depth introduction to the techniques and tools used to design and analyze computer and telecommunications networks. Overview of issues related to network performance, including the impact on cost, reliability and security. Prerequisite: CS/ISAT 460 and ISAT 340 or equivalent.

ISAT/CS 464. Issues in the Telecommunications Business. 3 credits.
Addresses complex business concepts and issues in the telecommunications industry. Explores the interrelation of the economics of the telecommunications industry with ensuing social, ethical and security issues. Discusses topics in product and service creation, marketing, customer service and billing, and electronic commerce. Prerequisite: CIS 320 and SMAD 356, and ISAT 340 or equivalent.

ISAT 480. Selected Topics in Integrated Science and Technology. 1-4 credits.
Topics in integrated science and technology which are of interest to the upper-division student but not otherwise covered in the regular course offerings. Offered only with the approval of the program coordinator. May be repeated for credit when course content changes. Students should consult the instructor prior to enrolling for the course. Prerequisite: Junior or senior standing required. Topic selected may dictate prerequisite.

ISAT 491, 492, 493. Senior Thesis. 6 credits.
Three-course sequence. Student performs an independent research project, either alone or within an investigative team, to identify and analyze a technologically based problem, develop alternative solutions, recommend the best solution and provide a written and oral technical report. ISAT 491 (one credit) is for project identification and proposal. ISAT 492 (two credits) and ISAT 493 (three credits) follow.

ISAT 499. Honors Thesis. 6 credits.
Three-course sequence. Student performs an independent research project that meets the requirements set forth by the honors program. Student must identify and analyze a technologically based problem, develop alternative solutions, recommend the best solution and provide a written and oral technical report of the effort. May be taken in lieu of ISAT 491, 492, 493 sequence.

Interscience Research

Departments of Biology, Chemistry, Geology and Environmental Studies, Mathematics, Physics and Computer Science

ISCI 450 A,B,C. Interscience Research. 1-4 credits.
Repeatable to six credits.
An investigative experience spanning more than one field of science which may require supervision by multiple faculty members from different disciplines. Students must get prior approval for this course from each of the supervising faculty members and the department head of their program. Prerequisite: Junior status and permission of the instructors.

Italian

Department of Foreign Languages and Literatures

ITAL 101-102. Elementary Italian (4, 1). 4 credits each semester.
The fundamentals of Italian through listening, speaking, reading and writing. Practice in pronunciation and development of comprehension. One hour's work a week in the language laboratory.

ITAL 231-232. Intermediate Italian. 3 credits each semester.
A thorough review of grammar, vocabulary building, conversation, composition and reading. Prerequisite: One year of college Italian or equivalent.

ITAL 300. Conversation and Composition. 3 credits.
Intensive training in the use and comprehension of everyday Italian with emphasis on conversation and composition to give students confidence to express themselves in idiomatic Italian. Instruction is in Italian. Prerequisite: ITAL 232.
ITAL 307. Italian Civilization. 3 credits.
A study of Italian society, economics, politics and the arts from the Roman Republic to the present. Instruction is in Italian. Prerequisite: ITAL 300.

ITAL 320. Advanced Grammar. 3 credits.
Advanced course in morphology and syntax with extensive practice in composition. Instruction is in Italian. Prerequisite: ITAL 232.

ITAL 330. Business Italian. 3 credits.
A study of commercial and technical vocabulary and trade customs in conjunction with practice in the art of commercial communication, including interviews, letter writing and simultaneous interpretation. Instruction is in Italian. Prerequisite: ITAL 300.

ITAL 335. Introduction to Italian Literature. 3 credits.
A survey of Italian literature from its beginning to the present. Textual analysis of sample writings representative of the most important literary movements. Instruction is in Italian. Prerequisite: ITAL 300.

ITAL 425. Modern Italian Literature. 3 credits.
A study of the works of major Italian writers of the 20th century. Instruction is in Italian. Prerequisite: Three years of college Italian or equivalent.

ITAL 465. Italian Cinema. 3 credits.
A study of the evolution of Italian cinema. Emphasis given to the following directors: Rossellini, Visconti, De Sica, Fellini, Antonioni, Bertolucci, Wertmüller, Scala, Taviani, Salvatores. Instruction is in Italian. Prerequisite: Three years of college Italian or equivalent.

Kinesiology

School of Kinesiology and Recreation Studies

KIN 101. Adapted Activities in Kinesiology (0, 2).
1 credit.
Designed for students with severe medical restrictions and is adapted to individual needs. Prerequisite: Recommendation of university physician and permission of the department head.

KIN 122-174. Basic Instruction Activities (0, 2).
1 credit.
The following courses provide basic instruction in the activities listed: 122, road cycling; 123, mountain cycling; 124, experiential adventure education; 125, tennis; 126, golf; 128, fencing; 129, badminton; 133, bowling; 138, racquetball; 139, river canoeing; 140, swimming; 145, conditioning; 148, jogging; 149, aerobic dance; 151, swim conditioning; 152, lifesaving/lifeguarding; 156, scuba and skin diving; 157, Self-Defense for Women; 162, intermediate swimming; 163, intermediate tennis; 174, water safety instructor.

KIN 199. New Directions in Kinesiology. 1-3 credits.
In-depth exploration of topics significant in kinesiology. The topic for each semester will be announced in the Schedule of Classes.

KIN 201. Introduction to Kinesiology. 2 credits.
Students are introduced to the discipline of kinesiology, the art and science of human movement. They will study the effects of physical activity on human beings; survey the subdisciplines, including exercise physiology, biomechanics, motor behavior and sociological, historical and philosophical perspectives; and discuss how the discipline can be applied professionally.

KIN 202. Biological Foundations of Kinesiology. 3 credits.
Introduction to the biological scientific foundations within the discipline of Kinesiology. Includes applied anatomy and physiology, biomechanics and exercise physiology.

KIN 203. Social/Psychological Foundations of Kinesiology. 3 credits.
This course is designed to introduce the students to the social and psychological aspects of movement. The focus of this course will be on exploring the principles of: 1) motor learning, 2) motor performance and 3) the socio/psychological perspectives of physical activity.

KIN 211-216. Activity Techniques (0, 4). 2 credits.
The following courses provide motor skills, strategy, rules and officiating techniques in the activities listed: 211, team activities; and 216, individual activities.

KIN 302. Physiology of Muscular Activity (2, 2).
3 credits.
A study of the effects of exercise on the body including functional adjustments related to physical activity. Topics include energy systems, physiological testing and neuromuscular considerations. Prerequisite: BIO 270 or BIO 290.

KIN 303. Motor Learning and Performance. 3 credits.
A study of the learning processes underlying performance. Emphasis is given to the application of learning principles in teaching, coaching and rehabilitative settings.

KIN 304. History and Philosophy of Physical Education and Sport. 2 credits.
Introductory analysis of various theoretical approaches to the discipline of physical education fitness and sport; brief historical study of the development of school programs and sport; and debates on current professional issues.

KIN 305. Sociopsychological Perspectives of Physical Activity. 3 credits.
An examination of the interrelationship of the social and psychological perspectives of physical activity. Sociopsychological models and theories of physical activity are introduced. Emphasis is given to the sociopsychological principles and their application to specific areas of interest.

KIN 306. Biomechanical Principles of Kinesiology (2, 2). 3 credits.
A study of anatomical, physical and mechanical factors, as these factors affect human movement. Prerequisite: BIO 290.
KIN 310. Instructional Methods in Physical Education. 2 credits

Students will apply the affective, cognitive and psychomotor principles in class management, unit and lesson planning and instructional techniques. This course introduces students to effective teaching strategies and allows application through peer microteaching and teaching students in a school setting. Principles of self-evaluation and reflective teaching are reinforced. Prerequisite: Acceptance to the PHETE program.

KIN 311. Elementary Curriculum in Physical Education. 3 credits.

Theory and application of games, dance and gymnastic activities compatible with the developmental characteristics of elementary children and the educational objectives of the elementary school. Prerequisite: Acceptance to the PHETE program.

KIN 315. Secondary Curriculum and Methods in Physical Education. 3 credits.

This course introduces students to middle and secondary school physical education curriculum and developmentally appropriate teaching and management methods. Prerequisite: Successful completion of Professional Semester 1 courses and acceptable standing in the JMU Teacher Education Program.

KIN 316. Physical Fitness in the Schools. 1 credit.

This course is designed to expose students to procedures or methods that are used in physical education programs that may enhance or limit an individual’s fitness level. Students will participate in critical analysis of fitness curricula and practices. Discussions will highlight current research, requirements and appropriate curricula designs that incorporate theories of fitness. School observations, interviews and participation will be required. Prerequisite: Successful completion of Professional Semester 1 courses and acceptable standing in the JMU Teacher Education Program.

KIN 317. Multicultural Issues in Physical Education. 1 credit.

This course builds on students’ awareness of issues and begins its focus on schools. The preservice teachers will consider needs and differences of all students when making curricular and pedagogical decisions. Students will identify appropriate strategies to overcome inequitable situations in physical education. Prerequisite: Successful completion of Professional Semester 1 and acceptable standing in the JMU Teacher Education Program.

KIN/PSYC/SOCI 329. Psychological and Sociological Aspects of Sport. 3 credits.

A study of the psychological and sociological implications of sport and the effect of sport on the United States and other cultures.

KIN/REC 333. Management in Sport, Recreation and Fitness Settings. 3 credits.

This course is designed as an introduction to sport, fitness and recreation management. Students will examine a variety of management issues and opportunities in these areas.

KIN 334. Sport Ethics. 3 credits.

This course is designed to introduce the student to the myriad of ethical issues that permeate sport. Specifically, students will be actively involved in the identification of the underlying ethics issues and the ethical decision-making processes as these issues and processes relate to sport.

KIN 353. Maximizing Sport Performance. 2 credits.

This course explores current sport psychology theories, models and concepts as they relate to sport behavior and performance. Students examine the theoretical basis of cognitive sport skills and apply the information to the sport environment. No prerequisites.

KIN 355. Introduction to Driver Education. 3 credits.

An introduction to the task of the motor vehicle operator within the highway transportation system and factors that influence performance ability. Prerequisite: Junior standing and permission of the instructor.

KIN 401A, B, C, D. Practicum in Kinesiology (1, 4). 3 credits.

A sequence of selected practicum experiences which provides the student with supervised practicum experience. Prerequisite or corequisite: KIN 302 for KIN 401B.

KIN 402A, B, C, D. Internship in Kinesiology. 8 credits.

A full-time professional experience which affords the opportunity to apply theory and methodology under qualified supervision from the cooperating agency and the university. Prerequisite: Successful completion of all professional courses.

KIN 407/HTH 441. Rehabilitative Biomechanics. 3 credits.

This course will examine a variety of biomechanical concepts and applications as related to the health professions. Specific attention will be given to the biomechanical aspects of the musculoskeletal system. Prerequisite: BIO 290.

KIN 410. Adapted Physical Education (3, 1). 3 credits.

Principles and procedures for adapting physical education programs for students with physical and mental disabilities. Laboratory experience included. Prerequisite: KIN 301 and successful completion of Professional Semester II courses and acceptable standing in the JMU Teacher Education Program.

KIN 411. Measurement and Evaluation in Physical Education. 3 credits.

The selection, administration and use of tests unique to the field of physical education. Special emphasis is placed on testing procedures. Prerequisite: MATH 220 or equivalent and successful completion of Professional Semester II courses and acceptable standing in the JMU Teacher Education Program.
KIN 412. The Profession of Teaching Physical Education. 2 credits.
Selected topics relating to the profession of teaching physical education are covered in this course. Major topics include the foundations of school physical education, the organization and administration of school physical education and the basics of professional development. Prerequisite: Successful completion of Professional Semester II courses and acceptable standing in the JMU Teacher Education Program.

KIN/REC 420. Exercise Programming for Special Populations. 3 credits.
An in-depth study of the etiology and pathophysiology of disease and disability states in order to understand the role of exercise and recreation in disease prevention, habilitation and rehabilitation.

The principles of exercise testing and prescription as they apply to fitness and performance. The role of the health-related components of fitness in performance and/or physical fitness of normal and special populations is examined. The significance of cardiovascular fitness programs throughout the life cycle is studied. Prerequisite: KIN 302.

KIN 422. Exercise Leadership. 3 credits.
Theories, principles and procedures involved with leading safe, effective individualized and group exercise. Application of theories and practical competencies for conducting an exercise session as identified by the American College of Sports Medicine. Prerequisite: KIN 302, 401B.

KIN 423. Exercise and the Older Adult. 3 credits.
An in-depth study of the theories and principles of exercise testing, prescription and programming for the older adult. Emphasis will be given to the significance of physical activity on the health of the aging population. Prerequisite: KIN 302.

KIN 424/NUTR 455. Theories and Practices of Weight Management. 3 credits.
An examination of the physiological, psychological and environmental theories of obesity. Current trends in obesity research are emphasized. A case study and laboratories are used to provide students with practical experience in constructing a weight management program. Prerequisite: BIO 270, 290, NUTR 280, or permission of the instructor.

KIN 425. Concepts of Strength and Conditioning. 2 credits.
Theory and application of coaching concepts in strength/conditioning training including program design, testing and specific techniques for the physical development of athletes. Designed for students interested in working with athletic populations, this course also prepares students for NSCA certification. Prerequisite: GKin 100 and KIN 302.

KIN 426. Seminar in Exercise Behavior. 3 credits.
An introduction to exercise motivation including theories of exercise participation, programmatic and individual factors affecting behavior and intervention techniques for nurturing good exercise habits.

Analysis of the rules and regulations governing driver education in the Commonwealth of Virginia with application to program organization and administration, and the development and conduct of learning experiences in the classroom and laboratory. Prerequisite: Valid Virginia operator’s license and KIN 355.

KIN 480. Student Teaching in Physical Education. 16 credits.
Enables students to apply skills and attitudes acquired in all teacher education components in a public school setting. Conducted under the guidance of an experienced teacher and university faculty in both elementary (A) and secondary (B) settings. Prerequisite: Successful completion of Professional Semester III and acceptance to student teaching.

KIN 490. Special Studies in Kinesiology. 1-3 credits each semester.
Designed to give superior students in physical education an opportunity to complete independent study and/or research under faculty supervision. Prerequisite: Permission of the department head.

KIN 499. Honors. 6 credits. Year course.
** For more specific course information, please contact the department office (568-6145). Fees are required in certain courses to cover equipment and/or facility rental. Please refer to the current Schedule of Classes for prevailing fees.

The university reserves the right to cancel any class should suitable facilities be unavailable and to alter fees in the event of unusual inflation. Students must furnish their own transportation to bowling, canoeing, golf and skiing classes.
Latin

Department of Foreign Languages and Literatures

LAT 101-102. Elementary Latin. 4 credits each semester.

An introductory course for students who intend to acquire only a reading knowledge of classical and medieval Latin. Systematic study of the fundamentals of grammar.

LAT 231-232. Intermediate Latin. 3 credits each semester.

An introduction to Latin literature. The further study of Latin grammar and the elements of Latin prosody are also presented. Prerequisite: One year of college Latin or equivalent.

Liberal Studies

Division of Academic Affairs

LS 310. The British Foundations of Modern Science. 3 credits.

Fundamental principles from the modern sciences are surveyed by directed exploration of the work of British scientists who were pioneers in their fields. Excursions to historical sites and museums are linked to reading assignments. Prerequisite: Six hours of laboratory natural science credits.

Mathematics

Department of Mathematics

*MATH 103. The Nature of Mathematics. 3 credits.

Topics such as geometry, computing, algebra, number theory, history of mathematics, logic, probability, statistics, modeling and problem solving intended to give students insight into what mathematics is, what it attempts to accomplish and how mathematicians think.

MATH 107*-108. Fundamentals of Mathematics I-II. 3 credits each semester.

Sets, logic, numeration systems, number theory, probability and statistics, measurement, geometry and an introduction to computers. This course will fulfill the requirements for licensure of prospective early childhood and middle school teachers, as well as provide a general introduction to mathematics for students in other majors. Prerequisite for MATH 108: MATH 107.

MATH 135. Elementary Functions. 3 credits.

Algebraic, exponential, logarithmic and trigonometric functions. Designed for freshmen who want to enroll in MATH 235 in the following semester. Not open to students who have previously earned credit in MATH 125, 145, 155, 156, 205 or 235, except with the consent of the department head.

MATH 155. Functions and Probability. 3 credits.

Polynomial, rational, exponential and logarithmic functions and applications, systems of equations and inequalities, sequences, counting and probability. Prerequisite: Demonstration of proficiency in algebra at an intermediate level. A test is required to determine placement in MATH 155 or 156. Not open to students who have previously earned credit in MATH 125, 135, 145, 156, 205, 220 or 235.

MATH 156. Functions and Probability. 3 credits.

Covers same topics as MATH 155. MATH 156 will meet five times a week for students requiring more instructional time. Prerequisite: Demonstration of proficiency in algebra at an intermediate level. A test is required to determine placement in MATH 155 or 156. Not open to students who have previously earned credit in MATH 125, 135, 145, 155, 205, 220 or 235.

MATH 167. Topics in Mathematics. 1-3 credits.

Topics or projects in mathematics which are of interest to the lower-division student. May be repeated for credit when course content changes. Topics or projects selected may dictate prerequisites. Students should consult the instructor prior to enrolling for this course.

*MATH 205. Introductory Calculus I. 3 credits.

Topics from differential calculus with applications to the social, behavioral or life sciences and business or management. Prerequisite: Demonstration of strong preparation in algebra. Not open to mathematics or physics majors or to students who have already earned credit in MATH 235. Not recommended for chemistry majors.

MATH 206. Introductory Calculus II. 3 credits.

Topics from integral calculus with applications to the social, behavioral or life sciences and business or management. Prerequisite: MATH 205. Not open to mathematics or physics majors or to students who have already earned credit in MATH 236. Not recommended for chemistry majors.

*MATH 220. Elementary Statistics. 3 credits.

Descriptive statistics, frequency distributions, sampling, estimation and testing of hypotheses, regression, correlation and an introduction to statistical analysis using computers. Prerequisite: Demonstration of strong preparation in algebra. Not open to majors in mathematics or computer science.

MATH 235*-236. Calculus I-II. 4 credits each semester.

Differential and integral calculus of functions of one variable. Sequences and infinite series. Prerequisite for MATH 235: MATH 135 or equivalent. Prerequisite for MATH 236: MATH 235 with grade of "C" or better.

MATH 237. Calculus III. 4 credits.

Vectors. Multivariate calculus. Prerequisite: MATH 236 with grade of "C" or better.
MATH 238. Linear Algebra with Differential Equations. 4 credits.
Matrices; determinants; vector spaces; linear transformations; eigenvalues and eigenvectors; separable, exact and linear differential equations; and systems of linear differential equations. Corequisite or prerequisite: MATH 237 or consent of instructor. Not open to students with credit in MATH 300 or MATH 336 without departmental permission.

Introduction to high-level computer language. Applications of numerical algorithms to problems basic to areas such as mathematics, the sciences and economics and finance. Prerequisite or corequisite: MATH 206 or 236. This course is not open to students who have previously earned credit in MATH/CS 448.

MATH/PHYS 265. Introduction to Fluid Mechanics. 4 credits.
Introduces the student to the application of vector calculus to the description of fluids. The Euler equation, viscosity and the Navier-Stokes equation will be covered. Prerequisite: MATH 237 and PHYS 260.

MATH 285. Data Analysis. 4 credits.
Topics include experimental and survey design, distributions, variation, chance, sampling variation, computer simulation, bootstrapping, estimation and hypothesis testing using real data generated from classroom experiments and large databases. Prerequisite: MATH 206 or MATH 236 or permission of instructor. Not open to students who have already earned credit in MATH 220 or MATH 318.

MATH 300. Linear Algebra. 3 credits.
Vector spaces, linear transformations, matrices, determinants, systems of linear equations and eigenvalues and eigenvectors. Prerequisite or corequisite: MATH 237 or consent of the instructor.

MATH 310. Elementary Theory of Numbers. 3 credits.
Properties of integers and prime numbers, divisibility, congruence, residues and selected topics. Prerequisite or corequisite: MATH 237 or consent of the instructor.

MATH 315. The Real Number System. 3 credits.
A development of the real number system through a systematic approach to the natural numbers, integers, rationals and irrationals. Prerequisite or corequisite: MATH 237 or consent of the instructor.

MATH 318. Introduction to Probability and Statistics. 3 credits.
Descriptive statistics, counting, probability, random variables, sampling distributions, estimation, hypothesis testing, power functions, regression and correlation. Prerequisite: MATH 236.

MATH 321. Analysis of Variance and Experimental Design. 3 credits.
Introduction to basic concepts in statistics with applications of statistical techniques including estimation, test of hypothesis, analysis of variance and topics in experimental design. Prerequisite: MATH 220, 318 or equivalent.

MATH 322. Applied Linear Regression. 3 credits.
Introduction to basic concepts and methods in regression analysis and the application of these models to real-life situations. Prerequisite: MATH 220, 318 or equivalent.

MATH 323. Exploratory Data Analysis. 3 credits.
Introduction to box plots, stem-and-leaf displays, re-expression, median polish, smoothing and robust regression. Applications and interactive computing will be an integral part of the course. Prerequisite: MATH 220 or 318.

MATH 324. Applied Nonparametric Statistics. 3 credits.
Methods of analyzing data from non-normal populations including binomial tests, contingency tables, use of ranks, Kolmogorov-Smirnov type statistics and selected topics. Prerequisite: MATH 220, 318 or equivalent.

MATH 325. Survey Sampling Methods. 3 credits.
Theory and practice of sampling including stratified random samples, discussion of simple random samples, cluster sampling, estimating sample size, ratio estimates, subsampling, two-state sampling and analysis of sampling error. Prerequisite: MATH 220 or 318.

MATH 326. Statistical Quality Control. 3 credits.
Uses and concepts of probability and sampling procedures. Acceptance sampling by attributes and variables, Shewhart concepts of process control, control chart process capability studies, reliability and life testing. Design of sampling plans. Prerequisite: MATH 318.

MATH/FIN 328. Time Series Analysis. 3 credits.
Regression and exponential smoothing methods for forecasting nonseasonal and seasonal time series, stochastic processes, Box-Jenkins' autoregressive and moving average models. Prerequisite: MATH 300 and 318.

MATH 336. Elementary Differential Equations. 3 credits.
Applications of differential equations, elementary probability and statistics to the development and analysis of continuous and discrete models that arise in the physical, biological, social and management sciences. Linear and nonlinear optimization methods will be stressed, along with computer visualization. Prerequisite: MATH/CS 248.

MATH 341. Mathematical Modeling II. 3 credits.
Applications of differential equations, elementary probability and statistics to the development and analysis of continuous and discrete models that arise in the physical, biological, social and management sciences. Prerequisite: MATH 340; or MATH/CS 248, MATH 300, MATH 336 and either MATH 318 or MATH 285.
MATH 352-353. Discrete Mathematics. 3 credits each semester.
Logic, set theory, relations and functions, counting, recurrence relations, Boolean algebras and switching functions, graphs and trees. Prerequisite or corequisite for MATH 352: MATH 237 or consent of instructor. Prerequisite for MATH 353: MATH 352.

MATH 360. Complex Variables with Applications. 3 credits.
Introduction to algebraic properties of complex numbers, analytic functions, harmonic functions, mappings of elementary functions, contour integration, series, residues and poles and conformal mappings. Emphasis on computations and applications to fluid and heat flow. Prerequisite: MATH 237.

MATH/PHYS 365. Computational Fluid Dynamics. 3 credits.
Applications of computer models to the understanding of both compressible and incompressible fluid flows. Prerequisite: MATH 248, MATH 336, MATH/PHYS 265 and PHYS 340.

MATH 387. Fourier Analysis and Partial Differential Equations. 3 credits.
Elementary applied partial differential equations, the heat equation, Laplace’s equation, the wave equation; Fourier series and boundary value problems. Both theory and problem-solving will be included. Prerequisite: MATH 237.

MATH/FIN 395. Mathematical Finance. 3 credits.
An overview of the role of mathematical concepts in financial applications. Topics include continuous time finance, optimization, numerical analysis and applications in asset pricing. Prerequisite: MATH 237 and FIN 380.

MATH/FIN 405. Securities Pricing. 3 credits.
A quantitative treatment of the theory and method of financial securities pricing to include an examination of closed form pricing models such as the Black-Scholes and its various derivatives as well as numerical solution techniques such as binomial methods. Prerequisite: MATH/FIN 395.

MATH 410-411. Advanced Calculus. 3 credits each semester.
Limits, continuity, differentiation, sequences, series, integration and selected topics. Prerequisite for MATH 410: MATH 300 and one of 310, 315 or 352 or consent of the instructor. Prerequisite for MATH 411: MATH 410.

MATH 415. History of Mathematics. 3 credits.
Topics in the history of mathematics spanning ancient times to the present. Prerequisite: Junior standing in mathematics or consent of the instructor.

MATH 420. Foundations of Euclidean Geometry. 3 credits.
A study of the structure and content of Euclidean geometry from an advanced standpoint. Prerequisite: MATH 310, 315 or 352 or consent of the instructor.

MATH 421. Applied Multivariate Statistical Analysis. 3 credits.
Multivariate statistical methods with applications. Topics include canonical correlation, clustering, discriminant analysis, factor analysis, multivariate analysis of variance, multiple regression, multidimensional scaling and principal component analysis. Prerequisite: MATH 321 or MATH 322.

MATH 423. Stochastic Processes. 3 credits.
Sequences and classes of random variables. Applications to physical, biological, social and management sciences. Topics include Markov chains, branching processes, the Poisson process, queueing systems and renewal processes. Prerequisite: MATH 300 or equivalent and MATH 318.

MATH 424. Statistical Decision Theory. 3 credits.
Development and use of probability and statistics for strategic decision making with applications. Topics include decision flow diagrams, analysis of risk and risk aversion, utility theory, Bayesian statistical methods, the economics of sampling, sensitivity analysis and collective decision making. Prerequisite: MATH 318.

Probability spaces, random variables, discrete and continuous probability distributions, mathematical expectation, moment generating functions, moments of linear combinations of random variables and sampling distributions. Prerequisite: MATH 318.

MATH 427. Probability and Mathematical Statistics II. 3 credits.
Sampling theory and distributions, theory and applications of estimation and hypothesis testing, regression and correlation and analysis of variance. Prerequisite: MATH 426.

MATH 429. Practicum in Statistics. 1-3 credits.
Practical statistical experience under the supervision of a statistics faculty member. Prerequisite: Six hours of statistics courses at the 300 or 400 level.

MATH 430-431. Abstract Algebra. 3 credits each semester.
An introduction to groups, rings and fields. Prerequisite for MATH 430: MATH 300 and one of 310, 315 or 352 or consent of the instructor. Prerequisite for MATH 431: MATH 430.

MATH 435. Introduction to Topology. 3 credits.
Metric spaces, limits, continuous maps and homeomorphisms, connectedness, compact topological spaces and applications. Prerequisite: MATH 300 and one of 310, 315 or 352 or consent of the instructor.

MATH/CS 448-449. Numerical Mathematics and Computer Applications. 3 credits each semester.
Numerical solutions and error analysis of typical problems such as finding zeros of nonlinear functions, solving systems of linear and nonlinear equations, interpolation, approximation, integration, solving ordinary differential equations, optimization, Monte Carlo methods. Prerequisite for MATH/CS 448: MATH 237, MATH 300 and either CS 238 or MATH/CS 248. Prerequisite for MATH/CS 449: MATH/CS 448 and MATH 336.
MATH 450. Theory of Ordinary Differential Equations. 3 credits.

Theory of existence, uniqueness, continuous dependence and stability for differential equations with applications to the sciences. Prerequisite: MATH 300, MATH 336 and MATH 410.

MATH/FIN 465. Seminar in Actuarial Science I. 3 credits.

Theory and application of contingency mathematics in the areas of life and health insurance and of annuities from both a probabilistic and deterministic approach. This class, together with MATH/FIN 466, helps students prepare for the professional actuarial examinations. (Offered fall, odd-numbered years.) Prerequisite: MATH/FIN 395 or consent of the instructor. Prerequisite or corequisite: MATH 426.

MATH/FIN 466. Seminar in Actuarial Science II. 3 credits.

A continuation of MATH/FIN 465. Additional coverage of contingency mathematics in the areas of life and health insurance, annuities, pensions and risk theory from both probabilistic and deterministic approaches. The two-course sequence helps to prepare the student for the professional actuarial examinations. Prerequisite: MATH/FIN 465. Prerequisite or corequisite: MATH 427.

MATH 467. Selected Topics in Mathematics. 1-3 credits each semester.

Topics in advanced mathematics which are of special interest to the student but not covered in the regularly offered courses. Offered only with approval of the department head; may be repeated for credit when course content changes.

MATH 475. Fundamental Concepts of Geometry. 3 credits.

Origin and development of geometry, axiomatic systems, mathematical proof and special topics from incidence geometry. Prerequisite: MATH 310, 315 or 352 or consent of the instructor.

MATH 483. Selected Topics in Applied Mathematics. 3 credits.

Topics in applied mathematics not covered in the regularly offered courses. Offered only with approval of the department head; may be repeated for credit when course content changes. Prerequisite: Junior standing and consent of the instructor.

MATH 485. Selected Topics in Statistics. 1-3 credits.

Topics in statistics which are of interest but not otherwise covered in the regular statistics offerings of the department. Offered only with approval of the department head; may be repeated for credit when course content changes. Prerequisite: Junior standing and consent of the instructor.

MATH 497-498. Independent Study. 1-3 credits each semester.

Independent study in mathematics under faculty supervision. Offered only with consent of the department head.

MATH 499. Honors. 6 credits.

Year course.

Materials Science

Center for Materials Science

MATS/CHM/PHYS 275. An Introduction to Materials Science. 3 credits.

An introduction to materials science with emphasis on general properties of materials. Topics will include crystal structure, extended and point defects and mechanical, electrical, thermal and magnetic properties of metals, ceramics, electronic materials, composites and organic materials. Prerequisite: CHEM 131 or PHYS 150 or PHYS 250 or ISAT 212 or permission of the instructor.

MATS/PHYS 337. Solid State Physics. 3 credits.

A study of the forces between atoms, crystal structure, lattice vibrations and thermal properties of solids, free electron theory of metals, band theory of solids, semiconductors and dielectrics. Prerequisite: PHYS 270 or consent of instructor.

MATS/PHYS 381. Materials Characterization (Lecture/Lab Course). 3 credits.

A review of the common analytical techniques used in materials science related industries today including the evaluation of electrical, optical, structural and mechanical properties. Typical techniques may include Hall Effect, scanning probe microscopy, scanning electron microscopy, ellipsometry and x-ray diffraction. Prerequisite: PHYS/MATS 275 or ISAT/MATS 431 or GEOL/MATS 395.

MATS/GEOL 395. Geologic Perspectives in Materials Science. 3 credits.

A one-semester course which emphasizes the commonalities between the geological sciences and materials science. Course includes topics from mineralogy, crystallography, petrology and structural geology which are also important in metallurgy and ceramics. Prerequisite: An introductory course in any physical science or integrated science and technology (i.e., GEOL 110, CHEM 131, PHYS 140 or ISAT 141) and at least one additional advanced course in the major.

MATS/ISAT 430. Manufacturing Processes. 3 credits.

This course provides an introduction to the processes used for fabricating parts, such as machining, grinding and casting and sheet-metal fabrication, including both traditional and nontraditional processes. Topics include interaction of materials, processing and design, economics of manufacturing, design for improved processing. Manufacturing processes for metals, plastics and composites are addressed. Prerequisite: ISAT 431 or permission of instructor.

MATS/ISAT 431. Materials Science in Manufacturing. 3 credits.

This course is the study of engineering materials used in the fabrication of products including metals, polymers, ceramics, composites and elastomers. Topics include physical, mechanical and electrical properties of materials, elements of strength of materials, failure criteria and materials selection. Prerequisite: ISAT 211 and 142 or permission of instructor.
MATS/ISAT 432. Selection and Use of Engineering Materials and Manufacturing Processes. 3 credits.

This course deals with the interplay between engineering product specification, design, economics, environment, energy, materials selection, fabrication route, manufacturing cost and product service requirements. Students will be taught how to perform design projects that involve understanding of the behavior of materials and selection of materials for a specific function. Prerequisite: ISAT 211 or permission of instructor.

MATS/ISAT 436. Micro-Nanofabrication and Applications. 3 credits.

This course examines processes used in the manufacture of microelectronic devices (MSI integrated circuits, optoelectronic devices, flat panel displays), microelectromechanical devices (micromotors, microactuators), data storage media (magnetic and optical disks, including CDs), optical fibers and some sensors and transducers. Principles of operation of semiconductor and other devices are also studied. Prerequisite: Junior standing in integrated science and technology or PHYS 150 or PHYS 250 or permission of instructor.

Management

College of Business

MGT 300. Management Principles. 3 credits.

A study of management functions, decision processes, resources, planning, organization staffing and control, along with ethical considerations and political and social influences on business. Prerequisite: Junior standing (56 hours) and a cumulative 2.0 grade point average in all courses taken at JMU.

MGT 311. Organizational Behavior. 3 credits.

A study of human behavior and motivation in the business organization. Behavioral science research in administration is discussed and applicability to organizational behavior is treated. Prerequisite: Junior standing (56 hours) and a cumulative 2.0 grade point average in all courses taken at JMU.

MGT 365. Human Resource Management. 3 credits.

A study of employer-employee relationships in business and industry including personnel policies and methods; selection, placement, training and promotion of employees; and recent trends in employment practices. Prerequisite: MGT 300 or COB 300.

MGT 370. Quality Management. 3 credits.

An introduction to the management of quality in organizations. Topics include statistical quality control, the design of quality management systems, implementation, measurement and management issues in quality programs. Prerequisite: OM 360/COB 300C or equivalent and junior standing.

MGT 372. Entrepreneurship. 3 credits.

A survey of the field of entrepreneurship and entrepreneurs and their significance in the American free enterprise system. Emphasis will be on exploring the theoretical framework of the entrepreneurship process and the entrepreneurial personality. Prerequisite: MGT 300 or COB 300.

MGT 410. International Management. 3 credits.

A comparative analysis of management styles and organizational effectiveness across cultural boundaries and within other political, legal and economic environments. Prerequisite: COB 300 or MGT 311, FIN 345 and MKTG 380.

MGT 450. Management and Creativity. 3 credits.

Students will become aware of and develop their own creative potential while addressing the problems associated with building creative organizations and managing creative employees. Prerequisite: Senior standing.

MGT 460. Government Regulations and Personnel Administration. 3 credits.

Course provides student with an overview of federal regulations and court decisions which affect employment, employee/management relations, compensation, benefits, safety and health. Explores impact of regulations on general business operations. Prerequisite: MGT 365.

MGT 462. Compensation and Benefits. 3 credits.

Compensation and benefit theories, planning and legislation. Topics include job analysis, job evaluation, conducting wage surveys and admission of benefit plans. Prerequisite: MGT 365.

MGT 463. Labor Relations. 3 credits.

An examination of the field of labor relations including the evolution of the labor movement, the structure of unions, public labor policy and the emergence of public sector bargaining. Prerequisite: MGT 365.

MGT 464. Industrial Psychology. 3 credits.

Motivation of workers, leadership, work groups; measurement of job performance and job satisfaction. Prerequisite: COB 300 or MGT 300 and COB 191.

MGT 465. Senior Seminar in Personnel. 3 credits.

A study of advanced personnel management theory and techniques. Topics include development and implementation of policy and procedures; new techniques in planning, administration and evaluation of human resources management in organizations; and research problems. Prerequisite: Senior standing. MGT 365 and at least nine hours from MGT 460, 462, 463, 464, 466, 467 or 468 or permission of the instructor.

MGT 466. Employee Training and Development. 3 credits.

A study of training and development of human resources in organizations. Topics include design, development and evaluation of programs; adult learners; adult development; and career development programs in organizations. Prerequisite: MGT 365.
MGT 467. Human Resource Planning and Strategy. 3 credits.

Study of human resource management from a macro organizational perspective. Emphasizes the role of the human resource manager as a strategic partner in organizational planning. Topics include environmental analysis, forecast techniques, human resource strategies and implementation programs. Prerequisite: MGT 365.

MGT 468. Employee Selection. 3 credits.

A study of the selection of human resources in organizations. Topics include internal and external recruitment, internal and external selection and testing. Prerequisite: MGT 365.

MGT 472. Venture Creation. 3 credits.

The formulation, financing and operation of new ventures by individual entrepreneurs and entrepreneurial teams will be explored. The course will include a group term project designed to give the students clinical experience in the venture creation process. Prerequisite: COB 300 or FIN 445 and MGT 372 or permission of the instructor.

MGT 473. Small and Family Business Management. 3 credits.

Emphasizes the complexities of family roles and relationships in a family business, operational planning, marketing, financial and administrative controls and the future of the small and family business. Prerequisite: COB 300 or MGT 300, MGT 311 and MKTG 380 and MGT 372 or permission of the instructor.

MGT 474. Entrepreneurial Research and Small Business Consulting. 3 credits, repeatable to 6 credits.

Students will conduct actual research and consulting duties for numerous clients of the Center for Entrepreneurship. Assignments and clients will vary but all students will be expected to work with several entrepreneurs and business owners. Extensive field work required. Prerequisite: Permission of the instructor.

MGT 480. Organization Theory. 3 credits.

Examines the theory and research underlying the design of complex organizations. Takes a macro approach to the study of organizations, placing particular emphasis upon the interaction between an organization and its environment and the impact that the environment has on organizational design, structure and processes. Prerequisite: COB 300 or MGT 300, MGT 311 and senior standing (90 hours).

MGT 488. Experiences in Organizational Behavior. 3 credits.

This course offers the student the in-depth study of such variables as motivation, leadership, planning and control and management of conflict and change. These variables will be studied through the use of in-class experiential exercises. Prerequisite: COB 300 or MGT 311 and senior standing (90 hours).

MGT 490. Special Studies in Management. 1-3 credits each semester.

Designed to give capable students in management an opportunity to complete independent study under faculty supervision. Prerequisite: Recommendation of the instructor and written permission of the director prior to registration.

MGT 494. Business Practicum. 3-6 credits.

A course providing an opportunity to work in and with local industry to gain insight into the real side of modern business. Prerequisite: Management major and senior standing (90 hours); recommendation of the instructor and written permission of the program director prior to registration.

MGT 495. Human Resources Internship. 3-6 credits.

Internship in the area of human resource management as a generalist or in a specific area. Prerequisite: MGT 365, recommendation of the instructor and written permission of the director prior to registration.

MKTG 100. Aspects of Culture. 3 credits.

An environmental approach to the study of dress through the physical, cultural, economic, psychological, emotional, aesthetic and sociological influences.

MKTG 380. Principles of Marketing. 3 credits.

Deals with fundamentals involved in the marketing process; concerned with the functions, institutions and channels used to distribute goods and services from producer to consumer. Prerequisite: Junior standing (56 hours) and a cumulative 2.0 grade point average in all courses taken at JMU.

Marketing

College of Business
MKTG 382. Market Database Development. 3 credits.
Course introduces the research process, with a focus on use of quantitative secondary data. Students create market databases using database management software and overview marketing tasks of database management systems. Students use geographic information systems and decision support systems applications to conduct market opportunity analyses. Prerequisite: MKTG 380 or COB 300 and COB 191.

MKTG 385. Buyer Behavior. 3 credits.
Deals with the behavioral science concepts of individual and group behavior of consumers and industrial buyers. Stresses the application of buyer behavior research to marketing management. Prerequisite: MKTG 380 or COB 300.

MKTG/HTM 386. Hospitality and Services Marketing. 3 credits.
Application of marketing principles to the services sector, including the hospitality industry. The course focuses on review of customer demand for and assessment of services; the employee/customer interface; services operation management; review of the services marketing mix; and development of marketing plans for service organizations. Prerequisite: MKTG 380 or COB 300.

MKTG 388. Retail Marketing. 3 credits.
Study of the institutions of retailing, retailing research, selection of store location and layout, retail organizational structure and merchandise planning and management. Retail store image, promotion, retail pricing, retail strategy and retail trends will be evaluated. Prerequisite: MKTG 380 or COB 300.

MKTG 391. Fundamentals of Merchandising. 3 credits.
To develop an understanding of the merchandising industry as a major segment of the global economy, including the history and growth of the retail/apparel industry. To understand the marketing of consumer goods, the market centers and global sourcing. Prerequisite: MKTG 380 or COB 300.

MKTG 392. Analysis of Merchandise. 3 credits.
To understand the manufacturing process of consumer goods, to evaluate the quality of consumer products and to have knowledge of material/textile composition of soft and hard retail goods. Prerequisite: MKTG 380 or COB 300.

MKTG 394. Merchandising Buying. 3 credits.
Deals with the fundamentals involved with retail buying, including policies, terminology, knowledge of markups, markdowns, inventory and stock turn, vendor negotiation and pricing for profit. Course focuses on imports/exports of soft and hard retail goods. Prerequisite: MKTG 380 or COB 300.

MKTG 395. Merchandising Imports/Exports. 3 credits.
To provide students with global knowledge of the impact on all economies of merchandising imports and exports. Prerequisite: MKTG 380 or COB 300.

MKTG 405. Survey Research. 3 credits.
This course covers the techniques and principles, skills and activities that are required to conduct an effective survey project. The course will cover survey planning, survey methods, sampling, survey instrument design, data collection and analysis, and survey reporting. Survey findings are linked to future marketing decision-making. Prerequisite: MKTG 380 or COB 300, MKTG 382, MKTG 385.

MKTG 420. Database Marketing. 3 credits.
Examines database applications by which marketers can build a long-term, interactive relationship between their product/service and their customers. Study of the information-driven marketing process that enables marketers to develop, test, implement, measure and modify customized marketing programs and strategies. Prerequisite: MKTG 380 or COB 300, MKTG 382.

MKTG 430. Sales Management and Personal Selling. 3 credits.
Provides an understanding of many aspects of personal selling including preparing for selling, selling techniques and the role of selling in our society. These activities are also examined from an administrator's point of view. Prerequisite: MKTG 380 or COB 300.

MKTG 450. Business Marketing. 3 credits.
An analysis of the policies and procedures in marketing to business buyers. The course provides emphasis on special problems connected with the segmentation and target marketing, purchase, distribution, promotion and development of business-to-business goods and services. Prerequisite: MKTG 380 or COB 300.

MKTG 460. Global Marketing. 3 credits.
Global marketing examines marketing in international environments, including foreign entry, local marketing in individual countries and global or standardized marketing across many countries. Emphasis is placed on cultural, economic and strategic variables in deciding how to enter and compete in various markets. Prerequisite: MKTG 380 or COB 300.

MKTG 470. Strategic Internet Marketing. 3 credits.
Studies the culture and demographics of the Internet and examines online business strategies. Students will learn the hardware and software tools necessary for Internet commerce, identify appropriate target segments, develop product opportunities, pricing structures and distribution channels over the Internet and execute marketing strategy in computer mediated environments. Prerequisite: MKTG 380 or COB 300. (Formerly MKTG 440.)

MKTG 480. Product Development and Management. 3 credits.
The process of developing new products will be developed and explored. The marketing tasks which are unique to this operation will be investigated. An understanding of the marketing management of products throughout their life cycles will complete the course. Prerequisite: MKTG 380 or COB 300 or consent of the instructor.
MKTG 484. Integrated Marketing Communications. 3 credits.

Integrated Marketing Communications includes advertising, sales promotions, packaging, public relations, publicity, personal selling, direct marketing and event sponsorship. Student will be involved in creating, planning, implementing and evaluating client-oriented projects by developing integrated marketing communication campaigns. Prerequisite: MKTG 380 or COB 300 and MKTG 382 or permission of instructor.

MKTG 485. Marketing Management. 3 credits.

Case studies are used to develop analytical and decision-making skills. Knowledge gained from previous course work is applied to actual circumstances faced by marketing managers in private, public, profit and not-for-profit organizations. Extensive preparation of case materials outside of class provides the basis for case presentations and discussion of case situations in class. Prerequisite: MKTG 380 or COB 300, MKTG 382 and MKTG 385 and senior standing.

MKTG 490. Special Studies in Marketing. 1-3 credits.

Designed to give capable students in marketing an opportunity to complete independent study under faculty supervision. Prerequisite: GPA of 2.80, recommendation of the instructor and approval by the director prior to registration.

MKTG 494. Marketing Internship. 3-6 credits.

A course providing an opportunity to work in and deal with local industry to gain insight into the real side of modern business. Prerequisite: Senior standing. must have application on file with Student Development Center no later than April 1 of junior year. Recommendation of the internship coordinator and approval of the director prior to registration.

MKTG 498. Special Topics in Marketing. 3 credits.

This course is designed to allow explorations of areas of current topical concern or to exploit special situations. Course content will vary. For current course content consult your adviser. Prerequisite: Permission of the instructor.

MKTG 499. Honors. 6 credits.

Year course.

Military Science

Department of Military Science

MSCI 100. Leadership Laboratory (0, 2). 1 credit, repeatable to 8 credits.

A laboratory in the development of leadership, stressing the practical application of leadership principles, techniques, styles and responsibilities. Participation as a member of a team or as a leader of the team given responsibility for accomplishment of given tasks.

MSCI 101. Introduction to Leadership and the Army. 1 credit.

Introduction to various leadership styles and their effect on organizations; an introduction to the organization of the U.S. Army, its roles and missions, customs and traditions; effective writing and oral presentation techniques; orienteering and the use of lensatic compass; principles of physical conditioning. Corequisite: MSCI 100, Leadership Laboratory.

MSCI 102. Leadership Development Fundamentals. 1 credit.

Introduction to the basic principles of leadership; developing a personal leadership style; effective writing and speaking skills; introduction to leadership in small tactical units; fundamentals of first aid, land navigation and marksmanship; principles of personal conditioning. Corequisite: MSCI 100, Leadership Laboratory.

MSCI 201. Leadership Styles – Theory and Application. 2 credits.

A study of individual leadership styles and techniques, using historical case studies; an introduction to the branches (specialties) of the army. Communication and goal-setting in small organizations; effective writing and public speaking; performance and evaluation as the leader of a five-member team required to accomplish tasks in a practical setting. Also serve as a member of a 10-person team responsible for accomplishing tasks in a field setting. Corequisite: MSCI 100, Leadership Laboratory.

MSCI 202. Developing Leader Skills. 2 credits.

Analyzing missions to determine specified and implied tasks; organizing and conducting a briefing, preparing a concise written directive (operations order); detailing how a team will accomplish its tasks; performance and evaluation as the leader of a five-person team during a 44-hour, off-campus leadership practicum; evaluation of physical fitness preparedness for attendance at Cadet Professional Development Training. Corequisite: MSCI 100, Leadership Laboratory.

MSCI 300. Advanced Leadership Laboratory (0, 2). 2 credits, repeatable to 8 credits.

An advanced laboratory in the development of leadership, stressing the practical application of leadership principles, techniques, styles and responsibilities. The advanced leadership laboratory focuses on leadership planning, resourcing and execution. Performance and evaluation as a leader of a 10- to 30-person team given responsibility for accomplishment of given tasks. Responsible for the evaluation, counseling and mentoring of 10 to 30 subordinates and team members. Prerequisite: Completion of ROTC Basic Course (MSCI 101, 102, 201, 202 and MSCI 100 lab). Department head approval required.
MSCI 310. Leading Small Organizations. 3 credits.
Ethical dilemmas in leadership - when organizational goals conflict with member welfare; the role of policy and standard procedures in organizations; continued practice in effective writing and oral presentations; performance as a leader of a 10-person team in practical exercises; evaluation as an instructor of a period of instruction for 30 subordinates; evaluation as a leader of a 10- to 30-person team in a 44-hour, off-campus leadership practicum. Prerequisite: MSCI 101, 102, 201 and 202 or placement credit as determined by the professor of military science. Corequisite: MSCI 300, Advanced Leadership Laboratory.

MSCI 320. Developing Advanced Leader Skills. 3 credits.
Planning for the unexpected in organizations under stress; developing alternate courses of action which are viable with the given constraints; how to delegate tasks and supervise subordinate leaders; avoiding micro-management - the when and how of providing guidance and direction; time management - the “backward planning process;” evaluation of a 10- to 30-person team within tactical and non-tactical settings; analysis of assigned tasks, preparation of a written directive to accomplish these tasks and oral presentation to others in a concise briefing. Corequisite: MSCI 300, Advanced Leadership Laboratory.

MSCI 410. Seminar on Command Management - Leadership Challenges and Organizational Goal-Setting. 3 credits.
Studies in advanced leadership and management; how to assess organizational cohesion and develop strategies to improve it; examine and utilize components of the army’s training cycle; methods of instruction, planning and conducting of classes to be taught at leadership lab; conduct of oral After-Action Reviews and preparation of written After-Action Reports; the counseling process for improving individual and group performance of subordinates. Corequisite: MSCI 300, Advanced Leadership Laboratory.

MSCI 420. Seminar on Officership Transition. 3 credits.
Introduction to army management systems - personnel and logistics; the military’s legal system and its application at the company level; the officer-NCO relationship; The Officer Efficiency Report and its support form; establishment of project time lines with milestones, goals and In-Progress Reviews; book review on the Civil War Battle of Antietam, along with a field trip to Antietam Battlefield. Corequisite: MSCI 300, Leadership.

MSCI 420. Seminar on Officership Transition. 3 credits.
Introduction to army management systems - personnel and logistics; the military’s legal system and its application at the company level; the officer-NCO relationship; The Officer Efficiency Report and its support form; establishment of project time lines with milestones, goals and In-Progress Reviews; book review on the Civil War Battle of Antietam, along with a field trip to Antietam Battlefield. Corequisite: MSCI 300, Leadership.

Middle School Education

School of Education

MSED 401. The Middle School. 1 credit.
Students learn the essential elements of the middle school program such as programming relates to educating children in the middle grades. Corequisite: MSED 402.

MSED 402. Practicum I (0, 2). 1 credit.
Students devote 30 clock hours to classroom activities in a middle school under university and public school supervision. Satisfactory performance in this course is required for retention in teacher education. Corequisite: MSED 401.

MSED 412. Middle School Curriculum. 4 credits.
This course provides an understanding of objectives, content, materials and trends associated with the curriculum in grades four through eight. Attention is given to interdisciplinary aspects of the curriculum and to science, social studies and the fine arts. Prerequisite: Permission of instructor.

MSED 413. Practicum II (0, 2). 1 credit.
Students devote 30 clock hours to classroom activities in grades four and five under university and public school supervision. Satisfactory performance in the course is required for retention in teacher education. Prerequisite: Permission of instructor.

MSED 420. Instructional Strategies in the Middle Grades. 3 credits.
Basic instructional planning and techniques appropriate to grades four through eight are studied. Specific attention is given to classroom management and discipline, evaluation of learner progress and working with parents. Prerequisite: Permission of instructor.

MSED 422. Practicum III (0, 2). 1 credit.
Students devote 30 clock hours to working with children who need special instruction. Prerequisite: Permission of instructor.

MSED 480. Student Teaching in Middle Education. 8 credits.
Enables students to apply in public school classrooms those understandings, skills and attitudes acquired in all components of teacher education. Under the guidance of university supervisors and cooperating teachers, students engage in full-time teaching responsibilities.
Applied Music Instruction
School of Music

Private and/or group applied lessons are basic areas of study for all music majors and approved minors. All other students, including freshmen and transfer students entering in an undeclared major status, who desire applied instruction will be accommodated after declared majors and minors have been scheduled and if time permits. Permission to register must be obtained from the coordinator of the respective applied area:

- Bassoon
- Clarinet
- Euphonium
- Flute
- Guitar
- Harpsichord
- Horn
- Oboe
- Organ
- Percussion
- Piano
- Saxophone
- String Bass
- Trumpet
- Tuba
- Viola
- Violin
- Violoncello
- Voice

Small Group Lessons
MUAP 113. 1 credit each semester.
Two hours per week. May be repeated.
1 credit each semester. May be repeated for up to four credits.

Applied Lessons
MUAP 200-level. 1 credit each semester.
One half-hour lesson per week. Five hours minimum practice per week. May be repeated.
MUAP 300-level. (See below for credits.)
One hour lesson per week. Ten hours minimum practice per week for two credits; 14 hours for three credits; and 18 hours for four credits. May be repeated.

Music Ensembles
Student performing ensembles sponsored by the School of Music provide unique musical experiences for music majors and any other university students who wish to continue developing their performing skills. The numerous large and small choral and instrumental ensembles encompass a wide range of musical styles and repertoire. Although participation in most ensembles requires an audition, several only require the permission of the director. All ensembles must be taken for credit and may be repeated. Students new to JMU should contact the music office during the registration periods for additional information.

Instrumental
MUAP 237. Marching Band (Fall Semester).
2 credits each semester.
The Marching Band will perform music and drill which is artistically structured. The repertoire will be representative of all styles of music. The Marching Band is required for two years of wind and percussion majors in the music education degree program.

MUAP 238. Concert Band. 1 credit each semester.
Open to all interested participants. A wide variety of music is utilized to acquaint the student with different types of band literature.
MUAP 239. Symphonic Band. 1 credit each semester.
The JMU Symphonic Band is a select group of brass, woodwind and percussion students who are dedicated to the performance of both traditional and contemporary band literature. The ensemble performs music of all periods and is open to any university student by audition in the fall of each year.

MUAP 344. Chamber Orchestra. 1 credit each semester.
Open to all university students. Membership is determined by audition. Music written for chamber orchestra from all periods is studied and performed.
MUAP 345. Symphony Orchestra. 2 credits each semester.
The JMU Symphony Orchestra is a participating member of the American Symphony Orchestra League. Membership is determined by audition and is open to all university students. Literature performed is from the standard symphonic repertoire.

MUAP 346. Wind Symphony. 2 credits each semester.
The JMU Wind Symphony is a highly select group of brass, woodwind and percussion students who are dedicated to the performance of wind orchestra music and chamber music for winds. The ensemble performs music from all periods and is open to any university student by audition in the fall of each academic year.

MUAP 347. Jazz Ensemble. 2 credits each semester.
Instrumental music performance ensemble of the standard "big band" instrumentation whose repertoire reflects jazz styles from the swing era to contemporary jazz. Admission is by audition.

MUAP 348. Jazz Band. 1 credit each semester.
Instrumental ensemble, performing the standard and contemporary repertoire of American music with emphasis on the jazz idiom. Jazz band is open to all JMU students who have sufficient ability to play the repertoire.

MUAP 349. Jazz Rock Ensemble. 1 credit each semester.
Small 10-piece ensemble consisting of winds and rhythm serving as backup band for the Madisonians show choir. The ensemble is open by audition and/or invitation of the director.

MUAP 350. String Ensemble. 1 credit each semester.
A rehearsal and performance ensemble where students of similar technical and musical ability are grouped in traditional string or piano trios, quartets and quintets and present public performances of important compositions from the chamber music literature of all historical periods.
MUAP 351. Woodwind Ensemble. 1 credit each semester.
Woodwind ensembles consisting of quintets or other smaller and larger combinations, limited to specially selected personnel through auditions. Concerts and other performances are prepared from a variety of literature from the classical period to the present.

MUAP 352. Brass Ensemble. 1 credit each semester.
Open to JMU students by audition. Literature ranging from the Renaissance to the 20th century will be performed using varied instrumentation. Performance experiences range from formal concerts to service-related events.

MUAP 353. Guitar Ensemble. 1 credit each semester.
The performance of guitar music from Renaissance to 20th century for duos, trios and quartets.

MUAP 354. Percussion Ensemble. 1 credit each semester.
The study and preparation for public performance of percussion ensemble literature. The ensemble is open to all university students by audition.

MUAP 355. Jazz Chamber Ensemble. 1 credit each semester.
Open by audition to students demonstrating a high degree of skill in jazz improvisation. Concerts and other performances are prepared from a variety of literature from early jazz to the present day.

MUAP 356. Flute Choir. 1 credit each semester.
Ensemble of multiple flutes, including alto and bass flutes and piccolo, which will rehearse and present concerts each semester. Flute choir is open to any flute player by audition.

MUAP 340. Chorale. 1 credit each semester.
A highly selected, 60-voice mixed choir that performs repertoire from the Renaissance to the contemporary era, both sacred and secular. There are opportunities to perform on and off campus.

MUAP 341. Madison Singers. 1 credit each semester.
A highly specialized vocal organization of 16 to 25 members. Membership is by audition. Repertoire is widely varied from Medieval to contemporary.

MUAP 342. Madisonians. 2 credits each semester.
A vocal ensemble performing vocal jazz literature and other contemporary American repertoire. Choreography included with appropriate music. The Madisonians group is open by audition in the spring to all JMU students.

MUAP 343. Opera Theater. 1-2 credits each semester.
The preparation and public performance of grand opera, light opera and musicals. Work will include coaching of both music and acting. Credit may vary with permission of instructor depending on the amount of time commitment. Admission is by audition only.

2-4 credits each semester.
One-hour lesson a week; 10 hours minimum practice per week for two credits, 14 hours for three credits and 18 hours for four credits. This course may be repeated.

MUAP 357. Piano Accompanying and Piano Ensemble. 1 credit each semester.
A course in basic accompanying skills and style characteristics required for two semesters (one fall, one spring) of all piano majors. Students will be assigned to vocal or instrumental studios and have the opportunity to perform in master class and private coaching sessions.

MUAP 334. Men’s Chorus. 1 credit each semester.
Performs music of various styles, but with primary focus on the lighter genres. It is open to the entire male student body without audition. The director reserves the right to limit membership because of balance or space considerations.

MUAP 335. Chorus. 1 credit each semester.
Acquaints students with a variety of choral music including music that is suitable for use with school groups and through this singing helps develop choral techniques and general musicianship. Students may participate in this ensemble without audition. However, the director reserves the right to determine its membership.

MUAP 336. Women’s Chorus. 1 credit each semester.
Performs music of various styles, but with primary focus on the lighter genres. It is open to the entire female student body without audition. The director reserves the right to limit membership because of balance or space considerations.

MUAP 340. Chorale. 1 credit each semester.
A highly selected, 60-voice mixed choir that performs repertoire from the Renaissance to the contemporary era, both sacred and secular. There are opportunities to perform on and off campus.

MUAP 341. Madison Singers. 1 credit each semester.
A highly specialized vocal organization of 16 to 25 members. Membership is by audition. Repertoire is widely varied from Medieval to contemporary.

MUAP 342. Madisonians. 2 credits each semester.
A vocal ensemble performing vocal jazz literature and other contemporary American repertoire. Choreography included with appropriate music. The Madisonians group is open by audition in the spring to all JMU students.

MUAP 343. Opera Theater. 1-2 credits each semester.
The preparation and public performance of grand opera, light opera and musicals. Work will include coaching of both music and acting. Credit may vary with permission of instructor depending on the amount of time commitment. Admission is by audition only.

Keyboard

2-4 credits each semester.
One-hour lesson a week; 10 hours minimum practice per week for two credits, 14 hours for three credits and 18 hours for four credits. This course may be repeated.

MUAP 357. Piano Accompanying and Piano Ensemble. 1 credit each semester.
A course in basic accompanying skills and style characteristics required for two semesters (one fall, one spring) of all piano majors. Students will be assigned to vocal or instrumental studios and have the opportunity to perform in master class and private coaching sessions.

Music Education

School of Music

MUED 206. Instrument Familiarization. 1 credit.
Introduces noninstrumental music majors to the tone production and basic characteristics of the woodwind, brass, percussion and string instrument families. No skill development in playing most of the instruments is attempted, but beginning skills on the guitar are emphasized.

MUED 271. Introduction to Music Education. 2 credits.
Overview of music teaching careers in general, the music education curriculum and Virginia’s Standards of Learning. Field trips to observe school music programs will be taken.
MUED 301-302. Woodwind Techniques. 1 credit each semester.
Instruction in the basic skills of playing and teaching standard woodwind instruments in a heterogeneous class situation. Various methods for woodwind teaching will be studied and materials used in public school teaching will be examined and performed. MUED 301 each fall; MUED 302 each spring.

MUED 303-304. Brass Techniques. 1 credit each semester.
Instruction in the basic skills of playing and teaching standard brass instruments in a heterogeneous class situation. Various methods for brass teaching will be studied and materials used in public school teaching will be examined and performed. MUED 303 each fall; MUED 304 each spring.

MUED 305-306. Percussion Techniques. 1 credit each semester.
Instruction in the basic skills of playing and teaching standard percussion instruments in a heterogeneous class situation. Various methods of percussion teaching will be studied and materials used in public school teaching will be examined and performed. MUED 305 each fall; MUED 306 each spring.

MUED 307-308. String Techniques. 1 credit each semester.
Instruction in the basic skills of playing and teaching string instruments. Instruction will be on violin, viola, cello, bass and guitar in a heterogeneous class situation. Various methods for string teaching will be studied and materials used in public school teaching will be examined and performed. MUED 307, each fall; MUED 308, each spring.

MUED 310. Vocal Techniques. 1 credit.
Class instruction designed to acquaint the instrumental (nonvoice) major with fundamentals of vocal and choral techniques including posture, breath support, basic vocal production, physiological functions of the vocal mechanism, singer's diction, vocal exercises and individual as well as ensemble performances.

MUED 311. Beginning Methods and Materials for Instrumental Music. 2 credits.
Methods and materials for beginning through intermediate instrumental music students. Administrative concerns are included. Prerequisite: MUED 271.

MUED 312. General Music Practices. 2 credits.
Focuses on broad preparation for teaching the general music courses now found at both middle and high school levels. Prerequisite: MUED 271.

MUED 313. Advanced Methods and Materials for Instrumental Music. 2 credits.
Learning experiences related to the career needs of school instrumental music teachers are analyzed, discussed and practiced. Planning and teaching skills are presented for beginning, intermediate and advanced level students. Prerequisite: MUED 317.

MUED 376. Choral Music Materials and Techniques. 2 credits.
Learning experiences of a useful and practical nature related to the career needs of school choral music teachers will be analyzed, discussed and practiced. Skills will be presented such as planning and teaching vocal technique, choosing appropriate music and administering choral music programs. Prerequisite: MUS 317 and MUED 271 or permission of instructor.

The general music program in the elementary school presented for future music specialists, K-6. Focus is on the synthesis of current philosophy, learning theories and educational practices for teaching elementary school music. Preparation for organizing music curricula and daily lesson plans is included. Prerequisite: MUED 271.

MUED 470. Marching Band Procedures. 2 credits.
Skills and knowledge needed to organize, administer, plan and teach marching band shows including shows for various competitions, parades, football, basketball and festival events; and techniques for developing both marching and playing style through a functional method of fundamental drills. Prerequisite: MUED 271 or permission of instructor.

MUED 471. Jazz and Show Choir Procedures. 2 credits.
Covers skills and concepts needed to organize, administer, plan, teach and perform in jazz or show choirs. Techniques of commercial vocal style and choreography for the show choir will be highlighted. Prerequisite: MUS 317 and MUED 271 or permission of instructor.

MUED 472. Survey of String Orchestra Repertoire. 2 credits.
An examination of concert repertoire for string and full orchestra appropriate for performance by students in grades seven through 12. The course will include a study of evaluation and selection of music appropriate for a specific ensemble. Prerequisite: MUED 271 or permission of instructor.

Course Descriptions 333

Music Industry

School of Music

MUI 221. Survey of the Music Industry. 3 credits.
An overview of the recording, entertainment and performing arts industries including an examination of the historical, aesthetic and commercial developments of the music industry in the United States.

MUI 323. Legal Aspects of the Music Industry. 3 credits.
An examination of the legal issues affecting the performing arts, recording and music publishing fields. Topics include music rights and licensing, performing arts unions and guilds, artist representation and contractual relationships. Prerequisite: MUS 221.
MUI 324. Audio Devices for Musicians I. 2 credits.
Introduction to electronic devices used in music recording and reproduction.

MUI 325. Audio Devices for Musicians II. 2 credits.
Continuation of Audio Devices I; includes sound reinforcement and recording practice. Prerequisite: MUI 324.

MUI 392. Practicum in Music Industry. 1 credit, repeatable to 4 credits.
Supervised cocurricular music industry activities. Students may receive one credit hour per semester. Prerequisite: MUI 221 and Practicum Approval Form.

MUI 400. Multi-Track Recording Techniques I. 3 credits.
An introduction to contemporary multi-track recording studio techniques. Students will be introduced to recording studio design, psycho-acoustics, mixing techniques, Musical Instrument Digital Interface and the mixing console. Prerequisite: MUI 325 or SMAD 234.

MUI 401. Multi-Track Recording Techniques II. 3 credits.
Advanced multi-track recording studio techniques. Students will examine signal processing, musical instrument digital interface, mixdown and editing procedures. Prerequisite: MUI 400.

MUI 410. Songwriting. 3 credits.
An introduction to form, lyric development and melodic structure of contemporary songwriting for commercial entertainment applications. The course will include examination of leadsheet writing, demo production, copyright protection and publishing of commercial songs. Prerequisite: MUI 221, MUS 142 or permission of instructor.

MUI 411. Film Scoring: Music in Broadcast and Entertainment Media. 3 credits.
An examination of music used in the broadcast and entertainment media from artistic, cultural, technological and business viewpoints. Major emphases will include composition and production of music for the following media applications: radio advertising, television advertising, television programming, film and video. Prerequisite: MUI 221 and MUS 142 or permission of instructor.

MUI 420. Marketing of Recorded Music. 3 credits.
Examination of the process of studio production, manufacturing, promotion and distribution of contemporary recordings. Record release programs for independent and major label-controlled products are analyzed. Prerequisite: MUI 221.

MUI 422. Concert Production and Promotion. 3 credits.
Study of the presentation of cultural and commercial entertainment in the form of concert events from artistic, technical and business viewpoints. The roles of the cultural impresario and concert promoter in contemporary society are examined. Prerequisite: MUI 221 and 323 or permission of the instructor.

MUI 426. Music and Sound Product Merchandising. 3 credits.
The study of manufacturing, importation and distribution of music and sound products. An overview of product knowledge necessary for merchandising musical instruments, sound reinforcement systems and audio recording/playback equipment. Prerequisite: MUI 221.

MUI 492. Internship in Music Industry. 3-6 credits.
A supervised off-campus cocurricular learning activity designed to provide practical experience in the music industry. Prerequisite: MUI 221 and 323.

Music

School of Music

MUS 100-101. Elementary Class Piano. 1 credit each semester.
Primarily for music majors on beginning piano level. The course includes basic techniques, sight reading, elementary repertoire and functional theory-related keyboard skills.

MUS 120. Diction for Singers I. 1 credit.
The study of English and Italian pronunciation using the phonetic alphabet with emphasis on the performance of song literature in each language. Open to music majors and minors or by permission of instructor. Prerequisite: Music major or permission of instructor.

MUS 121. Diction for Singers II. 1 credit.
The study of French and German pronunciation using the phonetic alphabet with emphasis on the performance of song literature in each language. Prerequisite: Music major or minor or by permission of instructor.

Covers basic information in music theory, basic ear-training and sight-singing skills and basic keyboard skills designed for the nonmusic major. MUS 131 is a prerequisite to MUS 132. MUS 131 fall; MUS 132 spring.

MUS 141-142. Theory I: Writing and Analysis Techniques. 3 credits each semester.
Music scale construction, rhythm and interval work, melody writing and a study of triads, inversions, primary and secondary chords, embellishments, modulation to closely related keys and musical form and analysis. Prerequisite: MUS 142 requires a grade of “C-“ or higher in MUS 141; corequisite: should be taken concurrently with MUS 143-144.

MUS 143-144. Theory I: Aural Perception and Analysis. 1 credit each semester.
A coordinated laboratory course with MUS 141-142 encompassing sight singing and ear training. The course involves music reading and aural perception in unison and parts, dictation, error detection and analytical listening. Programmed tape instruction supplements in-class drill. Prerequisite: MUS 144 requires a grade of “C-“ or higher in MUS 143; corequisite: should be taken concurrently with MUS 141-142.
MUS 195. Recital Attendance. 0 credit.
Required of all music majors for the first six semesters of their enrollment as a major. The course is repeatable and each section of the course represents a semester. Successful completion of the course requires a minimum of 20 recitals attended each semester, totalling 120 attendances over the six semesters.

*GMUS 200. Music in General Culture. 3 credits.
Designed to increase the student's perceptual ability in listening to music and to encourage an interest in both familiar and unfamiliar music. Primary study will be on music from the classic, Western heritage. Folk, jazz, popular and non-Western musics may also be considered. Meets fine arts general education requirement.

MUS 202-303. Class Piano. 1 credit each semester.
Class instruction in functional piano skills for music majors with placement in intermediate through advanced levels of instruction by audition/interview. The course includes sight reading, transposition, harmonization, improvisation, playing by ear and accompanying techniques. It is designed to prepare students for keyboard proficiency examination required for most music majors.

*GMUS 203. Music in America. 3 credits.
Knowledge and skills to increase the student's perceptual ability in music listening with a survey of American music; examining relationships between popular and classical music styles. Meets fine arts and American studies general education requirements.

*GMUS 205. Global Music to the 18th Century. 3 credits.
A survey of the musical traditions of Africa and the Americas. The course will focus on aesthetic, musical forms and styles and the relationship of music to the other arts. Emphasis will be placed on historical, religious and cultural events and their influence on the development of music.

*GMUS 206. Global Music: 18th Century to Present. 3 credits.
A survey of the musical traditions of Asia, Europe, Africa and the Americas. The course will focus on aesthetic, musical forms and styles and the relationship of music to the other arts. Emphasis will be placed on historical, political and cultural events and their influence on the development of music.

MUS 240. Jazz Improvisation Laboratory I. 2 credits.
Presents the fundamentals of improvisation in both jazz and popular musical styles. The class emphasis will be on creative work although some theory and chord nomenclature will be taught. Both vocal and instrumental musicians will be permitted to enroll, including both the general student and the music major. Prerequisite: Music major or jazz minor or permission of instructor.

MUS 241-242. Theory II: Writing and Analysis Techniques. 3 credits each semester.
Continuation of MUS 142. Chromatic harmony, large forms, introduction to 20th-century compositional techniques. Prerequisite: MUS 241 requires a grade of "C-" or higher in MUS 142; MUS 242 requires a grade of "C-" or higher in MUS 241; corequisite: should be taken concurrently with MUS 243-244.

MUS 243-244. Theory II: Aural Perception and Analysis. 1 credit each semester.
A coordinated laboratory course with MUS 241-242 encompassing sight singing and ear training and involving music reading and aural perception in union and parts, dictation, error detection and analytical listening. Programmed tape instruction supplements in-class drill. Prerequisite: MUS 243 requires a grade of "C-" or higher in MUS 144; MUS 244 requires a grade of "C-" or higher in MUS 243; corequisite: should be taken concurrently with MUS 241-242.

MUS 304. Advanced Keyboard Skills. 1 credit.
Designed for music majors who are required to minor in piano and/or organ. The emphasis is on sight reading and other keyboard skills beyond those covered in the class piano MUS 303 course. This is a group class which can be repeated. Prerequisite: MUS 303.

MUS 317. Basic Conducting. 2 credits.
Designed to acquaint the student with the fundamental elements of conducting technique, such as beat patterns, cueing, expression, transposition and score reading, with an emphasis on applying these techniques in practical conducting experiences involving vocal and instrumental forces. Prerequisite: MUS 142 and MUS 144 or junior standing.

MUS 318. Intermediate Choral Conducting. 2 credits.
Consists of the further application of basic conducting skills learned in MUS 317 to the choral situation with emphasis on choral conducting techniques, score reading and preparation and introduction to choral literature. Prerequisite: MUS 317.

MUS 319. Intermediate Instrumental Conducting. 2 credits.
A continuation of basic conducting to develop skills in conducting techniques for public school use. Included are score sight-reading skills and literature selection. Prerequisite: MUS 317.

MUS 352. Music Composition. 2-3 credits.
Individual/seminar instruction in composition using 20th-century styles and techniques. Compositions are performed publicly. Prerequisite: MUS 141 and 142 or permission of instructor. May be repeated.

MUS 356. History of Jazz in America. 3 credits.
A study of American jazz with particular emphasis on its practices with reference to principal performers and composers of jazz-style periods.
MUS/THEA 357. Music Theater History. 3 credits.
A survey study of the history of music theater with consideration of the chronological and stylistic development of the popular forms of music theater. Emphasis will be on historical trends and theatrical viability through the study of specific masterworks.

MUS 365-366. Music History. 3 credits each semester.
The development of Western music from Gregorian chant to the present. MUS 365 is not prerequisite to MUS 366. MUS 365, each fall; MUS 366, each spring.

MUS 371. Private Piano Pedagogy. 3 credits.
Procedures and materials for the teaching of private piano students, especially elementary and intermediate. Piano solo and ensemble literature for children are emphasized. The problems of the adult beginner are studied.

MUS 372. Supervised Private Piano Teaching. 1 credit.
Supervised practice teaching in private lesson settings involving beginning and intermediate piano students of various ages and abilities. Prerequisite: MUS 371.

MUS 420. Piano Technology. 1-2 credits.
The acoustical and mechanical design and history of the piano. This course includes the theory of tuning and temperaments; procedures and techniques of regulating and voicing pianos; and an additional hour for tuning lab.

MUS 440. Jazz Improvisation Laboratory II. 2 credits.
Presents intermediate to advanced improvisation skills in the jazz idiom alone. There is an emphasis on the theoretical analysis of chord progressions as well as on creative musical application. The course concludes by introducing some advanced musical improvisation concepts. May be repeated. Prerequisite: MUS 240 or permission of the instructor.

MUS 441. Vocal Arranging. 3 credits.
Arranging for vocal ensembles. Included will be fundamental concepts of orchestration. Prerequisite: MUS 242 and MUS 244.

MUS 442. Instrumental Arranging. 3 credits
Arranging for various instrumental ensembles, including fundamental concepts for orchestration. Prerequisite: MUS 242 and MUS 244.

MUS 443-444. Counterpoint. 2 credits each semester.
MUS 443: Compositional and analytical study of 16th-century sacred vocal polyphony with two-voice and three-voice assignments and projects. MUS 444: Compositional and analytical study of 18th-century Bach-style polyphony with detailed study of invention, fugue and chorale prelude. (Courses may be taken in sequence or separately) Prerequisite: MUS 142 and MUS 144.

MUS 449-450. Advanced Music Analysis. 2 credits each semester.
Analytical investigation of musical examples in a variety of styles with emphasis on musical form and harmony. MUS 449: Renaissance and Baroque period. MUS 450: 20th century, including Debussy, Bartok and Stravinsky. (Courses may be taken in sequence or separately) Prerequisite: MUS 242 and 244

MUS 453. Introduction to Electronic Music. 2 credits.
An introduction to basic principles of electronic music including theory and acoustics, electronics and operational techniques. This course is designed for composition majors. Prerequisite: MUS 352 or permission of the instructor.

MUS 456. Choral Literature I. 3 credits.
A survey of choral literature from the pre-Renaissance through the Classical period, including a cappella and accompanied works. Attention will be given to parallel trends in keyboard and instrumental music where applicable. Prerequisite: MUS 365-366 or permission of the instructor.

MUS 457. Choral Literature II. 3 credits.
A survey of choral literature from the Romantic period through the present, including a cappella and accompanied works. Attention will be given to parallel trends in keyboard and instrumental music where applicable. Prerequisite: MUS 365-366 or permission of the instructor.

MUS 460. Piano Literature I. 2 credits.
A survey of baroque and classical literature for the piano encompassing solo and concerto repertoire. An examination of literature for the clavichord, harpsichord and pianoforte.

MUS 462. Music of the Romantic Period. 3 credits.
A study of the Romantic movement in music with reference to its historical background and parallel movement in literature and art. The music of Berlioz, Brahms, Chopin, Liszt, Schubert, Wagner and their contemporaries will be covered. Prerequisite: MUS 365 and MUS 366 or permission of instructor.

MUS 463. 20th-Century Music. 3 credits.
A survey of the trends found in 20th century music. Included will be impressionism; new music from Satie through Schoenberg, Bartok, Xenakis and Penderecki; and the music of contemporary American composers. Prerequisite: MUS 365 and MUS 366 or permission of the instructor.

MUS 464. Symphonic Literature. 3 credits.
A historical survey of symphonic literature concentrating primarily on major composers and compositions from Baroque to present.

MUS 465. Opera History and Literature. 3 credits.
A survey study of the history of opera. Consideration will be given to the chronological development of all forms of music theater with an emphasis on style characteristics through aural identification. Prerequisite: MUS 365 and 366 or permission of instructor.

MUS 467. Solo Vocal Literature. 3 credits.
A survey of vocal art-song literature in Western culture.
MUS 468. Organ Literature. 2 credits.
A survey of organ literature from 1600 to the present. Emphasis will be placed on style characteristics of each historical era with some demonstration at the organ where appropriate.

MUS 469. Church Music. 2 credits.
A course for sacred music majors designed to develop the practical skills required of a church musician. Study and performance of hymns, solo and anthem accompaniments, the liturgies of various religious denominations and directing from the organ console. Prerequisite: MUS 317 and 318.

MUS 470. Piano Literature II. 2 credits.
A survey of romantic, impressionistic and 20th-century literature for the piano, including solo and concerto repertoire, with an emphasis on stylistic trends of the 20th century.

MUS 472. Instrumental Pedagogy. 1 credit.
Presentations of instrumental methods, solo and ensemble literature related to the instrumental performer's own major area. Private instruction approaches and techniques are also considered with particular reference to the beginning player.

MUS 477. Vocal Pedagogy. 2 credits.
Designed to acquaint the prospective teacher with techniques of vocal pedagogy, both scientific and empirical. The course involves study, practice and observation.

MUS 478. Music During the Baroque Period. 3 credits.
A survey of music history and literature from 1590-1750. Prerequisite: MUS 365-366 or permission of instructor.

MUS 479. Music During the Classical Period. 3 credits.
A survey of music history and literature from 1750-1827. Prerequisite: MUS 365-366 or permission of instructor.

MUS 490. Special Studies in Music. 1-3 credits each semester.
Designed to give superior music students an opportunity to complete independent study under faculty supervision. Prerequisite: Permission of the instructor and school director.

MUS 495. Senior Graduation Recital. 1 credit.
Presentation of a full recital, with the quality of performance to meet standards for admission to graduate school master's of music programs. Memorized recital presentations will be required in those areas which traditionally demand them. Prerequisite: Senior standing.

MUS 497. Senior Project in Theory. 1 credit.
Analytical paper or other topic approved by the theory-composition area. Enrollment is for students who want to do graduate work in music theory.

MUS 498. Selected Topics in Music. 1-3 credits.
Courses in music or music education which are of a topical nature. This may be repeated.

MUS 499. Honors. 6 credits.
Year course.

Nursing
Department of Nursing

NSG 321. Health Assessment I. 3 credits.
The first health assessment course is designed to develop knowledge and skills necessary to gather, organize and present relevant health data. Emphasis is placed on systematic strategies, frameworks and skills used to conduct both comprehensive and need-specific health assessments for individuals in the context of their family and community.

NSG 322. Health Assessment II. 2 credits.
The second health assessment course is designed to develop knowledge and skills necessary to gather, organize and present relevant health data to assess the health status of families. Tapping major theoretical perspectives, students select assessment questions and tools to describe family structure, functions, developmental stages, environment and coping abilities.

NSG 331. Pathophysiology and Pharmacology I. 2 credits.
Students are introduced to physiological and clinical responses to pathological processes and to the pharmacological agents used to treat these processes. Content is focused on health problems addressed in NSG 341, 371 and 372.

NSG 332. Pathophysiology and Pharmacology II. 2 credits.
The second course in this sequence focuses on the pathophysiology related to the illness processes of increasing complexity encountered in NSG 342 and 373. Students learn the pharmacological management of these illness processes. The body's compensatory mechanisms and defenses are explored.

NSG 341. Nursing Applications I. 4 credits.
This first course in the nursing applications sequence provides the foundational knowledge and theory base for nursing practice. Students are introduced to concepts and principles of nursing process, health promotion, illness risk reduction and illness management. Focus is on the nurse's roles in planning, providing and evaluating care for clients with alterations in health.

NSG 342. Nursing Applications II. 4 credits.
This nursing application course focuses on the integration of concepts and principles utilized in health promotion, risk reduction, clinical decision making and management of care for adults and children experiencing moderate to severe challenges in health maintenance. Emphasis is on nursing roles within the multidisciplinary health care team.

NSG 351. The Profession and the Professional I. 2 credits.
This first course in the Profession and Professional sequence provides an overview of the concepts, definitions and character of professional nursing practice within the context of the health care delivery system. It promotes socialization as a professional nurse, an understanding of the role and processes for professional nursing practice.
NSG 352. The Profession and the Professional II. 2 credits.

This second course in the Profession and Professional sequence examines specific nursing theorists and their importance in nursing practice, explores decision making, research, care coordination and advocacy as critical processes and roles of the professional nurse and discusses the development of nursing as a profession.

NSG 362. Nursing Skills Laboratory II. 2 credits.

In this second laboratory course, students learn additional psychomotor, cognitive and affective skills that are foundational to nursing practice. Focuses of the course include acute care skills, strategies to manage stress, alternative health techniques and therapeutic group processes.

NSG 371. Nursing Practicum I. 3 credits.

This practicum has two distinct components. In the nursing skills laboratory component, students learn the cognitive and affective processes and the psychomotor skills which are foundational to nursing practice. In the practice component, students apply concepts and skills in the delivery of health care to elderly home residents.

NSG 372. Nursing Practicum II. 1 credit.

Through interactions with children and older adults, students develop health and developmental assessment skills and the nursing intervention skills of teaching and therapeutic communication. Emphasis is on holistic developmental assessment of individuals in a family and community context. Sites include day care centers, head start programs, schools and retirement communities.

NSG 373. Nursing Practicum III. 2 credits.

Students apply concepts, principles, theories and skills in the nursing care of adults or children experiencing moderate to severe challenges to health. In hospital settings, students are exposed to a wide variety of clinical skills gaining beginning practice in planning and facilitating nursing care for clients and their families.

NSG 374. Nursing Practicum IV. 1 credit.

This practicum emphasizes application of family assessment skills to evaluate structure, function, resources, needs and coping abilities of families experiencing illness. Students apply interpersonal and group communication skills, teaching-learning skills and problem-solving skills needed to address interrelated needs of the family network. Practicum seminars address family health issues.

NSG 423. Health Assessment III. 1 credit.

In this course, students develop the knowledge, skills and ability to conduct and interpret client assessments that integrate physical, neuropsychiatric, psychosocial and psychopharmacologic parameters. Systematic approaches to the assessment of persons at risk from disorders with both physical and psychiatric disabilities addressed concurrently in NSG 423, 443, 444, 446 and related practicum experiences. The body's compensatory mechanisms and defenses and the pharmacological management for these disabilities are explored.

NSG 443. Nursing Applications III. 3 credits.

This third course in the nursing application sequence focuses on the synthesis of concepts and principles utilized in the health promotion, risk reduction, clinical decision making and management of care for adults and children experiencing life threatening alterations in health maintenance. Emphasis is on nursing intervention and coordination in the context of crisis.

NSG 444. Nursing Applications IV. 2 credits.

In addition to exploration of basic psychiatric mental health nursing processes, this course emphasizes the analysis of health care issues and nursing needs for selected vulnerable populations from an interdisciplinary perspective. At-risk groups are identified and proactive, creative strategies for effective services are explored within a variety of treatment settings.

NSG 445. Nursing Applications V. 3 credits.

This fifth course in the application sequence focuses on synthesis of concepts and principles utilized in health promotion, risk reduction, clinical decision-making and management of women's health care. Focuses include women's health issues, perinatal care of mothers and infants and gynecological health.

NSG 446. Nursing Applications VI. 2 credits.

This course integrates relevant factors affecting the patient-centered care delivery process called case management. Emphasis is on the delivery, management and coordination of episodic care in a variety of settings and populations which focuses on secondary and tertiary levels of prevention.

NSG 453. The Profession and the Professional III. 2 credits.

This third course in the Profession and Professional sequence explores the development of the educational system in nursing, current issues relevant for the professional practice of nursing, the history and role of professional organizations, professional control of the practice of nursing and the utilization of research and theory in professional practice.

NSG 454. The Profession and the Professional IV. 3 credits.

This final course in the Profession and Professional sequence explores current factors having impact on the professional practice of nursing. It explores the many dimensions of management and leadership roles, the utilization of research in nursing practice and the role of nursing in health care policy development. Its focus on career planning and preparation for professional practice includes consideration of future directions, trends and opportunities in health care delivery and professional nursing practice.
NSG 475. Nursing Practicum V. 2 credits.

In this course, students synthesize and apply concepts, principles, theories and skills in the nursing care of adults or children experiencing moderate to multi system challenges in health. On acute and critical care nursing units, students will work in small groups to plan and facilitate care for multiple clients.

NSG 476. Nursing Practicum VI. 2 credits.

Students provide nursing care in the home for persons and families experiencing chronic illness. Using a case management theoretical framework, students coordinate and deliver services through visits with agency nurse case managers and direct care giving responsibilities. Issues of chronic illness, coping and extended care are explored.

NSG 477. Nursing Practicum VII. 1 credit.

The focus of this course is on assessing and meeting health needs of vulnerable individuals and groups. Linked closely with NSG 423, 444 and 478, the design of this practicum reflects the changing face of mental health care, community mental health programs that serve the individuals who are most critically in need of nursing service – the homeless, the working poor and those with restricted access to care. Working within a system of coordinated delivery of community-centered models, the emphasis of the course is on the key role nursing should play in primary health care.

NSG 478. Nursing Practicum VIII. 1 credit.

In this practicum, students are provided an opportunity to learn and apply biopsychosocial concepts to the care of hospitalized individuals experiencing acute alterations in mental health. Experiences may be in a private or public psychiatric treatment setting. There is both an individual and group client care focus.

NSG 479. Nursing Practicum IX. 2 credits.

Working in teams, students coordinate and provide nursing care for women and their families experiencing childbirth or gynecological treatment. Students observe and experience a variety of nursing roles, engage in peer performance appraisal and promote staff and peer professional development. The application of research findings to practice is emphasized.

NSG 480. Nursing Practicum X. 2 credits.

In this practicum, students are provided an opportunity to apply beginning case management in health and human services settings. The focus is coordination of care for clients, including those with high risk behaviors, inadequate coping and alterations in functional or developmental status.

NSG 481. Nursing Practicum XI. 1 credit.

The concepts community as client and population-focused practice are presented with an emphasis on understanding the relationship between individual, family and community needs. Students perform community-focused assessment and interventions and apply concepts of health promotion, health maintenance, health education and coordination of care.

Nutrition

Department of Health Sciences

NUTR 140. Contemporary Foods (2, 2). 3 credits.

Basic principles of contemporary food selection, purchasing, planning, preparation and service. Laboratory activities acquaint the student with the preparation and evaluation of quality products in the various food groups.

NUTR 280. Nutrition for Wellness. 3 credits.

Understanding nutrition as a component of wellness.

NUTR 360. Health Care Food Service Management. 3 credits.

Application of food service management principles to health care food systems. Prerequisite: Previous or concurrent enrollment in MGT 300.

NUTR 362. Quantity Food Service. 3 credits.

An integration of menu planning, food procurement, equipment selection and layout to provide quality food service in a variety of food systems. Prerequisite: NUTR 140 and 280 or equivalent.

NUTR 363. Food Production Management (1, 6). 3 credits.

The principles of quantity food production and service are studied. Prerequisite: NUTR 140 and 280 and prior arrangement with the instructor.

NUTR 380. Global Nutrition. 3 credits.

A study of food habits from around the world and their contributions to nutritional adequacy. Factors affecting global food-consumption behaviors including sociocultural practices, religion, health beliefs, agricultural practices, economics, politics and education will be explored.

NUTR 382. Sports Nutrition. 3 credits.

A study of the relationship of nutrition and athletic performance. Identification of the effects of age, sex, body build, environment and state of health on energy needs and energy sources during physical activity. Prerequisite: NUTR 280.


This course introduces nutrition as a disease therapy and the role of the clinical dietician as a member of the health care team. Topics covered include nutrition screening and assessment, medical records documentation, basic dietary modifications and patient/family counseling. Prerequisite: NUTR 140, NUTR 280 and NUTR 395.

NUTR 385. Nutrition Throughout the Life Cycle. 3 credits.

A study of the nutritional needs throughout the life cycle and the development of food habits. Nutrition assessment, promotion and nutrition education from prenatal health through infancy, childhood, adolescence, adulthood and old age are emphasized. Prerequisite: NUTR 280.
NUTR 386. Community Nutrition. 3 credits.
A study of human nutrition and health problems from a community perspective; programs and policies related to nutrition at local, state and federal levels; preventive nutrition or wellness; and approaches and techniques of effective application and dissemination of nutrition knowledge in the community. Prerequisite: NUTR 280.

3 credits.
A study of topics related to dietetics as a profession. Investigates historical foundations of dietetics, ethical standards of practice, roles and skills needed for the profession of dietetics and professional credentialing. Prerequisite: Must be dietetics major with junior standing.

NUTR 446. Experimental Foods (1, 4). 3 credits.
An introduction to research in foods. Different techniques of food preparation are studied and evaluated for most acceptable methods to obtain standard food products. Prerequisite: NUTR 140, organic chemistry and statistics.

NUTR 455/ KIN 424. Theories and Practices of Weight Management. 3 credits.
An examination of the physiological, psychological and environmental theories of obesity. Current trends in obesity research are emphasized. A case study and laboratories are used to provide students with practical experience in constructing a weight management program. Prerequisite: BIO 270, 290, NUTR 280, or permission of the instructor.

NUTR 460. Computer Systems for Foods and Nutrition. 3 credits.
Introduction to food and nutrition computer systems. Emphasis is placed on the role of computers in nutritional assessment, food service administration, nutrition education and food technology. Prerequisite: NUTR 360 and NUTR 482.

NUTR 482. Nutrition and Metabolism (2, 2).
3 credits.
A study of the nutrients, their roles in intermediary metabolism, the effects of genetic errors in metabolism, nutritional deficiencies and means of assessing nutritional status. Agencies and programs concerned with nutrition and health and current trends in nutrition research are emphasized. Experimental animals are used for feeding studies. Prerequisite: NUTR 280, physiology, biochemistry and statistics.

NUTR 484. Clinical Nutrition II (2, 2). 3 credits.
A study of the use of diet in preventing illness and as a means of treating disease. Emphasis is given to patient education. Prerequisite: NUTR 384 and NUTR 482.

NUTR 490. Field Experience Practicum. 1-3 credits.
Opportunity for students to participate in field experiences relating to their major area of health sciences and their career goals under the coordination and direction of a health sciences staff member. On-the-job supervision will be provided by the participating center. Prerequisite: NUTR 395, NUTR 384. (Application for enrollment must be completed through the department head in the fall semester prior to the year in which it will be taken.) Cumulative average of 2.0 required.

NUTR 499. Honors. 6 credits.
Year course.

Philosophy

Department of Philosophy and Religion

*GPHL 101. Introduction to Philosophy. 3 credits.
An introduction to the basic problems and concepts of philosophy—the nature of man and the self, ethics, theories of knowledge, philosophy of religion, etc. as revealed in the writings of major philosophers.

*GPHL 120A. Critical Thinking. 3 credits.
An introduction to the techniques for analyzing and evaluating information in everyday experience. The functions of language will be discussed. Techniques for judging the strengths of arguments and the probable truth of the arguments’ premises will be examined.

PHIL 250. Introductory Logic. 3 credits.
A critical examination of the formal principles of sound reasoning.

PHIL 260. Philosophy and Contemporary Life. 3 credits.
The application of philosophical principles to contemporary life. Not available for credit toward the major.

PHIL 270. Introduction to Ethics. 3 credits.
An introductory study of the basic ethical theories past and present with some application to moral problems.

PHIL 310. Symbolic Logic. 3 credits.
The study and application of the principles and techniques of modern deductive logic to natural language. Also, examination of the properties of formal systems and of the logical implications and paradoxes of language.

PHIL 325. Crime, Punishment and Justice. 3 credits.
Theories of criminal punishment are examined in the context of philosophical theories of justice and in conjunction with material from the social sciences on crime, criminal offenders and the effects of penal sanctions.

PHIL 330. Moral Theory. 3 credits.
An examination, at the intermediate level, of both classical and contemporary moral theories. Critical analysis of the normative and meta-ethical issues these theories raise.

PHIL 333. Problems in Applied Ethics. 3 credits.
Ethical theories are used to analyze contemporary moral issues in areas such as business and health care. Course content varies.

PHIL 340. Ancient Greek Philosophy. 3 credits.
This course traces philosophical problems raised by the pre-Socratics, Parmenides, Heraclitus, Pythagoras and the Sophists, through their treatment by Plato and Aristotle. Emphasis is placed on selected writings of Plato and Aristotle.
PHIL 341. Modern Philosophy. 3 credits.
An examination of the basic philosophic tendencies in the period from the Renaissance through the 19th century. Emphasis will be placed on the major philosophers from Descartes to Nietzsche.

PHIL 344. Existentialism. 3 credits.
An examination of existentialism and its major spokesmen including such authors as Kierkegaard, Nietzsche, Sartre, Camus, Marcel and Heidegger. Prerequisite: PHIL 101 or permission of the instructor.

PHIL/REL 350. Philosophy of Religion. 3 credits.
An intensive examination of religion from the standpoint of philosophical thinking with particular emphasis on the way philosophers view such problems as the existence of God, evil, immortality, religious language, etc.

PHIL 360. Philosophy and Literature. 3 credits.
The study of selected literary works in light of their philosophical background. Authors studied include Plato, Pascal, Sartre, Camus and Eliot.

PHIL 370. American Philosophy. 3 credits.
A study of the main philosophical ideas in America, especially pragmatism, with particular emphasis being given to Pierce, James, Royce, Dewey and Whitehead.

PHIL/REL 375. The 19th Century: Age of Ideology. 3 credits.
A study of selected 19th-century philosophers and theologians with special attention to rationalism, romanticism and idealism. Views of Hegel, Schleiermacher, Ritschl, Marx and others are considered.

PHIL/ART 380. Seminar in Aesthetics. 3 credits.
Readings and discussions in the persistent philosophical problems of the arts, centering on consideration of the work of art, the artist and the audience. Prerequisite: ART 200 or ARTH/GARH 205B or ARTH/GARH 206B or GPHL 101.

PHIL/REL 385. Buddhist Thought. 3 credits.
Buddhist thought from its origins to the contemporary world in South Asia and East Asia. Emphasis on the understanding of the human condition; analysis of the mind and of the nature of the cosmos; and the expression of Buddhist thought in the fine arts and social activism.

PHIL 395. Philosophy and Scientific Inquiry. 3 credits.
An analysis of philosophical problems in science, such as the nature of scientific explanation, theory formation and confirmation of scientific hypotheses. Issues discussed include the role of models in theory formation, the relationships between experience and reasoning in theory construction and confirmation and the roles of paradigms in scientific thought.

PHIL/SOSC 400. Philosophical Foundations of Social Science. 3 credits.
An examination of the philosophical aspects of social scientific knowledge and explanation as these are contained in logical empiricist, interpretive/hemeneutical and critical theory approaches. Prerequisite: 15 hours of social science and/or philosophy.

PHIL 430. Analytic Philosophy. 3 credits.
An examination of the origins and development of contemporary philosophical analysis, with special attention given to the nature and uses of language as well as logical structures of confirmation and explanation. Prerequisite: GPHL 101 or 250 or permission of the instructor.

PHIL 450. Knowledge and Belief. 3 credits.
An extensive examination of theories of knowledge and philosophical problems concerning knowledge and belief. Prerequisite: GPHL 101 or PHIL/GPHL 120 or permission of the instructor.

PHIL 475. Major Thinkers and Issues in Philosophy. 3 credits.
An advanced study of some of the major issues in philosophy or of the writings of one or two of the major persons in the history of philosophy, such as Aristotle, Aquinas, Descartes, Kant and Wittgenstein. Prerequisite: GPHL 101 or permission of the instructor. May be repeated for credit.

PHIL 490. Special Studies in Philosophy. 3 credits.
Designed to give capable students an opportunity to complete independent study in philosophy under faculty supervision.

PHIL 499. Honors. 6 credits.
Year course.

Physics

PHYS 110. The Physics of Musical Sounds. 3 credits.
An introductory course covering the physical principles involved in the production, propagation, perception and reproduction of musical sounds. Topics include simple harmonic motion, spectrum analysis, decibel scales, electronic recording and playback.

PHYS 115. Physics as Inquiry (2, 2 and 2, 1 on alternate weeks). 3 credits.
Examines selected areas of classical and modern physics using lectures, laboratory work and discussion meetings. A primary objective is to aid the student in developing an understanding of the physical world and an appreciation of aspects of our cultural and philosophical heritage.

PHYS 120. The Astronomical Perspective (2, 2 and 2, 1 on alternate weeks). 3 credits.
An introductory course in astronomy including its historical development, its relationship to other sciences and its interaction with the arts and humanities.

PHYS 122. Observational Astronomy for Beginners (0, 2). 1 credit.
An introduction to naked-eye and telescopic astronomical observations. Wells Planetarium will be used when weather conditions prohibit outdoor observations.
PHYS 125. Principles of Physics With Biological Applications I (3, 2). 4 credits.
A study of fundamental physical principles covering areas of mechanics, thermal energy and fluids, emphasizing topics pertinent to life processes. Realistic biological examples are used to illustrate the relationship between physics and the life sciences. Laboratory exercises explore the application of physics to living systems. Prerequisite: MATH 133 or equivalent.

PHYS 126. Principles of Physics With Biological Applications II (3, 2). 4 credits.
The second semester is a study of physical principles. Topics include elasticity, wave motion, sound, electricity and magnetism, geometrical and physical optics and electromagnetic radiation and radioactivity. Prerequisite: PHYS 125.

*PHYS 140. College Physics I. 3 credits.
The first semester of a noncalculus sequence in general physics. Topics include principles of mechanics, thermal properties of matter, wave motion and sound. Prerequisite: MATH 135 or equivalent. Corequisite: PHYS 140L.

PHYS 150. College Physics II. 3 credits.
The second semester of a noncalculus sequence in general physics. Topics include electric charges, circuits, magnetism, optics, atomic and nuclear physics. Prerequisite: PHYS 140 and 140L. Corequisite: PHYS 150L.

PHYS 140L-150L General Physics Laboratories.
1 credit each semester.

These laboratory courses are designed to complement and supplement the PHYS 140-150 and PHYS 240-250 lecture courses. The laboratory and lecture portions must be taken concurrently. Corequisite for PHYS 104L: PHYS 140 or PHYS 240. Prerequisite for PHYS 150L: PHYS 140L and either PHYS 140 or PHYS 240. Corequisite for PHYS 150L: PHYS 150 or PHYS 250.

PHYS 201. Discovering Physics (2, 2). 3 credits.
Mathematical models are developed for the behavior of portions of the physical world. These models are studied to see what they imply about the physical world. The goal is to teach about both physics and the utility of mathematics in modeling real events. Prerequisite: MATH 205 or corequisite: MATH 235. A student may not earn credit for both PHYS 115 and PHYS 201.

PHYS 215. Energy and the Environment. 3 credits.
Energy use, sources and trends; fossil fuels, heat-work conversions, thermodynamic restrictions and electric power production; nuclear fission reactors and fusion energy; solar energy and technologies; alternative energy sources; energy storage; energy conservation; issues of waste and safety. Environmental, social and economic aspects will be discussed. Not open to ISAT majors scheduled to take ISAT 212 as part of their degree requirements. Prerequisite: Two college courses in science and one in mathematics.

*PHYS 240. University Physics I. 3 credits.
Kinematics, dynamics, energy and momentum conservation; oscillatory motion; fluid mechanics and waves. Corequisites: MATH 235 and PHYS 140L. A student may not earn credit for both PHYS 202 and PHYS 240.

PHYS 250. University Physics II. 3 credits.
Electric forces, fields and potentials; capacitance, dielectrics, resistance, and DC circuits; magnetic fields, induced electric fields, inductance and AC circuits; geometrical optics, interference, diffraction and polarization. Prerequisite: PHYS 202 or PHYS 240 and PHYS 140L. Corequisite: MATH 236 and PHYS 150L.

Rotational kinematics and rotational dynamics; static equilibrium and elasticity; universal gravitation and orbital mechanics; temperature, heat, heat engines, entropy and kinetic theory; Gauss' law, electric potential and capacitance; magnetic fields, induced electric fields and inductance; displacement current and electromagnetic waves; and the special theory of relativity. Prerequisite: PHYS 150 or PHYS 250 and PHYS 150L. Corequisite: MATH 237.

PHYS/MATH 265. Introduction to Fluid Mechanics. 4 credits.
Introduces the student to the application of vector calculus to the description of fluids. The Euler equation, viscosity and the Navier-Stokes equation will be covered. Prerequisite: MATH 237 and PHYS 260.

PHYS 270. Modern Physics. 4 credits.
A course in modern physics, consisting of a discussion of the experimental basis for and fundamental principles of quantum physics, with applications to atomic structure and nuclear physics. Prerequisite: PHYS 260 or consent of instructor.

PHYS/Chem/MATS 275. An Introduction to Materials Science. 3 credits.
An introduction to materials science with emphasis on general properties of materials. Topics will include crystal structure, extended and point defects and mechanical, electrical, thermal and magnetic properties of metals, ceramics, electronic materials, composites and organic materials. Prerequisite: CHEM 131 or PHYS 150 or PHYS 250 or ISAT 212 or permission of the instructor.

PHYS 295. Laboratory Apparatus Design and Construction. 1 credit.
An introduction to the design and fabrication of laboratory apparatus using machine tools. Prerequisite: PHYS 250 and permission of the instructor.

PHYS 297. Topics in Physics. 1-4 credits each semester.
Topics in physics at the second-year level. May be repeated for credit when course content changes. Topics selected may dictate prerequisites. Students should consult instructor prior to enrolling for course. Prerequisite: Permission of the instructor.

PHYS 335. Modern Physics II. 4 credits.
A continuation of PHYS 270, with applications to molecules, the physics of condensed matter and nuclear physics. Prerequisite: PHYS 270.

PHYS/MATS 337. Solid State Physics. 3 credits.
A study of the forces between atoms, crystal structure, lattice vibrations and thermal properties of solids, free electron theory of metals, band theory of solids, semiconductors and dielectrics. Prerequisite: PHYS 270 or consent of instructor.
PHYS 340. Mechanics. 3 credits.
Application of the fundamental laws of mechanics to particles and rigid bodies. Topics include statics, dynamics, central forces, oscillatory motion and generalized coordinates. Prerequisite: PHYS 260. Corequisite: MATH 336.

PHYS 342. Mechanics II. 3 credits.
A continuation of PHYS 340 including Lagrangian dynamics, rigid body motion and the theory of small oscillations. Prerequisite: PHYS 340.

PHYS 347. Advanced Physics Laboratory (0, 4).
2 credits.
An advanced laboratory in which students perform experiments from several areas of physics. Prerequisite: PHYS 270.

PHYS 350. Electricity and Magnetism. 3 credits.
A study of the electrostatic field, the magnetic field, direct and alternating currents and electromagnetic waves. Prerequisite: PHYS 260 and MATH 336.

PHYS 360. Analog Electronics (2, 4). 4 credits.
DC and AC circuits, spectral and pulse circuit response, semiconductor physics and simple amplifier and oscillator circuits. Prerequisite: PHYS 250 or permission of the instructor.

PHYS/MATH 365. Computational Fluid Mechanics. 3 credits.
Applications of computer models to the understanding of both compressible and incompressible fluid flows. Prerequisite: MATH 248, MATH 336, PHYS/MATH 265 and PHYS 340.

PHYS 371. Introductory Digital Electronics (2, 4).
2 credits.
Transistors, integrated circuits, logic families, gates, latches, decoders, multiplexers, multivibrators, counters and displays. Prerequisite: PHYS 150 or 250 with a grade of "C" or better or permission of instructor.

PHYS 372. Microcontrollers and Their Applications (2, 4). 2 credits.
Microcontrollers, their instructions, architecture and applications. Prerequisite: PHYS 371 or consent of instructor.

PHYS 373. Interfacing Microcomputers (2, 4).
2 credits.
A study of the personal computer and its input/output bus, input/output functions, commercially available devices, proto-typing circuit boards and programs for device control. Prerequisite: PHYS 371.

PHYS 380. Thermodynamics and Statistical Mechanics. 3 credits.
A treatment of the thermal properties of matter from both macroscopic and microscopic viewpoints. Topics include the laws of thermodynamics, heat, work, internal energy, entropy, elementary statistical concepts, ensembles, classical and quantum statistics and kinetic theory. Approximately equal attention will be given to thermodynamics and statistical mechanics. Prerequisite: PHYS 270 and PHYS 340.

PHYS/MATS 381. Materials Characterization (Lecture/Lab course). 3 credits.
A review of the common analytical techniques used in materials science related industries today, including the evaluation of electrical, optical, structural and mechanical properties. Typical techniques may include Hall Effect, scanning probe microscopy, scanning electron microscopy, ellipsometry and x-ray diffraction. Prerequisite: PHYS/MATS 275 or ISAT/MATS 431 or GEOL/MATS 395.

PHYS 390. Computer Applications in Physics. 3 credits.
Applications of automatic computation in the study of various physical systems. Problems are taken from mechanics of particles and continua, electromagnetism, optics, quantum physics, thermodynamics and transport physics. Prerequisite: MATH/CS 248, PHYS 240 and 250 and six additional credit hours in majors courses in physics excluding PHYS 360, 371 and 372.

PHYS 391-392. Seminar. 1 credit per year.
Participation in the department seminar program. Prerequisite: Junior or senior standing and permission of the instructor.

PHYS 397. Topics in Physics. 1-4 credits each semester.
Topics in physics at intermediate level. May be repeated for credit when course content changes. Topics selected may dictate prerequisites. Students should consult instructor prior to enrolling for course. Prerequisite: Permission of the instructor.

PHYS 398. Problems in Physics. 1-3 credits, repeatable to 4 credits.
An individual project related to some aspect of physics. Must be under the guidance of a faculty adviser.

PHYS 420. Modern Optics. 3 credits.
A study of the kinematic properties and physical nature of light including reflection, refraction, interference, diffraction, polarization, coherence and holography. Prerequisite: PHYS 260 and 270 and MATH 237.

PHYS 430. Statistical Mechanics. 3 credits.
An advanced course in statistical physics, including transport theory, irreversible processes and applications to a variety of systems. Prerequisite: PHYS 380.

PHYS 446. Electricity and Magnetism II. 3 credits.
A continuation of PHYS 350. Emphasis will be placed on the solutions of Maxwell's equations in the presence of matter, on solving boundary-value problems and on the theory of electromagnetic radiation. Prerequisite: PHYS 350.

PHYS/CHEM 455. Lasers and Their Applications to Physical Sciences (2, 3). 3 credits.
An introduction to both the theoretical and practical aspects of lasers and their applications in the physical sciences. Prerequisite: PHYS 270 or CHEM 331 or permission of the instructor.
PHYS 460. Quantum Mechanics. 3 credits.
Principles and applications of quantum mechanics. Topics include wave packets and the uncertainty principle, the Schroedinger equation, one-dimensional potentials, operators and eigenvectors, three-dimensional motion and angular momentum and the hydrogen atom. Prerequisite: PHYS 340.

PHYS 480. Astrophysics. 3 credits.
An introduction to the problems of modern astronomy and the quantitative application of physical principles to these problems. Topics of study include stellar structure and evolution, the interstellar medium and star formation, cosmic rays, pulsars, galactic structure, extragalactic astronomy and cosmology. Prerequisite: PHYS 340 and one of either PHYS 270 or 430.

PHYS 491-492. Physics Assessment and Seminar.
1 credit per year.
Principal course activities are participation in the departmental assessment program and attendance at departmental seminars. Prerequisite: PHYS 392.

PHYS 497. Topics in Physics. 1-4 credits each semester.
Topics in physics at the advanced level. May be repeated for credit when course content changes. Topics selected may determine prerequisites. Students should consult instructor prior to enrolling for course. Prerequisite: Permission of the instructor.

PHYS 498R. Undergraduate Physics Research.
2-4 credits, repeatable to 6 credits.
Research in a selected area of physics as arranged with a faculty research adviser. Prerequisite: Proposal for study must be approved prior to registration.

PHYS 499. Honors. 6 credits. (Year course: 3 credits each semester).
Participation in this course must be approved during the second semester of the junior year. For details, see catalog section entitled “Graduation with Distinction.”

Political Science
Department of Political Science

POSC 101. Advisory in Public Affairs. 1 credit.
An introduction to graduate study and career opportunities in political science, public administration, international affairs and criminal justice.

*GPOS 200. Global Politics. 3 credits.
An exploration of political, social and economic issues and structures existing within and between states in the contemporary global community. Students are introduced to alternative approaches to analyzing these issues in diverse cultures and political settings.

POSC 201. Introduction to Western Political Theory. 3 credits.
A general survey of Western political theory from Plato to Marx, including the foundations of political inquiry and the search for order and freedom.

POSC 205. Comparative Politics. 3 credits.
A comparative study of selected political systems. Emphasis is on the structure of government, the political process and the conditions which either promote or constrain political change and stability.

POSC 207. Legal Research Methods. 3 credits.
Introduction to basic legal concepts and research tools. Includes the use of public records and legal materials, as well as writing legal memoranda and briefs. Prerequisite: POSC 210. Does not count as part of the political science major.
POSC 310. Political Theory: Ancient to Early Modern. 3 credits.
A study of political theory from Plato and Aristotle through Machiavelli with analysis of such political concepts as the nature of the state, political obligation, natural law and Utopian societies.

POSC 315. Political Theory: Early Modern to the 19th Century. 3 credits.
A study of political theory from Hobbes and Locke to Hegel, Green and other 19th century thinkers. The course will examine such ideas as freedom, political obligation, justice, progress, ethics and politics and the relationship between the individual and the human polity.

POSC 316. Contemporary Political Theory. 3 credits.
An examination of political thinkers and their ideas from the end of the 19th century to the present. Special emphasis will be placed on the writings of Hannah Arendt, Jurgen Habermas, John Rawls and other contemporary thinkers who continue to engage in the pursuit of political inquiry.

POSC 321. Political Theory and Ideology. 3 credits.
A study of the relationship between normative political theory and ideology emphasizing the philosophic foundations of modern political thought and its relationship to the emergence of various ideological positions in the 19th and 20th centuries. Includes a study of liberalism, conservatism, socialism, anarchism, nationalism, fascism, feminism, environmentalism and others.

POSC 325. Constitutional Law. 3 credits.
A study of the legal aspects of the American democratic system. The development of the Constitution will be explored and case studies used to portray important events and changes. Prerequisite: GPOS 225 and one additional political science course.

POSC 326. Civil Rights. 3 credits.
An examination of the judicial interpretation of civil rights in America with emphasis on freedom of speech, due process of law and equal protection under the 14th Amendment. Prerequisite: GPOS 225.

POSC 330. American Political Thought. 3 credits.
A study of the development and significance of political ideas that have influenced American society and government.

POSC 337. Russian Political System. 3 credits.
A study of the former Soviet Union emphasizing the functions and role of local government in the central Eurasian region. Also included are aspects of historical background that have an impact on contemporary political developments.

POSC 338. Russian Foreign Policy. 3 credits.
An analysis of the historical, ideological, internal and strategic factors which influence the formation of the foreign policies of Russia and the other members of the Commonwealth of Independent States. Emphasis is placed on relations between the independent states which make up the CIS and relations between the CIS and foreign states.

POSC 339. Politics of Communist and Post-Communist Systems. 3 credits.
A comparative study which examines the former Communist Party states of eastern Europe and the remaining communist states of the Third World. The course stresses the dynamics of political transition in this region and the factors which have enabled some communist parties to retain power.

POSC 340. Political Development in the Third World. 3 credits.
A comparative study of the processes of political development in the developing nations of the Middle East, Africa, Asia and Latin America. Attention is given to the special problems confronting these nations and their implications for the global systems.

POSC 345. European Governments. 3 credits.
Comparative analysis of European constitutions, political systems and governmental processes with major emphasis on the United Kingdom, France and Germany.

POSC 347. Comparative Public Policy. 3 credits.
A study of public policy formation and implementation in selected advanced industrial and Third World nations.

POSC 350. Latin American Politics. 3 credits.
A comparative study of the political institutions, processes and current issues in the Latin American states and an analysis of their importance in regional and global relations.

POSC 351. Contemporary Problems in American Government. 3 credits.
In-depth exploration of contemporary problems in the presidency, Congress, the federal bureaucracy and the political process. The topic for each semester will be announced in the Schedule of Classes.

POSC 355. East Asian Politics. 3 credits.
A study of the political systems of the major countries of East Asia, including Japan, China and Korea. Issues discussed include political development and democratization movements in the People's Republic of China, the Republic of China and the Republic of Korea.

POSC 360. Urban Politics. 3 credits.
A study of the functions and role of local government in urban America with emphasis on the social, economic and governmental problems of cities and metropolitan areas. Prerequisite: GPOS 225 or permission of instructor.

POSC 361. Contemporary Problems in International Affairs. 3 credits.
In-depth exploration of contemporary problems in the field of international affairs. The topic for each semester will be announced in the Schedule of Classes.

POSC 362. Political Behavior. 3 credits.
A study of how citizens acquire politically relevant attitudes and how these attitudes influence their political behavior. The effects of the mass media on voting behavior are also considered. Emphasis is placed on U.S. voting behavior but behavior in other nations is also covered. Prerequisite: GPOS 225 and one other POSC course.
POSC 365. American Political Campaigning. 3 credits.
Study of modern day political campaigning with emphasis on campaign structure, strategy and the relationship between candidates and political consultants. The course assesses the consequences of the changing nature of political campaigns for democracy in the United States. Prerequisite: GPOS 225.

POSC 368. Interest Groups and Public Policy. 3 credits.
An analysis of the activities of interest groups in the American system of government with emphasis on their goals and effectiveness in shaping public policy. Prerequisite: GPOS 225.

POSC 369. Political Parties and Elections. 3 credits.
A study of national political parties and elections. Attention is given to the origin and evolution of the major and important minor parties, nomination and election process, presidential campaign, role and practical working of political parties, influence of public opinion and pressure groups and responsibilities of the individual voter. Prerequisite: GPOS 225 and one other political science course.

POSC 370. U.S. Foreign Policy. 3 credits.
An investigation of the processes for making foreign policy, underlying premises influencing specific policies and substance of American foreign policy. Prerequisite: POSC 230.

POSC 380. The National Executive. 3 credits.
A study of the institution of the American presidency focusing on the sources, bases and character of the power required by the president for effective executive action. Relationships of the presidency to foreign affairs, Congress, the public, party structure and the administrative establishment will also be considered. Prerequisite: GPOS 225 or honors standing.

POSC 385. The Legislative Process. 3 credits.
Study of the legislative process will concentrate on the operation of Congress with regard to such matters as its rules and procedure; relationships to the presidency, the bureaucracy, pressure groups and the courts; and a discussion of its current problems. Prerequisite: GPOS 225.

POSC 395. International Law. 3 credits.
Examination of the role of international law in world politics. Particular attention will be given to the effects of international law on patterns of international exchange and interaction. Case study and other forms of political analysis will be used.

POSC 396. International Organizations. 3 credits.
Study of the evolution and role of contemporary international organizations in the larger context of world politics. Emphasis on the ways in which the changing patterns of political power influence the processes and effectiveness of such organizations. Prerequisite: POSC 230.

POSC 397. The Politics of International Economic Relations. 3 credits.
A study of the political dynamics and implications of international economic relations.

POSC 405. Seminar in American Government. 3 credits.
Study of the relationship of the federal bureaucracy to the presidency, Congress and the policies of the national government. Prerequisite: GPOS 225 and senior standing.

POSC 435. Seminar in International Terrorism. 3 credits.
Systematic study of political terrorism with emphasis upon the destabilizing effect that it has upon the international community. Prerequisite: POSC 295.

POSC/SCOM/SMAD 472. Media and Politics. 3 credits.
A study of the media's role in political campaigns, concentrating on past/present election, the media's role in covering political parties and coverage of the governing process. Discussion of electronic and print will occur. Topics to be examined include campaign videos, CSPAN, political ads, editorial cartoons, TV debates, convention coverage and radio talk show commentary.

POSC 490. Senior Tutorial in Political Science. 4 credits each semester.
A research-oriented tutorial designed to integrate student's prior knowledge and strengthen lifelong learning skills. Course may be offered in multiple sessions (490A, 490B, etc.). Prerequisite: Senior standing and permission of instructor.

POSC 492. Senior Seminar in Political Science. 4 credits.
A research-oriented senior seminar especially recommended for students who want to go on to graduate school. This course provides an overview of the discipline of political science and the different approaches to research in the field. A major research project will strengthen the research, information access and lifelong learning capacities of the student. Prerequisite: Senior standing and POSC 295.

POSC 493. Simulations. 4 credits.
Application of concepts and insights learned in the classroom to contemporary policy problems and practical activities. The topic of this course will vary from offering to offering. Prerequisite: Junior or senior standing and permission of the instructor. The exact courses required will vary with the subject matter of the simulation.

POSC 495. Internship in Political Science. 4 credits.
Provides students with opportunities for experiential learning in a legislative, policy making, campaign, constituency, interest group or criminal justice organization. A research paper related to the internship and a presentation based on the experience are required. Prerequisite: Junior or senior standing. 15 credits of political science, public administration or political communication and permission of the instructor.

POSC 497. Internship in Law. 4 credits.
Provides students with opportunities for experiential learning in a law-related organization. A research paper related to the internship and a presentation based on the experience are required. Prerequisite: Junior or senior standing. 12 credits of political science courses, POSC 307 and permission of the instructor.
PSYC 100. Interpersonal Skills for Resident Advisers. 1 credit.
Designed to give resident adviser trainees understanding of interpersonal relations. The course cannot be used as a psychology major elective. Prerequisite: Limited to students selected as resident advisers.

*Gpsy 101. General Psychology. 3 credits.
A study of the nervous system, sensation, perception, consciousness, learning, memory, language, intelligence, motivation, emotion, life span development, personality, psychopathology, psychotherapy, social psychology and the scientific method.

*Gpsy 160. Life Span Human Development. 3 credits.
An introduction to human development. Emphasis is on life span processes within physical, emotional, cognitive, psychosexual, social, personality and moral development.

PSYC 200. Topics in Psychology. 3 credits.
Exploration of an important psychological topic. The topics for each semester will be announced in the Schedule of Classes. Prerequisite: PSYC 101.

Introduction to techniques used by psychologists in measuring behavior, including physiological recording, surveys, behavioral measurement, case studies and psychometrics. Fundamental measures and theory of descriptive and inferential statistics will be discussed. The use of computers for data analysis will be introduced. Prerequisite: PSYC 101 and MATH 220.

PSYC 211. Experimental Psychology (3,2). 4 credits.
An introduction to experimental methods as applied to selected problems in psychology. Attention is given through lecture and laboratory to the design and conduct of experiments, data analysis and reporting of experimental results. Prerequisite: PSYC 101 and PSYC 210.

PSYC 235. Psychology of Adjustment. 3 credits.
A study of the process and dynamics of the well-integrated personality and the practical application of adjustment theories and behavior change techniques to enhance personal awareness and self-development.

PSYC 250. Introduction to Abnormal Psychology. 3 credits.
An introduction to the field of Abnormal Psychology, for the non-psychology major. This course will examine methods of defining psychological normality and abnormality and the classification, causes and treatment of abnormal behavior. This course cannot be used for Psychology major or minor credit. Prerequisite: PSYC 101 or PSYC 160.

PSYC 270. Psychology for Teachers of the Pre-adolescent and Adolescent Child. 3 credits.
The psychology of children during middle (pre-adolescent) and secondary (adolescent) school ages with emphasis on applications for teachers. Classroom observations are required. Course is designed to fulfill teacher licensure requirements for middle and secondary education teaching levels. Prerequisite: PSYC 160 or equivalent.

PSYC 275. Psychology of Human Intimacy. 3 credits.
Theoretical and applied study of human relationships through case analysis and role play.

PSYC 290. Directed Studies in Psychology. 1-3 credits.
Introductory training in academic advising, career development and counseling techniques. Not to be used for psychology major credit. Prerequisite: PSYC 101 and a written plan for the directed study must be submitted to the department head for approval one week prior to registration.

PSYC 301. Peer Advising Training I. 2 credits.
Continued training and supervised experiences in academic advising, career development and counseling techniques. Not to be used for psychology major credit. Prerequisite: PSYC 301 and 211 and permission of the course coordinator.

PSYC 302. Peer Advising Training II. 2 credits.
Continued training and supervised experiences in academic advising, career development and counseling techniques. Not to be used for psychology major credit. Prerequisite: PSYC 301 and 211 and permission of the course coordinator.

PSYC 304. Death and Dying: Thanatology. 3 credits.
Psychological theories about death including ways in which individuals and society deal with death. Prerequisite: PSYC 101 and junior-level status.

PSYC 308. Health Psychology. 3 credits.
This course deals with personality and its relation to health and illness behaviors. Topics include psychological factors involved in control and helplessness, conflict management, cardiovascular disorders, cancer, pain, substance abuse and other psychophysiological problems. Prerequisite: PSYC 101 and junior-level status.

PSYC 310. The Psychology of Women and Gender. 3 credits.
An examination of research and theory regarding the behaviors and roles of women. Consideration is given to biological, developmental and societal determinants of sex and gender. Prerequisite: PSYC 101 and junior-level status.

PSYC/SOCI/KIN 329. Psychological and Sociological Aspects of Sport. 3 credits.
A study of the psychological and sociological implications of sport and effect of sport on the United States and other cultures.
PSYC 330. Psychology of Personality. 3 credits.
Essential elements of leading theories of personality with an emphasis on implications of these theories for human behavior. Prerequisite: PSYC 211.

PSYC 335. Abnormal Psychology. 3 credits.
This course for the Psychology major or minor critically examines psychological normality and abnormality and the classification, causes and treatment of abnormal behavior. Students learn classification and diagnosis, explore social and multicultural issues relating to diagnosis and discuss research in the field. May not be taken by students who have previously completed PSYC 250. Prerequisite: PSYC 211.

PSYC 345. Social Psychology. 3 credits.
The study of how an individual's behavior, feelings and thoughts are influenced by other people. Topics include attitude formation and change, social perception, attraction, altruistic and antisocial behavior, conformity, leadership and group dynamics and applications of social psychology to other fields. Prerequisite: PSYC 211.

PSYC 365. Developmental Psychology. 3 credits.
Psychological aspects of growth, development and behavior from birth through adolescence. Prerequisite: PSYC 211.

PSYC 375. Sensation and Perception. 3 credits.
Explores the nature and development of human sensory capabilities, processing and storing of sensory information and how these affect perception of the environment. Prerequisite: PSYC 211.

PSYC 380. Cognitive Psychology. 3 credits.
This course explores the nature and development of human attention, memory, language and thinking processes. An information processing approach to the study of human cognition is emphasized. Prerequisite: PSYC 211.

PSYC 385. Biopsychology. 3 credits.
A survey of the neurological and chemical mechanisms which control behavior. This course examines the brain and how it processes sensation, perception, cognition, movement, motivation, learning, memory and other behavioral processes of interest to psychologists. Prerequisite: PSYC 211.

PSYC 390. Psychology of Learning. 3 credits.
Basic principles of learning and conditioning with a consideration of extinction, reinforcement, generalization, discrimination, transfer, concept formation and verbal learning. Prerequisite: PSYC 211.

PSYC 395. Comparative Psychology. 3 credits.
An introduction to the biological, genetic, ecological and evolutionary principles which underlie animal and human behavior. Prerequisite: PSYC 211.

PSYC 400. Advanced Topics in Psychology.
1-3 credits.
Exploration of a significant psychological topic in depth. The topics for each semester will be announced in the Schedule of Classes. Prerequisite: At least one course in Area A and one in Area B.

PSYC 401. Peer Advising. 2 credits.
Supervised practicum in academic and career development and peer counseling. May be taken twice for up to four credit hours toward the psychology major. Prerequisite: PSYC 302, one course from Area A, one course from Area B and permission of the course coordinator.

PSYC 402. Independent Research in Psychology. 1-3 credits.
Provides psychology majors an opportunity to conduct faculty supervised independent research in psychology. Only three credits of this course can be used for psychology major credit. Prerequisite: PSYC 211, a written plan and approval from adviser and project supervisor (guidelines available from department head) must be submitted to the department head for approval one week prior to registration.

PSYC 410. Industrial/Organizational Psychology. 3 credits.
This course is a survey of the applications of psychological principles in business and industry. Emphasis is on topics such as research and methods, personnel decisions and training, satisfaction, motivation, leadership, communication and organizational influences on behavior. Other topics of current interest will also be covered. Prerequisite: At least one course in Area A and one in Area B.

PSYC 412. Psychology of Motivation. 3 credits.
This course is an advanced study of the motives that underlie behavior. Students explore pertinent theories representative of the biological, behavioral, cognitive and social perspectives on motivation. Includes an examination of historical context as well as a study of applied motivational approaches. Prerequisite: At least one course in Area A and one in Area B.

PSYC 425. Introduction to School and Educational Psychology. 3 credits.
Applications of psychological principles in school settings, including roles and activities of school psychologists, standards, trends and issues of treatment and evaluation. Prerequisite: At least one course in Area A and one in Area B or permission of instructor.

PSYC 427. Tests and Measurements. 3 credits.
Standardized psychological tests of mental ability, achievement, aptitude and personality with a review of statistical procedures necessary for interpretation of test results. Prerequisite: At least one course in Area A and one in Area B.

PSYC 430. Clinical Psychology. 3 credits.
An introduction to the field of clinical psychology including a review of the major theoretical models, psychometrics, psychiatric diagnosis and treatment strategies. Prerequisite: PSYC 335 and one course in Area B.

PSYC 435. Community Psychology. 3 credits.
Focus on emerging trends and models in the application of psychology to community, stress prevention programs, human resources and change. Prerequisite: At least one course in Area A and one in Area B.
PSYC 440. Counseling Psychology. 3 credits.
A basic counseling skills course designed for students interested in human service and mental health fields and for students from related disciplines who want to acquire counseling skills. Prerequisite: At least one course from Area A and one in Area B.

PSYC 442. Introduction to Small Group Process. 3 credits.
This course is designed to acquaint students with the theories, ethics, skills and processes of small groups. A major requirement will be participation in a group experience. Prerequisite: At least one course from Area A and one in Area B.

PSYC 450. Psychology of Child Abuse and Neglect. 3 credits.
Review of current psychological literature on child abuse and neglect including identification, etiology, treatment, prevention and legal aspects. Family violence issues are also discussed. Prerequisite: At least one course from Area A and one in Area B.

PSYC 452. Child Psychopathology. 3 credits.
The causes, symptoms and classification of childhood psychological disorders. Prerequisite: PSYC 335 or permission of the instructor.

PSYC 470. Psychology of the Young Adult. 3 credits.
Study of the development of the young adult (ages 18-35) including personality and self-concept, career decisions, lifestyles, marriage, parenthood, social and community involvement, self-exploration and application. Prerequisite: At least one course in Area A and one in Area B or permission of the instructor.

PSYC 475. Psychology of Adulthood. 3 credits.
The physical, social and psychological factors faced by adults and their progression through the life span. Prerequisite: At least one course in Area A and one in Area B.

PSYC 492. History of Psychology. 3 credits.
The history of psychology as reflected through the individuals, theories and experimental investigation of the discipline. Special emphasis is placed upon relating the current state of psychology to its historical development. Prerequisite: At least two courses from both Areas A and B. May be taken as a capstone course or psychology elective.

PSYC 493. Laboratory in Psychology. 3 credits.
A research course designed by a faculty member that studies a particular topic. Topics will change from semester to semester. Students will be guided in a group through a research experience that would include library research of the topic, design of an experiment, gathering and analyzing the data and writing the results. The course meets the requirement as a capstone course or as a psychology elective. Only 3 credit hours of the course can be used for the psychology major. Prerequisite: At least two courses from each of Areas A and B.

PSYC 495. Field Placement in Psychology. 4 credits.
Supervised practicum in a counseling, industrial or human service agency. Orientation to agency’s service, policies, personnel and professional ethics is provided. The course meets the requirement as a capstone course or as a psychology elective. Prerequisite: PSYC 211, junior or senior standing. Approval from adviser, course coordinator and department head required one month prior to registration. (Guidelines available in the department office).

PSYC 497. Senior Seminar in Psychology. 3 credits.
A seminar course that will require students to integrate theories, research and/or methods from several areas of psychology and/or related disciplines. Topics will vary from semester to semester. May be taken as a capstone course or psychology elective. Up to six credit hours can be used in the psychology major. Prerequisite: At least two courses each from Area A and Area B.

PSYC 499. Honors. 6 credits. Year course.
See catalog description entitled “Graduation with Distinction” and “Graduation with Honors.”

Public Administration

Department of Political Science

PUAD 215. Introduction to Criminal Justice. 3 credits.
An introduction to the development of the American criminal justice system from early English beginnings to the present in its three dimensions: police, courts and corrections.

PUAD 265. Public Administration. 3 credits.
An introductory survey of the principles, functions and processes of public administration with specific emphasis on the political aspects and environment of bureaucracies and the how and why of policy-making within an administrative system. Organizational structure, personnel, budgeting, public relations and government values, traditions and objectives are analyzed. Prerequisite: POSC 225.

PUAD 324. Counterintelligence. 3 credits.
A study of foreign intelligence activities directed against the United States. Special emphasis will be given to counterintelligence measures initiated by the U.S. and especially those leading to successful criminal prosecution when considered appropriate.

PUAD 325. Regional Planning and Organization. 3 credits.
Study of trends and issues in the public planning process with focus on regional planning and organization; the relationship of planners and the planning board to their committees.

PUAD 327. Criminal Law. 3 credits.
Study of substantive criminal law including common law sources and elements of various criminal offenses, justifications and defenses.
PUAD 328. Criminal Procedure. 3 credits.
Study of the criminal justice process from arrest through appeal with emphasis upon the rights of the accused including due process, the right to counsel, search and seizure and the privilege against self-incrimination. Prerequisite: POSC 210 or PUAD 215.

PUAD 329. Criminal Investigation and Evidence. 3 credits.
Characteristics, legal aspects, organizational objectives, theories and systematic procedure of criminal investigation. Includes a survey of the investigative function, interviewing witnesses, interrogation, physical evidence, the investigation of common serious offenses and the principles of evidence, including the legal rules controlling the presentation of evidence in court.

PUAD 358. Public Policy. 3 credits.
Study of the political process of the conversion of public needs through policy into benefits. Also deals with the capacity of officials to make policy on the basis of a rational selection of the best options and the constraints under which policy-makers must operate. Prerequisite: Junior standing.

PUAD 381. Budgetary Process. 3 credits.
An examination of the political planning and strategies of Congress and federal agencies in the budgetary process; politics of budgetary reform; state and local budgetary politics; and intergovernmental impacts on budgeting. Prerequisite: Junior standing.

PUAD 410. Administration in Criminal Justice. 3 credits.
A study of the major concepts of management in criminal justice and public safety agencies emphasizing functional and structural approaches and the concepts of leadership, decision making and the effects of the social environment in the administration of the criminal justice system.

PUAD 415. Legal Environment of Public Administration. 3 credits.
Examination of the basic constitutional framework of American public administration. Examines legal constraints imposed on public administrators by law and judicial oversight. Emphasis placed on legal issues affecting public employees. Also examines the basics of public procurement law.

PUAD 420. Public Management. 3 credits.
Study of the management of public agencies from the executive viewpoint. Management control of public agencies will be explored including establishment of goals, policies, organizational structure and output of services. Case studies illustrate administrative behavior and managerial operations in local, regional, state and federal agencies. Prerequisite: Junior standing. Does not count as part of the political science major.

PUAD 480. Senior Tutorial in Criminal Justice. 4 credits.
A research-oriented tutorial in criminal justice. Prerequisite: Senior standing and permission of instructor.

PUAD/SOCI 482. Senior Seminar in Criminal Justice. 4 credits.
A research-oriented senior seminar providing an overview of the discipline of criminal justice and various approaches to research. The student will complete a major research project. Prerequisite: Senior standing and permission of instructor.

PUAD 483. Emerging Issues in Public Administration. 3 credits.
A detailed study of an emerging issue in public administration. The course will examine an area of new or emerging interest in the profession of public administration. The course may be repeated for credit with a change in the subject matter. Prerequisite: Permission of instructor.

PUAD 490. Special Studies in Public Administration. 3 credits.
Designed to give capable students in public administration an opportunity to complete independent study under faculty supervision. Prerequisite: Permission of the instructor and department head.

PUAD 496. Internship in Public Administration. 4 credits.
Provides students with opportunities for experiential learning in a governmental or nonprofit organization. A research paper and a presentation based on the experience are required. Prerequisite: Junior or senior standing. 15 hours of public administration and permission of instructor.

** No more than four semester hours (in any combination of internships) can be counted toward a degree.

Reading Education

School of Education

READ 240. Children’s Literature. 3 credits.
The study of a variety of children’s literature and the practices, principles and procedures for selecting and evaluating works for children, giving consideration to their motivational and developmental effects. Prerequisite: Completion of Cluster One. (Formerly LSEM 240.)

READ 254. Literature for Adolescents. 3 credits.
A study of literature which has been written for or appeals to young adults and adolescents, including practices, principles and procedures for evaluating and making literary materials appealing to adolescents. Prerequisite: Completion of Cluster One. (Formerly LSEM 254.)

READ 401. Problems in Reading Education. 1-3 credits.
Considers current problems and issues in reading education as these problems and issues relate to the professional education of preservice teachers. Prerequisite: Permission from the coordinator of the program where the student is enrolled.
READ 414. Reading and Writing in the Content Areas. 1 credit.
Study of how to use print and media resources to support the acquisition of knowledge and the development of reading and writing skills in all content areas. This course may not be used for credit in minor programs in early and middle education.

READ 415. Introduction to Reading Development. 3 credits.
This course is designed to provide an understanding of the reading process and how children develop an awareness and comprehension of print. Literacy acquisition, vocabulary development, reading strategies and writing will also be addressed.

READ 490. Special Studies in Reading Education. 1-3 credits.
Designed to give capable students, under faculty guidance, an opportunity to engage in the independent study of educational problems. Prerequisite: Plan for the study must be approved by the faculty adviser and the coordinator of the program where the student is enrolled.

Recreation
School of Kinesiology and Recreation Studies

REC 241. Introduction to Recreation and Leisure Services. 3 credits.
Introduces the recreation/leisure professions in governmental, voluntary and commercial settings. Outlines development of recreation and evolution of leisure services. Overviews professional preparation in leisure management and therapeutic recreation.

REC 332. Perspectives of Outdoor Recreation. 3 credits.
An orientation to the field of outdoor recreation. Attention is given to trends, resources, economic and social values, management approaches, ecological and educational implications, goals, ethics, and professional opportunities. Prerequisite: REC 241, or permission of the instructor.

REC/KIN 333. Management in Sport, Recreation and Fitness Settings. 3 credits.
This course is designed as an introduction to sport, fitness and recreation management. Students will examine a variety of management issues and opportunities in these areas. Prerequisite: REC 241 or permission of instructor.

REC 344. Principles of Therapeutic Recreation. 3 credits.
Examination of the profession of therapeutic recreation by analyzing the history, philosophy, concepts, roles and functions involved in providing therapeutic recreation services to individuals with differing needs. Prerequisite: REC 241.

REC/SOCI 346. Leisure in Contemporary Society. 3 credits.
Sociological analysis of leisure or nonwork in contemporary society with particular emphasis upon conceptual and human problems and the potentials of leisure in a context of social change.

REC 401. Practicum in Recreation and Leisure Studies. 3 credits.
This course provides students with an opportunity to practice the professional skills and competencies associated with specializations in recreation and leisure in a real-world setting. It is supervised by a highly qualified and experienced professional.

REC 402. Internship in Recreation and Leisure Studies. 12 credits.
This course provides students with a full-time professional experience in the area of recreation management, leisure or therapeutic recreation. It is supervised by a highly qualified and experienced professional. All course work must be completed prior to internship.

REC/KIN 420. Exercise Programming for Special Populations. 3 credits.
An in-depth study of the etiology and pathophysiology of disease and disability states in order to understand the role of exercise and recreation in disease prevention, habilitation and rehabilitation.

REC 430. Programming and Leadership in Recreation. 3 credits.
Fundamentals of program planning exploring the purpose and function of programs, planning principles, goals and objectives, organizational behavior, and evaluation. Class includes a study of the theory, principles and processes of leadership in the delivery of recreation programs for a variety of populations. Lab and field observations required. Prerequisite: REC 241, REC 346, REC 420, or permission of instructor.

REC 431. Leisure Programming. 3 credits.
Planning, organizing and conducting leisure programs in a variety of settings and program fields.

REC/KIN 436. Facilities Planning and Management in Sport and Recreation. 3 credits.
The purpose of this course is to enhance the understanding and skills necessary to be part of a facilities planning team and assume an entry-level facilities management position. Prerequisite: REC 241, REC 333, REC 420, REC 430 or permission of instructor.

REC 444. Therapeutic Recreation Assessment and Evaluation. 3 credits.
Examination of principles and procedures applicable to client assessment, activity analysis, goal identification, treatment planning, documentation and evaluation. Program interventions for physically and psychologically disabled populations. Prerequisite: REC 241 and REC 344.
REC 445. Clinical Aspects of Therapeutic Recreation. 3 credits.
Experiential examination of the therapeutic recreation process using a comprehensive and systematic service design. Includes full range of intervention strategies and facilitation techniques specific to the needs of special populations. Prerequisite: REC 241, REC 344, REC 420 and REC 444.

REC 446. Facilitation Management in Therapeutic Recreation. 3 credits.
Discussion of implementation of therapeutic recreation services in a variety of settings. Emphasis is directed to implementation of services to meet the goals of the agency and the needs of the clients. Prerequisite: REC 241, REC 344, REC 420, REC 444, REC 445 or permission of instructor.

REC 450. Commercial Recreation and Tourism. 3 credits.
A study of the nature and function of recreation in commercial and tourism environments, covering the introductory information about commercial enterprises and the practical concepts involved with managing or owning an enterprise. Course also covers an introduction to the principles of travel and tourism with an emphasis on the economic significance of tourism. Prerequisite: REC 241, REC 333, REC 346, REC 430 or permission of the instructor.

REC 451. Conference and Convention Planning and Management. 3 credits.
Prepares students for positions as planners and managers of meetings, conferences and conventions at resorts, hotels, cruise ships, camps, universities, or other private or municipal convention centers. The course provides students with a basic understanding of planning, managing and servicing conferences and conventions. Prerequisite: REC 241, REC 333, REC 420, REC 430, REC 436 or permission of the instructor.

REC 452. Sport and Recreation Facility Maintenance and Operations. 3 credits.
This course will provide an in-depth understanding and practical knowledge of the problems, principles and techniques of maintenance and operations of selected park, recreation and leisure facilities, including commercial and private facilities, with an emphasis on the planning and management for maintenance efficiency. Prerequisite: REC 241, REC 333, REC 420, REC 430, REC 436 or permission of the instructor.

Religion

Department of Philosophy and Religion

*REL 101. Religions of the World. 3 credits.
An investigation of the world's major religions which will give attention to their origin, history, mythology and doctrines.

REL/HEBR 131-132. Elementary Biblical Hebrew. 4 credits each semester.
An introductory course for students who intend to acquire the ability to read the Massoretic text of the Bible. Systematic study of the fundamentals of grammar, with emphasis on reading, pronunciation and translation.

REL 200. Exploring Religion. 3 credits.
An examination of the various components in the study of religion including myths, rituals, mystical experiences, theologies, ethics and current issues. Examples will be taken from the sacred texts, rituals and the lives of religious personalities in traditions around the world.

REL 201. Introduction to Hebrew Bible/Old Testament. 3 credits.
A study of selected texts from the books of Genesis-Malachi that will examine their literary, historical and theological dimensions from the perspective of their ancient Israelite and Judahite contexts.

REL 202. Introduction to the Literature and Religion of the New Testament. 3 credits.
A study of the faith of the New Testament community as reflected in its literature including the Gospels, Acts and Letters of Paul. Attention is given to the development of tradition and problems of interpretation.

REL/HEBR 231-232. Intermediate Biblical Hebrew. 3 credits each semester.
An intensive reading course. Selections from the Masoretic text of the Bible. An introduction to the critical apparatus used within the Massoretic text and the variant readings apparatus printed in the Biblia Hebraica Stuttgartensia. Prerequisite: One year of college biblical Hebrew or equivalent.

REL 270. Religious Ethics. 3 credits.
An investigation of the historical development of religious values and moral concepts in the Western religious traditions of Judaism, Roman Catholicism and Protestantism.

REL 300. Selected Topics in Religion. 3 credits.
Selected topics in religion are studied in depth. See Schedule of Classes for current topic. Course may be repeated for credit when content changes.

REL 310. Religions of India. 3 credits.
An introduction to the thought and practice of four major religious traditions of India: Hinduism, Jainism, Buddhism and Islam. Topics include myth, ritual, yoga and meditation, philosophy, community and devotionalism.

REL 312. Religions of East Asia. 3 credits.
An introduction to the religions of China and Japan, including Confucianism, Taoism, Buddhism, Shinto, Folk Religions and the "New Religions" of Japan. Attention to the role of religion in the family and the state, classic texts, the importance of nature and expressions of spirituality in the fine arts.
REL 315. Women and Religion. 3 credits.
Study of women and world religions, historically and
today emphasizing Buddhism, religions of China and Japan,
Judaism and Christianity. The variety of women’s religious roles and practices are studied in a comparative context.
Feminist scholarship’s proposals for revising our understand-
ing of religious history and reforming religious traditions.

REL 320. Judaism. 3 credits.
An examination of the beliefs, practices and historical development of the various forms of Judaism represented in America today: Orthodox, Reform, Conservative and Reconstructionist.

REL/SOCI 322. Sociology of Religion. 3 credits.
A sociological analysis of religion; how it influences and is influenced by social existence. See cross listing in Department of Sociology and Anthropology.

3 credits.
Study of the variety of responses by contemporary Catholic theologians and philosophers to key elements in Christian doctrine and practice. Topics include Vatican II; scripture, tradition and modern scholarship; Jesus and Christology; contemporary Catholic spirituality; moral issues in the church; and ecumenism.

3 credits.
An examination of the character and nature of religious traditions and liturgical practices of African and African-American communities through history.

REL/ANTH 337. Archaeology and the Bible.
3 credits.
An examination of the relationship between material cultural remains, texts and history. Specific exercises in recreating the history of ancient Israel and Judah through the use of texts and artifacts will be undertaken in class and student papers.

REL 338. The Culture of Israel. 4 credits.
A study of the past and present cultures of Israel through an examination of archaeological remains and the study of its geography, politics and religions. Students will visit ancient and modern sites in Israel and explore the various geographical regions first hand as part of the summer Dig in Israel program.

REL/PHIL 350. Philosophy of Religion. 3 credits.
An intensive examination of religion from the standpoint of philosophical thinking with particular emphasis on the way philosophers view such problems as the existence of God, evil, immortality, religious language, etc.

REL 360. History of Western Religious Thought.
3 credits.
A survey of the development of western religious thought from the classical period through the modern period. The primary emphasis will be on the person, ideas, beliefs and critical turning points in the development of Christianity and Judaism, with some reference to Islam and to contemporary religious developments.

REL 370. Mysticism. 3 credits.
An examination of the nature of mysticism and its forms of practice in selected religious communities through the world.

REL/PHIL 375. The 19th Century: Age of Ideology.
3 credits.
A study of selected 19th-century philosophers and theologians with special attention to rationalism, romanticism and idealism. Views of Hegel, Schleiermacher, Ritschl, Marx and others are considered.

REL 380. Contemporary Theologies. 3 credits.
A survey of one or more of the following contemporary theological movements: continental, North American, African and South American, including Roman Catholic, Orthodox and Protestant approaches and covering themes such as the conflict between history and faith, Christology, fundamentalism and liberalism and the emergence of liberation, feminist, black, neo-conservative, secular, pluralist and eco-
logical theologies.

REL/PHIL 385. Buddhist Thought. 3 credits.
Buddhist thought from its origins to the contemporary world in South Asia and East Asia. Emphasis on the understand-
ing of the human condition; analysis of the mind and nature of the cosmos; and the expression of Buddhist thought in the fine arts and in social activism.

REL 450. Religion and Society. 3 credits.
A survey and/or selection of major western approaches to issues of religion and society, including but not limited to traditional understanding of church and state issues. Significant figures, texts and methodologies will be critically examined.

REL 460. Biblical Texts in Context. 3 credits.
An in-depth examination of the literary, theological and historical dimensions of selected biblical texts. Texts will be studied in their ancient contexts, with a focus on ancient literary patterns and writing strategies. Students will apply critical methods used in the academic study of the Bible in their analyses. Prerequisite: REL 201 or 202 or permission of the instructor.

REL 475. Inter-Religious Dialogue. 3 credits.
Dialogue is today the most important response of the world’s religions to the diversity of world religions. It is a vehicle for mutual understanding, mutual challenge and joint response to contemporary problems. Students will study the theory and practice of dialogue and then engage in dialogue. Prerequisite: Familiarity with two world religions or permission of the instructor.

REL 490. Special Studies in Religion. 3 credits.
Designed to give capable students an opportunity to complete independent study in religion under faculty supervi-
sion. Prerequisite: Permission of the department head.

REL 499. Honors. 6 credits.
Year course.
Russian

Department of Foreign Languages and Literatures

RUS 101-102. Elementary Russian (4, 1). 4 credits each semester.

The fundamentals of Russian through listening, speaking, reading and writing. Practice in pronunciation and development of comprehension. One hour’s work a week in the language laboratory.

RUS 111-212. Intensive Russian (6, 1). 6 credits each semester.

The fundamentals of Russian through listening, speaking, reading and writing. The first semester is the equivalent of RUS 101-102 and the second of RUS 231-232.

RUS 231-232. Intermediate Russian. 3 credits each semester.

A thorough review of grammar, vocabulary building, conversation, composition and reading. Prerequisite: One year of college Russian or equivalent.

*RUS 265-266. Russian Literature in Translation. 3 credits each semester.

First semester: Russian literature to 1880; second semester: 1880 to the present. All lectures and readings are in English.

RUS 300. Russian Conversation and Composition. 3 credits.

Intensive training in the use and comprehension of modern, everyday Russian with emphasis on conversation and composition to give students confidence in expressing themselves in idiomatic Russian. Instruction is in Russian. Prerequisite: RUS 232 or equivalent.

RUS 308. Introduction to Russian Civilization. 3 credits.

A study of Russian life and culture and the outstanding contributions of Russian-speaking peoples. Instruction is in Russian. Prerequisite: RUS 300.

RUS 315. Russian Phonetics. 3 credits.

Intensive drill in Russian sounds and intonation patterns. Continued emphasis on conversation. Instruction is in Russian. Prerequisite: RUS 232 or equivalent.

RUS 320. Advanced Russian Grammar. 3 credits.

Advanced course in morphology and syntax with extensive practice in composition. Instruction is in Russian. Prerequisite: RUS 300 or equivalent.

RUS 400. Advanced Conversation. 3 credits.

Discussions deal with topics of current interest. Instruction is in Russian. Prerequisite: RUS 300 or equivalent.

RUS 405. Russian Literature of the 19th Century. 3 credits.

Readings and analyses of poetry, prose and drama by such writers as Pushkin, Lermontov, Gogol, Tolstoy, Dostoevsky and Chekhov. Instruction is in Russian. Prerequisite: Three years of college Russian or equivalent.

RUS 426. Russian Literature of the 20th Century. 3 credits.

A study of the works of major Russian writers of the 20th century. Instruction is in Russian. Prerequisite: Three years of college Russian or equivalent.

Speech Communication

School of Speech Communication

SCOM 121. Basic Human Communication. 3 credits.

Study of the basic process of oral human communication. Emphasis on oral skills in message composition, analysis of subject matter, listening, definition of communication purposes and participation skills in a variety of oral communication contexts. The class will focus on dyadic, small group and public communication events.

SCOM 122. Public Speaking. 3 credits.

Study of creative and practical skills of public speaking. Emphasis on practice and analysis based on measurable objectives and speech purposes. Consideration given to how to design and deliver effective speeches of various types for various occasions and purposes.

SCOM 220. Introduction to Interpersonal Communication. 3 credits.

Introduction to the fundamental theoretical perspectives in interpersonal communication. Emphasis on the effects of verbal and nonverbal messages on continuity and change in personal relationships. Consideration of the influence of cultural and social contexts on messages in relationships. Development of communication competence in diverse interpersonal contexts.

SCOM 231. Introduction to Alternative Dispute Resolution. 3 credits.

Study of conflict resolution processes including mediation, arbitration and negotiation. Consideration of litigation and hybrid dispute processes such as summary jury trial, rent-a-judge and panel evaluation.

SCOM 240. The Process of Human Communication. 3 credits.

Study of speech communication as a behavioral process employing verbal and nonverbal modes of interaction. Emphasis on learning theory, motivation, language, meaning and social interaction as applied to the theory of speech communication. Consideration of role of communication in all human endeavors.

SCOM 242. Presentational Speaking. 3 credits.

Study of methods for preparing and presenting public speeches. Consideration of impromptu and extemporaneous speaking, sales speeches, business presentations and other special occasion speeches. Emphasis on performance and evaluation. Prerequisite: Any 100-level speech communication course or permission of instructor.

SCOM 243. Oral Interpretation. 3 credits.

Study and application of theories concerning the oral presentation of various forms of literature including prose, poetry, drama and nonfiction materials. Emphasis on performance. Prerequisite: Any 100-level speech communication course or permission of instructor.
SCOM 245. Signs, Symbols and Social Interaction. 3 credits.

The study of verbal and nonverbal communication as used in human interaction. Consideration given to the function of symbolic systems in self-concept development, the structuring of reality and social discourse. Attention is directed toward the use of signs and symbols by different ethnic groups, genders, age groups and geographic groups.

SCOM 247. Small Group Communication. 3 credits.

Study of communication processes involved in solving problems when working with others in a small group context. Emphasis on concepts of roles, norms, leadership and decision making. Consideration of small group factors which influence problem-solving effectiveness. Prerequisite: Any 100-level speech communication course or permission of instructor.

SCOM 248. Intercultural Communication. 3 credits.

The study of human communication in a variety of cultural settings and contexts. Emphasis on developing understanding and analytical skills regarding communication between people from different racial, ethnic and cultural backgrounds in both domestic and international settings. Consideration of relevance and application to social, business and political environments.

SCOM 260. Introduction to Public Relations. 3 credits.

Study of basic principles and practices of public relations. Consideration given to public relations problems and pragmatic solutions utilizing oral, written and electronic communication media and skills.

SCOM 261. Public Relations Techniques I: Written. 3 credits.

Study of writing fundamentals for public relations. Emphasis on practice of effective writing for a variety of media (press releases, public service announcements, brochures, newsletters). Must be able to use word processing software. Prerequisite: SCOM 260 and SMAD 210 (can be taken concurrently) or permission of instructor.

SCOM 270. Introduction to Health Communication. 3 credits.

An introduction to the study of the theory and practice of communication in health- and medical-related fields. Emphasis on communication interaction between professional health providers and patients/clients. Consideration of strategies that promote effective communication between health-medical professionals and patients/clients. Prerequisite: Any 100-level speech communication course.

SCOM 280. Introduction to Communication Research. 3 credits.

An introduction to the principles, methods and analysis techniques used in the field of communication. Emphasis on a broad-based understanding of the breadth of research in the field. Includes both qualitative and quantitative research methods, methods of literature review and research article critiques. Prerequisite: SCOM 240.

SCOM 313. Topics in Speech Communication. 1-3 credits. Repeatable to 6 credits.

Study of current topics and issues in human communication. Emphasis on contemporary theories, research and principles. Prerequisite: Nine hours of speech communication courses including SCOM 240 and one at 100 level or permission of instructor.

SCOM 318. Practicum in Speech Communication. 1 credit.

Approved cocurricular activities and/or projects of a practical nature. Repeatable during the junior and senior years to a maximum of one practicum per semester. No more than four hours practicum credit can be applied to major. Prerequisite: Permission of the school director.

SCOM 331. Communication and Conflict. 3 credits.

An examination of communication in conflict situations. Emphasis on communication competencies required for successful management and resolution of conflict. Consideration of theories of conflict and application to different conflict levels including interpersonal communication, small group communication and organizational communication. Prerequisite: SCOM 231 recommended.

SCOM 332. Mediation. 3 credits.

Study of analysis and resolution of human conflict. Emphasis on role of mediation in dispute resolution focusing on relationships, language, listening and problem-solving techniques. Consideration of the interpersonal and group approaches to study of conflict management. Prerequisite: SCOM 231 recommended.

SCOM 341. Persuasion. 3 credits.

The study of oral communication as a determinant of attitudinal and behavioral change. Emphasis on the various kinds of artistic and nonartistic proofs as they apply to human motivation. Consideration of the application of behavioral research findings to persuasion. Prerequisite: SCOM 240 and SCOM 280 or permission of instructor.

SCOM 342. Argument and Advocacy. 3 credits.

The study of the techniques and principles of argument and advocacy. Emphasis on developing, presenting and defending a position on controversial questions. Consideration given to contemporary theories of public argument.

SCOM 345. Nonverbal Communication. 3 credits.

Study of nonverbal means through which people relate to one another. Consideration of the communicative effects of environment, facial expression, voice, posture, gestures, touch, distance and physical appearance. Prerequisite: SCOM 245 recommended and any 200-level speech communication course or permission of instructor.

SCOM 346. Free Speech in America. 3 credits.

The study of the evolution of freedom of speech in America from Colonial times to the present day. Emphasis on the major periods of development and on the role of courts in defining freedom of speech. Special consideration of contemporary freedom of speech controversies.
SCOM 348. Communication and Gender. 3 credits.
Study of theories and research regarding the influence of gender in various human communication contexts, both public and private. Emphasis on the critical analysis of existing theory and empirical research and the potential competent uses of communication for social change. Prerequisite: Any 100-level speech communication course or permission of instructor.

SCOM 350. Organizational Communication. 3 credits.
Study of theories and principles of communication within organizations. Emphasis on analysis of formal and informal communication systems, networks and interactions with organizational hierarchies. Consideration of both profit and not-for-profit contexts.

SCOM 352. Communication and Social Movements. 3 credits.
A study of the use of communication in social movements. Emphasis on the types of communication used in social movements and on ways to produce and respond to such messages. This course examines a variety of different social movements within the political process including nonprofit organizations. Prerequisite: SCOM 240.

SCOM 353. Political Communication. 3 credits.
Study of functions performed by communication in politics. Emphasis on a variety of communication forms and techniques used by advocates both in campaigning and governing. Consideration of contemporary campaigns and the role of communication in their successes and failures. Prerequisite: SCOM 240 is recommended or permission of the instructor.

SCOM 358. Business and Professional Speech Communication. 3 credits.
Study of techniques of effective communication in business/professional context. Emphasis on communication skills and results. Consideration of communication problems unique to the business/professional environment.

SCOM 361. Public Relations Techniques II: Visual. 3 credits.
Study of visual communication techniques for public relations. Survey of design principles and elements used for developing visually effective messages with an emphasis on publication design and production, photography and computer-mediated presentations. Students should provide a camera and be familiar with desktop publishing and presentation software. Prerequisite: SCOM 261 or permission of the instructor.

SCOM 381. Communication Criticism. 3 credits.
Study of methods of evaluating acts of persuasive communication. Emphasis on developing and applying appropriate standards to determine effectiveness of persuasion. Consideration of criticism of advertising, mass media, public speaking and other forms of persuasive communication. Prerequisite: SCOM 280 and any 100-level speech communication course or permission of instructor.

SCOM 383. Communication Research Methodologies. 3 credits.
The study of research methods in various areas of communication. Emphasis on ability to research literature and criticize research design. Prerequisite: SCOM 280 and nine hours of speech communication courses or permission of instructor.

SCOM 386. Communication Survey Research. 3 credits.
Consideration of survey problems and methods unique to communication. Emphasis on using survey research methodology in communication audits, public relations problems and public opinion polling. Prerequisite: SCOM 280 or permission of instructor.

SCOM 390. Directed Projects. 2-3 credits, repeatable to 6 credits.
Supervised projects related to any aspect of human communication. Emphasis on original individual or group programs beyond the department’s usual curricular or cocurricular offerings. Formal report(s) required for awarding of credit. Prerequisite: Permission of school director.

SCOM 391. Communication Career Strategies. 1 credit.
The study of strategies for implementing a job/internship campaign. Emphasis on conducting a self assessment, locating job and internship openings, writing resumes, cover letters and follow-up messages, conducting informational interviews, networking, interviewing techniques and marketing a speech communication degree. Prerequisite: 12 credit hours in speech communication.

SCOM 431. Legal Communication. 3 credits.
Study of the role of communication in the legal process. Emphasis on communication questions/problems which litigants, lawyers, judges and jurors face. Consideration of legal argument, negotiation, trial advocacy, decision making and communication technologies.

SCOM 432. Senior Seminar in Conflict and Mediation Studies. 3 credits.
An advanced seminar, capstone course for students concentrating or minoring in conflict and mediation studies. Special topics are developed to include research in conflict resolution, current trends in dispute resolution, evolving practices in conflict and mediation, as well as other relevant and timely issues.

SCOM 440. Advanced Interpersonal Communication. 3 credits.
A study of the major conceptual approaches and research methods used in the study of interpersonal communication. Emphasis on communication and relationship development, maintenance and disengagement. This course involves advanced analysis and critical evaluation of research in interpersonal communication. Prerequisite: SCOM 220 and 280 plus six additional hours of speech communication courses, or permission of instructor.
SCOM 449. Communication Training. 3 credits.
An examination of methods for planning, arranging and conducting communication training. Students become familiar with strategies and activities designed to help others improve their communication skills. Prerequisite: Junior standing and 12 hours in speech communication or permission of instructor.

SCOM 450. Advanced Studies in Organizational Communication. 3 credits.
Integrated study of organizational communication theory and research. Analysis of communication systems within organizations and at their boundaries. Special attention to field studies. Prerequisite: SCOM 350 or permission of instructor.

SCOM 453. Political Communication Methods. 3 credits.
An advanced study of communication techniques, procedures and processes as they relate to political campaign communication. Emphasis upon the design, execution and production of various communication messages. Consideration of the impact and utilization of various technologies in political campaigns. Prerequisite: SCOM 353 or permission of the instructor.

SCOM 460. Public Relations Management. 3 credits.
Intensive study and research of advanced communication management skills, theory and principles using case and field studies. Special attention to systematic and ethical management of communication and action affecting an organization’s internal and external publics. Prerequisite: SCOM 361 and senior standing.

SCOM 461. Public Relations Campaigns. 3 credits.
Planning and executing public relations campaigns for specific organizations. Emphasis on the four-step process of research, planning, communication/action and evaluation. Prerequisite: SCOM 261 and SCOM 386 or permission of instructor.

SCOM 470. Advanced Health Communication. 3 credits.
The study of advanced theory and practice of communication in health-related fields. Consideration of topics relating to communication problems which affect communication interaction between health professionals and clients/patients. Prerequisite: SCOM 270 or permission of instructor.

SCOM/SMAD/POSC 472. Media and Politics. 3 credits.
A study of the media’s role in political campaigns, concentrating on past/present election, the media’s role in covering political parties and coverage of the governing process. Discussion of electronic and print will occur. Topics to be examined include campaign videos, CSPAN, political ads, editorial cartoons, TV debates, convention coverage and radio talk show commentary.

An independent study for students to pursue individual research under the guidance of faculty. Limited to senior speech communication majors in good standing with permission of school director.

SCOM 495. Internship in Speech Communication. 2-3 credits, repeatable to 6 credits.
Program of work prepared and monitored on an individual student basis. Practical on-the-job experience in public relations, interpersonal communication, organizational communication or alternative dispute resolution in approved organization. Specified criteria to be met by each applying student. Prerequisite: Permission of school director.

SCOM 499. Honors in Speech Communication. 6 credits.
Year course. Prerequisite: Permission of school director.

Secondary Education

School of Education

SEED 101. Orientation to the Profession. 1 credit.
Designed to provide occupational and educational information about careers in secondary schools. Observation and peer interaction opportunities are provided.

SEED 371 (B-D and H-L). Clinical Techniques: Methodology Sequence. 3 credits.
Specific techniques and methods for secondary students in their respective disciplines. Competencies to be developed will include daily and unit planning, instructional methods, evaluation of student learning, micro-teaching experiences, etc. Prerequisite: PSYC 270, EDUC 360 and 370 and admission to the teacher education program.

SEED 371B. English Education Methods. 3 credits.

SEED 371C. Foreign Language Education Methods. 3 credits.

SEED 371D. Business and Marketing Education Methods. 3 credits.

SEED 371H. Social Studies Education Methods. 3 credits.

SEED 371I. Natural Sciences Education Methods. 3 credits.

SEED 371L. Technology Education Methods. 3 credits.

SEED 381. Field Experience (Practicum) in Secondary Education. 3 credits.
Provides practical classroom experience for secondary education students. Under the supervision of an in-service teacher and a clinical techniques professor, students engage in a variety of classroom activities to contribute to their professional preparation. Prerequisite: PSYC 270 and Junior standing and admission to the Teacher Education Program.
SEED 480. Student Teaching in Secondary Education. 12 credits.

A classroom teaching experience in an approved secondary school setting that provides opportunities for students to apply and refine their teaching knowledge and skills under supervised conditions. Ultimately, students are expected to assume primary responsibility for planning, implementing and evaluating learning activities. Prerequisite: PSYC 270, EDUC 360, EDUC 370, SEED 371 and permission of the director of teacher education services.

SEED 490. Special Studies in Education. 1-3 credits.

Independent study of researchable problems in secondary education. Prerequisite: Plan for the study must be approved by the faculty adviser and the program coordinator.

Media Arts and Design

School of Media Arts and Design

SMAD 101. Introduction to Media Arts and Design. 3 credits.

Study of the historical evolution of today’s media industries and career paths. Emphasis on contemporary issues affecting those industries and careers. Consideration given to emerging media, their required skills and social impacts. Prerequisite: formal declaration for admission to the SMAD major. (Formerly SMAD 300.)

SMAD 201. Fundamental Skills in Media Arts and Design. 3 credits.

Study of the basic theories, skills and systems required to master multimedia technologies. Emphasis on how such technologies shape the design of messages. Consideration given to commercial, instructional and artistic applications. Prerequisite: SMAD 101. (Formerly SMAD 200.)

SMAD 210. News Writing. 4 credits.

The study of the fundamentals of news writing, including news gathering techniques and modern news style. Emphasis on day-to-day coverage of meetings, events and breaking news stories. Prerequisite: Passing score on the school’s English proficiency test.

SMAD 220. News Editing. 3 credits.

The study of editorial functions in the modern newsroom. Consideration of problems in news judgment, news style and the laws of libel. Emphasis upon layout and headline writing. Prerequisite: Passing score on the school’s English proficiency test.

SMAD 225. Photographic. 3 credits.

The study of visual information gathering for print media including photojournalism. Emphasis on photographic techniques and print layout. Consideration of new visual technologies including the use of computers for electronic photodrafting and design. Students must provide their own camera. Prerequisite: SMAD 101 or permission of the instructor.

SMAD 230. Survey of Multimedia. 3 credits.

An introduction to the arrangement and synchronization of multimedia presentations for the educational, business and entertainment fields. The course covers the history of multimedia, CD-ROM development, computer applications, HTTP development and various design aspects. Prerequisite: Sophomore standing.

SMAD 231. Multimedia Writing. 4 credits.

Study of the principles and practices of writing for multimedia applications. Emphasis on the nature of interactivity and the relationship between text and image, sound and video. Attention to the development of multimedia presentations designed to inform, persuade and entertain. Prerequisite: admission to the major.

SMAD 232. Design Fundamentals. 3 credits.

Through theory and application, this course introduces the vocabulary, methods, processes, craft and technology employed by the graphic communicator, as well as the historical and sociological context of the design profession. Prerequisite: SMAD 101.

SMAD 233. Video Motion Graphics. 3 credits.

Study of the various means of digitizing and editing video. This would include capturing/compression techniques, storage considerations/limitations and file formats. The course will include current information concerning digital video applications such as multimedia and networking environments. Prerequisite: SMAD 201.

SMAD 234. Introduction to Music Technology. 3 credits.

The study of the fundamentals of music technology. Students are introduced to Musical Instrument Digital Interface, synthesizers, sequencing techniques, computer-based notation techniques, digital recording and editing and basic audio for the multimedia musician. Prerequisite: SMAD 201 or permission of the instructor.

SMAD 250. Scriptwriting. 4 credits.

The study of the principles and practices of writing scripts for commercial, noncommercial and corporate media applications. Emphasis on preparing dramatic and informational forms for broadcast or recording. Prerequisite: Passing score on the English proficiency test.

SMAD 256. Principles of Advertising. 3 credits.

Study of the principles and practices of advertising, including the process, planning, production and placement of commercial messages. Students will learn of the social impact, creative strategy, consumer use, message production and media placement strategies of advertising. Students get practical experience applying an integrated communication strategy.

SMAD 260. Telecommunication Business Fundamentals. 3 credits.

Students achieve a basic understanding of different media delivery technologies (broadcast radio, microwave, fiber optics, cable, twisted pair) and different modes of electronic transmission (amplitude and frequency modulation, pulse-code modulation, digital signaling, etc.), their limitations, advantages, disadvantages and how these realities affect management decisions.
SMAD 295. Practicum in Media Arts and Design. 1 credit, repeatable to 3 credits.
Freshmen and sophomores participating in cocurricular media activities may receive one hour of credit for field work at The Breeze, WMRA-FM, the Madison Video Productions or other university-related media outlets. Students are limited to one practicum per semester. Application procedures will be available from the school prior to registration. Prerequisite: Permission of the instructor.

SMAD 301. The Media Arts: Culture by Design. 3 credits.
Study of how mediated communication molds perception and influences cultural change. Emphasis on how language and imagery, sound and music are combined in current media to create meaning. Consideration of emerging media and their implications for cultural design. Prerequisite: admission to the major. (Formerly SMAD 200.)

SMAD 305. Topics in Media Arts and Design. 3-4 credits, repeatable to 6-8 credits.
The study of current topics and issues in media arts and design. Emphasis on contemporary themes of immediate concern. Prerequisite: Permission of the instructor.

SMAD 310. Advanced News Writing. 4 credits.
Advanced study and practice of news writing and news gathering techniques. Emphasis on in-depth and investigative stories. Prerequisite: SMAD 210 or permission of the instructor.

SMAD 311. Feature Writing. 4 credits.
The study and practice of advanced techniques in planning and writing feature stories. Emphasis on individual performance through criticism of student work in conference with instructor. Prerequisite: SMAD 210 or permission of the instructor.

SMAD 320. Newspaper Production. 4 credits.
Advanced study of the knowledge and skills required to produce a newspaper. Areas of study include story generation, writing, editing, picture editing, page design, layout, on-screen pagination, production and management. Consideration given to the journalistic responsibilities and problems of serving a diverse audience. Prerequisite: SMAD 210 or 220 and SMAD 295 or permission of the instructor.

SMAD 321. Feature Magazine Production. 4 credits.
A practical course in which students produce a feature magazine published regularly by the journalism area. Each student is assigned a specific staff position. Students learn to use the latest computer pagination technology in the design and production of the magazine. Prerequisite: SMAD 311 or permission of the instructor.

SMAD 330. Multimedia Law. 3 credits.
An in-depth investigation of business and legal aspects of multimedia production, publication and distribution. Examination of legal issues affecting the multimedia industry including: intellectual property laws, torts, contracts and licensing. Discussion of current policies and practices affecting multimedia development and review of pertinent legal reference materials. Prerequisite: Junior standing.

SMAD 332. Digital Image Processing. 3 credits.
Through theory and application, this course introduces the vocabulary, methods and technology of digital image processing. Students will focus on the treatment and manipulation of the photographic image. Prerequisite: SMAD 201.

SMAD 333. Computer Motion Graphics. 3 credits.
An intermediate course in computer animation theory and practice. Combines theoretical elements of film aesthetics with practical experience in animation film making. Students develop their skills in a variety of types of animated film production. Prerequisite: SMAD 233.

SMAD 334. Digital Sound Production. 3 credits.
The study of sound recording and manipulation, concentrating on industry-standard technology. Topics will include intermediate-level Musical Instrument Digital Interface, audio for video and introduction to multi-track music recording techniques. Prerequisite: SMAD 234 or permission of the instructor.

SMAD/GRPH 339. Web Design. 3 credits.
Introduction to web design through theory and practical application. Assignments will focus on the unique form, content and structures associated with designing for the world wide web. Special emphasis on the creative process and the graphic presentation of ideas. Prerequisite: GRPH 243, Computer Graphics.

SMAD 340. Screenplay Writing. 4 credits.
Study of the principles of screenplay writing for feature films and television movies. Emphasis is placed on the structure of narrative film. Prerequisite: SMAD 250; for non-majors ENG 380; or permission of the instructor.

SMAD 345. Electronic News Gathering. 4 credits.
Study of the fundamentals of newswriting for the electronic media, including news gathering techniques and electronic news style. Emphasis on writing and producing news packages. Prerequisite: SMAD 210 or 250.

SMAD 350. Video Production Fundamentals. 4 credits.
The study of the fundamental skills and information underlying audio and video production. Emphasis on competency-based learning and laboratory applications. Consideration of relevant aesthetic principles and practical limitations. Prerequisite: SMAD 101 or permission of the instructor.

SMAD 352. Electronic Field Production. 4 credits.
Introduces students to shooting and editing for various forms of post-produced video presentations. Through lectures, demonstrations and field work, students will gain a functional knowledge of equipment operations, composition, audio mixing and editing, editing techniques and special effects. Prerequisite: SMAD 350 or permission of the instructor.

SMAD 354. Television Graphics. 3 credits.
Introduction to the characteristics, limitations and production requirements of graphics used primarily in video production and displayed on standard television equipment. Students will gain an understanding of resolution, color and electronic restrictions inherent in television graphics. Prerequisite: SMAD 350 or permission of the instructor.
SMAD 355. Telecommunication Systems and Standards Issues. 3 credits.

This course is an overview of electronic communication transmission fundamentals, basic system configurations, component strengths and limitations. The course is presented from a managerial perspective and includes discussion of current and future technologies and international technology standards organizations. This course builds on material presented in SMAD 260, Introduction to Telecommunication Technologies. Prerequisite: SMAD 260 or permission of the instructor.

SMAD 356. Telecommunication Policy and Regulation. 3 credits.

An overview of the regulatory issues encountered in the telecommunication industry. Emphasizes post 1982-FCC changes deregulating telephone, CATV and broadcast industries. Includes regulation of emerging services and technologies, First Amendment issues, ownership and distribution of new information forms and limitations and uses of technology. Prerequisite: Junior standing.

SMAD 370. Mass Communication Law. 3 credits.

Principles and case studies in communication law, constitutional guarantees, libel, privacy, contempt, copyright and governmental regulatory agencies. Emphasis on recent cases and their effects on mass communication. Prerequisite: Junior standing.

SMAD 371. Media Theories. 3 credits.

Study of current theories of mediated communication. Emphasis on how such theories may be observed and tested in everyday life. Consideration of the research underlying these explanations of media influence. Corequisite: SMAD 301 or permission of the instructor.

SMAD 372. Media History. 3 credits.

The study of the history of the media in relation to American politics and society. Emphasis on key periods in the development of journalism and the mass media and the role of the journalist in society. Prerequisite: Junior standing or permission of the instructor.

SMAD 373. Media Analysis and Criticism. 3 credits.

The study and practice of journalistic and scholarly criticism of the mass media. Emphasis on interpretive writing about television, film and popular music. Consideration of contemporary analytical methods for researching mass-mediated culture. Corequisite: SMAD 301 or permission of the instructor.

SMAD 390. Directed Projects in Media Arts and Design. 2 credits, repeatable to 4 credits.

Supervised projects related to the study of any of the communication media. Credit given for original individual or group programs beyond the school’s usual cocurricular activities. A suitable completed project or report is required before credit can be awarded. Prerequisite: Permission of the school director.

SMAD 395. Advanced Practicum in Media Arts and Design. 1 credit, repeatable to 3 credits.

Juniors and seniors participating in cocurricular media activities may receive one hour of credit for field work at The Breeze, Curio, WMRA-FM, the Madison Video Productions or other university-related media outlets. Students are limited to one practicum per semester. Application procedures will be available from the school prior to registration. Prerequisite: Permission of the instructor.

SMAD 430. Principles and Practices of Multimedia. 3 credits.

An advanced course combining theoretical elements, aesthetics and practical experience in the creation of professional quality multimedia presentations. Students are exposed to advanced multimedia production through lectures, demonstrations, film and slide presentations, classroom work and outside assignments. Prerequisite: SMAD 201 and junior standing.

SMAD 432. Print Communication Design. 3 credits.

An introduction to the theories and methods of design for print communication. Students will learn various techniques needed to produce the design materials that go into print publications. Prerequisite: SMAD 332 or permission of the instructor.

SMAD 433. Advanced Digital Production-Video. 3 credits.

Experience in the organization and execution of video and multimedia projects on CD-ROM. Topics include creative and financial planning, time-management, talent booking, production and post-production process management, mastering and pressing/duplication. Prerequisite: SMAD 233 or SMAD 333 or permission of the instructor.

SMAD 434. Advanced Digital Production-Sound. 3 credits.

Experience in the organization and execution of audio and multimedia projects on CD-ROM. Topics include creative and financial planning, time-management, talent booking, production and post-production process management, mastering and pressing/duplication. Prerequisite: SMAD 334 or permission of the instructor.

SMAD 435. Advanced Practicum in Media Arts and Design. 1 credit, repeatable to 3 credits.

Juniors and seniors participating in cocurricular media activities may receive one hour of credit for field work at The Breeze, Curio, WMRA-FM, the Madison Video Productions or other university-related media outlets. Students are limited to one practicum per semester. Application procedures will be available from the school prior to registration. Prerequisite: Permission of the instructor.

SMAD 436. Telecommunication Policy and Regulation. 3 credits.

An overview of the regulatory issues encountered in the telecommunication industry. Emphasizes post 1982-FCC changes deregulating telephone, CATV and broadcast industries. Includes regulation of emerging services and technologies, First Amendment issues, ownership and distribution of new information forms and limitations and uses of technology. Prerequisite: Junior standing.

SMAD 437. Media Theories. 3 credits.

Study of current theories of mediated communication. Emphasis on how such theories may be observed and tested in everyday life. Consideration of the research underlying these explanations of media influence. Corequisite: SMAD 301 or permission of the instructor.

SMAD 438. Media History. 3 credits.

The study of the history of the media in relation to American politics and society. Emphasis on key periods in the development of journalism and the mass media and the role of the journalist in society. Prerequisite: Junior standing or permission of the instructor.

SMAD 439. Media Analysis and Criticism. 3 credits.

The study and practice of journalistic and scholarly criticism of the mass media. Emphasis on interpretive writing about television, film and popular music. Consideration of contemporary analytical methods for researching mass-mediated culture. Corequisite: SMAD 301 or permission of the instructor.

SMAD 440. Principles and Practices of Multimedia. 3 credits.

An advanced course combining theoretical elements, aesthetics and practical experience in the creation of professional quality multimedia presentations. Students are exposed to advanced multimedia production through lectures, demonstrations, film and slide presentations, classroom work and outside assignments. Prerequisite: SMAD 332 or permission of the instructor.

SMAD 442. Print Communication Design. 3 credits.

An introduction to the theories and methods of design for print communication. Students will learn various techniques needed to produce the design materials that go into print publications. Prerequisite: SMAD 332 or permission of the instructor.

SMAD 443. Advanced Digital Production-Video. 3 credits.

Experience in the organization and execution of video and multimedia projects on CD-ROM. Topics include creative and financial planning, time-management, talent booking, production and post-production process management, mastering and pressing/duplication. Prerequisite: SMAD 233 or SMAD 333 or permission of the instructor.

SMAD 444. Advanced Digital Production-Sound. 3 credits.

Experience in the organization and execution of audio and multimedia projects on CD-ROM. Topics include creative and financial planning, time-management, talent booking, production and post-production process management, mastering and pressing/duplication. Prerequisite: SMAD 334 or permission of the instructor.

SMAD 452. Electronic Entertainment/Information Distribution. 3 credits.

This course is an overview of current managerial issues affecting the entertainment and information industries as they relate to distribution of products to the consumer through various telecommunication media. Regulatory, technical and marketing perspectives are covered. This course requires a technical understanding of telecommunication. Prerequisite: SMAD 355 or permission of the instructor.

SMAD 460. Movies and Society. 3 credits.

The study of the cultural impact of the film industry as an institution of mass communication. Emphasis on the interrelationship among social, economic and technological factors influencing the creation and consumption of motion pictures. Consideration of particular films as indicators of cultural change. Prerequisite: SMAD 101; for non-majors ENG 380; or permission of the instructor.
SMAD 461. Movies as Art. 3 credits.
Advanced study of how movies tell their stories in visual terms. Emphasis on the historical evolution and design of the moving image. Consideration of the latest imaging technologies affecting film narrative. Prerequisite: SMAD 101; for non-majors ENG 380; or permission of the instructor.

SMAD 462. Documentary in Film and Television. 3 credits.
The study of content, style, technique and effect of representative samples of the documentary form. Consideration given to informational and persuasive elements. Prerequisite: SMAD 101; for non-majors ENG 380; or permission of the instructor.

SMAD 463. Film Adaptations. 3 credits.
The study of the process of adapting literature into feature films. Consideration is given to the original literary work, as well as to the changes undergone in its adaptation to film. Prerequisite: SMAD 101; for non-majors ENG 380 or permission of instructor.

SMAD 471. Media Ethics. 3 credits.
The study of ethical principles and how they apply in a variety of media situations, including entertainment programming and advertising. Emphasis on case studies as examples of ethical decision-making. Prerequisite: Junior standing or permission of the instructor.

SMAD/SCOM/POSC 472. Media and Politics. 3 credits.
A study of the media's role in political campaigns, concentrating on past/present election, the media's role in covering political parties and coverage of the governing process. Discussion of electronic and print will occur. Topics to be examined include campaign videos, CSPAN, political ads, editorial cartoons, TV debates, convention coverage and radio talk show commentary.

SMAD 475. Media Research Design. 3 credits.
Survey of empirical methods for conducting media research. Emphasis on applying such methods to the investigation of key issues in mass communication and the media arts. Consideration of model studies that exemplify these means of inquiry. Prerequisite: SMAD 371 or permission of the instructor.

SMAD 490. Special Studies in Media Arts and Design. 3 credits.
An independent study for students to pursue individual research under the guidance of a faculty adviser. Prerequisite: Senior media arts and design majors in good standing and permission of the school director.

SMAD 495. Internship in Media Arts and Design. 2 credits, repeatable to 4 credits.
An off-campus program prepared and monitored on an individual student basis. Internships are designed to provide practical experience in journalism, electronic media, corporate media or visual communication. Prerequisite: Permission of the school director and the media facility involved. Students must meet criteria and application procedures established in each concentration.

SMAD 498. Senior Seminar in Media Arts and Design. 3 credits.
The study and research in the history and philosophy of the function of mass communication in society. Consideration of topics relating to problems of communication systems, technological freedoms and press freedom and responsibilities. Prerequisite: SMAD 301 and senior standing or permission of the instructor.

SMAD 499. Honors in Media Arts and Design. 6 credits.
Year course.

Sociology

Department of Sociology and Anthropology

SOCI 101. Introductory Sociology. 3 credits.
Provides students with an understanding of the structure and processes of modern societies and their historical antecedents. Explores the universality of the social experience by addressing such topics as culture, socialization, social interaction, bureaucracy, norms and diversity, social inequality, social institutions, modernization, technology and social change, world views, values and behavior.

SOCI 102. Social Problems. 3 credits.
Introduces students to the study of problems of social value (e.g., environment, inequality, injustice, militarism, alienation) facing individuals and groups in complex societies. Examines problems inherent in social structure concerning the balance between individual freedom and social control.

An examination of current global social issues, such as industrialization, economy, work, inequality, social movements and socio-political change. Addresses questions of definition, nature, history, patterns and consequences of various issues, using sociological perspectives to examine and critique proposed social policies.

SOCI 214. Social Deviance. 3 credits.
Course offers students a wide range of explanations of deviance. Topics considered are the functions, social definitions, societal reactions and political aspects of deviance as characteristic of all societies. Deviant attributes as well as acts are considered.

SOCI/ANTH 236. Race and Ethnic Relations. 3 credits.
Comparative study of the causes and consequences of racial and ethnic inequality in the United States and around the world. Black/white relations in the United States and South Africa, native American rights and other ethnic and racial issues are discussed.
SOCI 240. Individual in Society. 3 credits.
Explores the relationship between ourselves, as individuals and society. Examines major contributors to the social science tradition including Freud, Marx, Hegel and Mead. Issues of personal and family relations, occupational aspirations, political organization, personal discipline and religious commitment are examined.

SOCI 265. Sociology of the Community. 3 credits.
Survey of community studies with special emphasis on definitions, development and modern community research.

SOCI 276. Sociology of the Family. 3 credits.
Covers the basic concepts and theories in marriage and the family; looks at basic issues in modern family life; examines changes in family functions and in the various stages of the family life cycle and discusses the future of the family in contemporary society.

SOCI/ANTH 313. Processes of Social and Cultural Change. 3 credits.
An interdisciplinary introduction to the study of aging. The course provides an overview of issues surrounding aging in contemporary society: personal, familial, communal and societal.

SOCI 302. Business in American Society. 3 credits.
A sociological analysis of the American business corporation, interrelationships among businesses and the interplay between business, public opinion and government policy.

SOCI 303. Sociology of Death and Dying. 3 credits.
Investigation of current American orientations toward death and dying with emphasis also given to the social organization of death and dying.

SOCI/ANTH 313. Processes of Social and Cultural Change. 3 credits.
Investigates the procedures through which a society operates and the manner in which it introduces and incorporates changes. Issues considered include belief, innovation, directed change, coercive change, revitalization and revolution.

SOCI 315. Science, Technology and Society. 3 credits.
Through an analysis of various issues, problems and case studies, this course will explore the interactions between science, technology and society. The course will examine connections of specific technologies to science, cultural values, social and economic interests and questions regarding progress.

SOCI 321. Politics in Society. 3 credits.
An examination of politics in American society from a sociological perspective. The relationship between society and politics, the nature and distribution of social power, political participation, political thought and politics as a vehicle for social change are explored.

SOCI/REL 322. Sociology of Religion. 3 credits.
A sociological analysis of religion. How it influences and is influenced by social existence.

SOCI 325. Criminology. 3 credits.
Study of the extent, causes and possible deterrents to crime including murder, assault, white-collar offenses and organized crime, with attention to the role of the victim and policy implications.

SOCI 327. Juvenile Delinquency. 3 credits.
Study of youth gangs, deviation and youth culture standards as well as the treatment used. Recent research reports will be emphasized.

SOCI/PSYC/KIN 329. Psychological and Sociological Aspects of Sport. 3 credits.
Study of the psychological and sociological implications of sport and the effect of sport on the United States and other cultures.

SOCI/SOWK 330. Corrections. 3 credits.
The history, philosophy, policies and problems of the treatment of violators by the police, courts and correctional institutions.

SOCI 331. Introduction to Sociological Analysis. 3 credits.
Introduction to the techniques for collecting, describing, analyzing and presenting sociological data.

SOCI 334. Socialization and Society. 3 credits.
Sociological analysis of processes by which persons acquire roles and identities.

SOCI 337. Sociology of Gender. 3 credits.
Examination of theories of sex role development, the roles of men and women in society and gender as a social construction.

SOCI 339. Sociology of Women. 3 credits.
Analysis of the structural position of women in society with emphasis on institutional frameworks such as economy, family, health, religion, sexuality, crime, etc.

SOCI 341. Sociology of Education. 3 credits.
Examination of sociological theories and research on education, emphasizing stratification, socialization, organization and relationship between schooling, family, community and work. Focus on cross-cultural approaches to education. Prerequisite: SOCI 101 or permission of instructor.

SOCI 344. Sociology of Work and Industry. 3 credits.
Examination of the problem of work in industrial societies, meanings and outcomes for individuals. This course will explore major industrial structures, the role of the individual in the work group and issues and policies affecting work and industry in contemporary society.

SOCI 345. Sociology of Occupations and Professions. 3 credits.
Examines work roles in American society with a focus on medicine, law and business. Topics include occupational organizations and professionalization; occupational ideology and community; occupational commitment and social character; and ways in which occupational careers impact and are impacted by society.

SOCI/REC 346. Leisure in Contemporary Society. 3 credits.
Sociological analysis of leisure or nonwork in contemporary society with particular emphasis upon conceptual and human problems and the potentials of leisure in a context of social change.
SOCl/ANTH/3OWK 348. Third World Societies: An Introduction. 3 credits.
This course will provide a critical examination of Third World societies within the global system. The course will address theoretical frameworks used to analyze Third World problems. Special attention will be given to persistent problems in the areas of population, poverty, health care, housing and social welfare.

SOCl/ANTH 352. Birth, Death, Sex: Exploring Demography. 3 credits.
Fertility (birth) and mortality (death) and their biological and social determinants, including cross-cultural and evolutionary/historical frameworks. Exploration of the dynamic between the material constraints on and symbolic significance of reproduction, sexuality and death within cultural context. Critical examination of population growth as a global "problem." Basic demographic methods. Prerequisite: Any lower level course in anthropology or sociology or permission of the instructor.

SOCl 354. Social Stratification. 3 credits.
Study of the class, caste and power structure of the American society. Stratification studies will be analyzed and compared.

SOCl 360. Modern Social Movements. 3 credits.
Introduction to the study and analysis of social movements in the United States as agents of social and ideological change. Emphasis is given to movements which have goals of extending and/or protecting rights of individuals and groups in the face of increasing industrialization, urbanization and centralization of power.

SOCl 361. Bureaucracy and Society. 3 credits.
Study of organizations primarily in contemporary society such as corporations, prisons, hospitals, social and government agencies, trade unions, etc., their internal structures and processes, impact on individuals and relation to other social units in society.

SOCl/ANTH 368. Modern American Culture. 3 credits.
Analysis of American society as reflected in popular cultural forms. Cultural expressions such as music, literature, theater, films and sports will be examined as they reflect the values, quality of contemporary life and social structure of the United States.

SOCl 369. Law and Society. 3 credits.
The history and functions of law as a form of social control; the social forces in the creation and practice of the law. The nature of law as a catalyst for and the product of social change.

SOCl 375. Medical Sociology. 3 credits.
An introduction to the field of medical sociology that examines the salient issues in the field and related theoretical perspectives. These two focuses are important in understanding the ability of humans to live to capacity. Attention is given to health-care programs in developing countries as well as modern industrial societies.
SOCI 490. Special Studies in Sociology. 1-3 credits.
Designed to give capable students in sociology an opportunity to complete independent study under supervision. Prerequisite: Recommendation of the instructor and permission of the department head.

SOCI 492. Sociology Field Practicum. 1-3 credits.
Provides the student with practical experience in employing and refining sociological skills in a public or private agency under faculty supervision.

SOCI 495. Special Topics in Sociology. 3 credits.
Examination of selected topics which are of current importance in sociology. May be repeated for credit when course content changes.

SOCI 499. Honors. 6 credits.
Year course.

Social Science
College of Arts and Letters

SOSC/PHIL 400. Philosophical Foundations of Social Science. 3 credits.
An examination of the philosophical aspects of social scientific knowledge and explanation as they are contained in logical empiricist, interpretive/hermeneutical and critical theory approaches.

SOSC 450. Interdisciplinary Perspectives on Social Issues. 3 credits.
An examination of the perspectives of the various social scientific disciplines through a survey of major issues such as inequality, racism and sexism, the nature of power and the relationship between the individual and society.

Social Work
Department of Social Work

SOWK 287. Introduction to Social Work. 3 credits.
An overview of the development of social work as a profession with emphasis upon various settings in which social work is practiced. The focus is on practical experiences designed to enable the student to gain familiarity with the dynamics of the profession. Co-requisite: 20 hours community service-learning.

SOWK 288. Social Welfare. 3 credits.
The analysis of basic human needs, problems and resources in society (America and other selected countries). The study of the development of social welfare as an institution in society. The examination of current issues in social welfare services.

SOWK 301. Workshops in Social Work. 1-3 credits.
Detailed study of a topic of interest in social work. May be repeated for credit.

SOWK 305. Social Work Research Methods. 3 credits.
Study of qualitative and quantitative methods in social work. Explanation of logic of scientific procedure. Formulation and design of social work research, including observation, questionnaires, interviews, use of existing sources, experiments, indirect techniques, evaluation research, analysis and interpretation of data. Publication and dissemination of results of social work research. Prerequisite: MATH 220 or SOCI 331.

SOWK 317. Introduction to Social Work Practice. 3 credits.
Self-awareness, analysis of worker and client value systems and an understanding of intervention are applied practically to aid students in developing skills in communication and interviewing.

SOWK 320. Human Behavior in the Social Environment. 3 credits.
Integration and expansion of prerequisite knowledge foundation in the biological, psychological and socio-cultural sciences as they apply to individuals, groups, families, organizations and communities. Particular attention is paid to minorities of color, women, sexual orientation and cultural diversity in a pluralistic society. Prerequisite: SOCI 101/GSOC 110/GSOC 210, SOCI 214 and 236; GPSY 160; and GPSY 101.

SOWK/SOCI 330. Corrections. 3 credits.
The history, philosophy, policies and problems of the treatment of violators by the police, courts and correctional institutions.

SOWK 332. Community Mental Health Practice. 3 credits.
Provides a basis for understanding mental health policy and services. Focus is on the needs of the deinstitutionalized mentally ill patient including psychosocial treatment and case management services. Outpatient services for the general public are also covered. Course contains a service component.

SOWK 335. Social Policy. 3 credits.
Study of the formulation and consequences of social policy in the context of contemporary social, political and economic conditions. Skill development in policy analysis, critique and change. Prerequisite: SOWK 288 and POSC 302 or GPOS 225.

SOWK 338. Issues and Policies in Family Services. 3 credits.
Examination of historical and philosophical approaches to family policy. Evolution of family-related social policies in the United States is contrasted with those of selected foreign countries with the view toward a national family policy.

SOWK 340. Violence in Families. 3 credits.
Examination of violence in the family, including spouse, sibling, elder and child abuse. Studies the social and cultural patterns and etiology of family violence. Examines programs and services for the abused and the abuser including shelters, support systems and counseling.
Study of the basic child welfare services - day care, homemakers, services to unwed parents, protective, foster care and adoption services - and the principle income maintenance programs as they affect children and their families. Analysis of legal framework and court services and such current issues as guardianship, educational and protective services.

SOWK/ANTH/SOCI 348. Third World Societies: An Introduction. 3 credits.
This course will provide a critical examination of Third World societies within the global system. The course will address theoretical frameworks used to analyze Third World problems. Special attention will be given to persistent problems in the areas of population, poverty, health care, housing and social welfare.

SOWK 372. Social Work Practice with the Aged. 3 credits.
An examination of America's response to aged Americans from a historical and current perspective. Social problems and social work skills will be examined in light of individual, group and community needs and those affected by social policies.

SOWK 387. Working with Teenagers. 3 credits.
Survey of physical, psychological and social theories of adolescent development. Examination of service delivery issues in working with teenagers. Investigation of topical areas of particular relevance to work with adolescents including sexuality, abuse and neglect, runaways, depression and suicide and substance abuse.

SOWK 442. Social Work in Health Care. 3 credits.
The impact of illness and disability on the person, family and community is studied. The social responses currently provided and those being developed are emphasized. Explores psychosocial assessment methods; prevention, crisis intervention and rehabilitation strategies; and interdisciplinary teamwork in health care.

Application of social work values, knowledge and methods with families and small groups is emphasized. Assessment, planning intervention strategies, resource utilization and evaluation are examined. Role play and group processing are utilized. Prerequisite: SOWK 305, 317, 320, 335 and admission to the Social Work Program.

SOWK 466. Social Work Practice in Micro Systems. 3 credits.
Application of social work values, knowledge and methods with individuals within the family context is emphasized. Case assessment, planning intervention strategies, resource utilization and evaluation are examined. Role play and videotaping are utilized. Prerequisite: SOWK 305, 317, 320, 335 and admission to the Social Work Program.

SOWK 467. Social Work Practice in Macro Systems. 3 credits.
Social work skill development and practice in the application of knowledge, skills and methods to the macro systems of professional practice including neighborhoods, communities and organizations. Prerequisite: SOWK 305, 317, 320, 335 and admission to the Social Work Program.

SOWK 481. Social Work Field Practicum I (Block Plan). 6 credits.
Offers students an opportunity to gain a broad knowledge of the basic functions, services and roles of the agency as related to actual social work practice, as well as a specific knowledge of practical intervention skills necessary to effective social work practice. The field experience is the application of knowledge and skill components drawn from previous courses. Prerequisite: Admission to the field practicum. Social work majors only. Senior Standing.

SOWK 482. Social Work Field Practicum II (Block Plan). 6 credits.
Offers students an opportunity to build upon previous field experience by having more responsibility and tasks designed to expand their practice skills in social work. Prerequisite: SOWK 481. Social work majors only.

SOWK 487. Special Topics in Social Work. 3 credits.
Examination of selected topics of social work practice that are of current importance in the social work profession. Course may be repeated for credit.

Spanish

Department of Foreign Languages and Literatures

SPAN 101-102. Elementary Spanish (4, 1). 4 credits each semester.
The fundamentals of Spanish through listening, speaking, reading and writing. Practice in pronunciation and development of comprehension. One hour’s work a week in the language laboratory.
Reviews elementary Spanish grammar, reading, writing, speaking and listening skills in Spanish. One hour's work a week in the language laboratory. For students who have had no more than two or three years of Spanish in high school and qualify through the placement test. Prerequisite: Permission of the department head.

SPAN 111-212. Intensive Spanish (6, 1). 6 credits each semester.
This intensive course covers two years of Spanish in one. The first semester is equivalent to elementary Spanish and the second semester to intermediate Spanish. Practice in pronunciation and development of comprehension. One hour's work a week in the language laboratory.

SPAN 205. Medical Spanish. 3 credits.
This course is designed to provide both health sciences students and health professionals with a basic knowledge of Spanish vocabulary and language structures and in order for them to communicate in a simple way with Spanish-speaking clients/patients in a health setting. Prerequisite: SPAN 102 or equivalent.

SPAN 231-232. Intermediate Spanish. 3 credits each semester.
A thorough review of grammar, vocabulary building, conversation, composition and reading. Prerequisite: One year of college Spanish or equivalent.

SPAN 267. Spanish-American Literature in Translation. 3 credits.
Survey of Spanish-American literature of the 20th century. All lectures and readings are in English. Does not count toward a major, minor or licensure in Spanish.

SPAN 300. Spanish Conversation and Composition. 3 credits.
Intensive training in the use and comprehension of modern, everyday Spanish with emphasis on conversation and composition to give students confidence in expressing themselves in simple idiomatic Spanish. Instruction is in Spanish. Prerequisite: SPAN 232 or equivalent.

SPAN 305. Advanced Reading. 3 credits.
Selected readings from Spanish and Latin American literature, with emphasis on teaching the student to read and interpret literary works. Prerequisite: SPAN 300.

SPAN 307. Spanish Civilization. 3 credits.
A study of Spanish life and culture and the outstanding contributions of Spain to world civilization. Instruction is in Spanish. Prerequisite: SPAN 300.

SPAN 308. Latin American Civilization. 3 credits.
A study of the geographical, historical and cultural development of Latin America from pre-Columbian times to the present. Instruction is in Spanish. Prerequisite: SPAN 300.

SPAN 315. Spanish Phonetics. 3 credits.
Intensive drill in Spanish sounds and intonation patterns. Continued emphasis upon conversation. Instruction is in Spanish. Prerequisite: SPAN 232 or equivalent.

SPAN 320. Advanced Spanish Grammar. 3 credits.
Advanced course in morphology and syntax with extensive practice in composition. Instruction is in Spanish. Prerequisite: SPAN 300 or equivalent.

SPAN 325. Advanced Oral and Written Practice in Spanish. 3 credits.
Intensive practice of conversation and composition in Spanish with emphasis on grammar and style. Instruction is in Spanish. The course is recommended to students who need practice in grammar. Counts as an elective for Spanish majors and minors. Prerequisite: SPAN 300.

SPAN 330. Business Spanish. 3 credits.
A study of commercial and technical vocabulary and trade customs in conjunction with practice in the art of commercial communication including interviews, letter writing and simultaneous interpretation. Instruction is in Spanish. Prerequisite: SPAN 300.

SPAN 385. Latin American Drama and Short Stories. 3 credits.
Reading and analysis of representative plays and short stories from Latin America. Student reports on selected authors. Instruction is in Spanish. Prerequisite: Three years of college Spanish or equivalent.

SPAN 400. Advanced Conversation. 3 credits.
Discussions deal with topics of current interest. Instruction is in Spanish. Prerequisite: SPAN 300 or equivalent.

SPAN 405. Spanish Novels of the 19th and 20th Centuries. 3 credits.
The development of the Spanish novel from the "costumbristas" through the realism of Galdos and from the writers of the Generation of 1898 to the present. Instruction is in Spanish. Prerequisite: Three years of college Spanish or equivalent.

SPAN 406. Spanish Drama of the 19th and 20th Centuries. 3 credits.
Readings and discussions of representative works of Spanish drama from the Romantic period to the present. Instruction is in Spanish. Prerequisite: Three years of college Spanish or equivalent.

SPAN 408. Aspects of Latin American Civilization. 3 credits.
The development of countries like Argentinia, Colombia, Peru, Mexico and others from pre-Columbian times to the present. Emphasis on the indigenous and European cultures and their influences on contemporary traditions. Focus on Central America, political developments and revolutions and wars within the last two decades. Instruction is in Spanish. Prerequisite: Two 300-level Spanish courses.

SPAN 415. The Spanish-American Novel. 3 credits.
Reading and analysis of representative works of Spanish-American novelists of the 19th and 20th centuries. Instruction is in Spanish. Prerequisite: Three years of college Spanish or equivalent.
SPAN 425. Prose of the Golden Age. 3 credits.
A study of the chivalric, sentimental, pastoral and picaresque genres of prose literature and of their development through the Golden Age, culminating in Cervantes. Instruction is in Spanish. Prerequisite: Three years of college Spanish or equivalent.

SPAN 426. Drama of the Golden Age. 3 credits.
A study of the “comedia” of the Golden Age including works of Lope de Vega, Calderón de la Barca, Tirso de Molina and Ruiz de Alarcon. Instruction is in Spanish. Prerequisite: Three years of college Spanish or equivalent.

SPAN 460. Post War Literature in Spain. 3 credits.
Reading and analysis of representative works of Spanish novelists and their development after the Civil War in Spain. Emphasis on Spanish history and society under the influence of Franco’s Regime. Instruction is in Spanish. Prerequisite: Three years of college Spanish or equivalent.

Special Education

School of Education

The nature, needs and problems of exceptional children and how these relate to educational provisions are studied. The status of the disabled in society will be emphasized. Federal and state laws ensuring the rights of the disabled will be stressed.

SPED 201. Characteristics of Persons with Learning/Behavioral Disabilities. 3 credits.
This course will highlight the legal definitions of learning disabilities, mental retardation and emotional disturbance as well as characteristics that are both shared and unique to each area. Causes and prevalence rates will be discussed.

SPED 202. Field Experiences in Special Education. 3 credits.
Provides students with supervised experiences with persons with disabilities. Placements are made in various settings, including schools, institutions and recreational programs. Prerequisite: SPED 200 or permission of instructor.

SPED 311. Assessing the Disabled. 2 credits.
A study of formal and informal measures used to diagnose disabilities, as well as to plan and evaluate instruction. Legal requirements for eligibility for special education services will be stressed. Prerequisite: SPED 200, 201 or permission of the instructor; corequisite: SPED 312.

SPED 312. Field Experience in Assessing Disabilities. 1 credit.
Students are expected to demonstrate in field and/or simulated settings the assessment skills which have been developed in SPED 311. Prerequisite: SPED 200, 201 or permission of the instructor; corequisite: SPED 311.

SPED 313. Instructional Programming for the Disabled. 2 credits.
A study of general curriculum and methods appropriate for students with disabilities in special education with emphasis on IEP development. Methods and materials for academic and school-related problems are examined. Prerequisite: SPED 200, 201 or permission of the instructor; corequisite: SPED 314.

SPED 314. Field Experience in Instructional Programming for the Disabled. 1 credit.
Students are expected to demonstrate in field and/or simulated settings the instructional programming skills which have been developed in SPED 313. Prerequisite: SPED 200, 201 or permission of the instructor; corequisite: SPED 313.

SPED 315. Analysis and Design of Behavioral Programs for the Disabled. 2 credits.
This course will emphasize the development of behavioral programs for learning and behavior problems as well as methods for developing interpersonal skills through social skill training. Prerequisite: SPED 200, 201 or permission of the instructor; corequisite: SPED 316.

SPED 316. Field Experience in Analysis and Design of Behavioral Programs for the Disabled. 1 credit.
Students are expected to demonstrate in field and/or simulated settings those skills necessary to design behavioral programs for children with disabilities as well as methods for developing interpersonal skills through social skill training. Prerequisite: SPED 200, 201 or permission of the instructor; corequisite: SPED 315.

SPED 317. Teaching Language Arts and Mathematics. 2 credits.
A survey of methods and materials for teaching language arts and mathematics in the regular class. Emphasis will be on the sequence of specific academic skills taught with a developmental approach. Prerequisite: SPED 200 or permission of the instructor; corequisite: SPED 318.

SPED 318. Field Experience in Teaching Language Arts and Mathematics. 1 credit.
Students are expected to demonstrate in field and/or simulated settings the teaching competencies which have been developed in SPED 317. Prerequisite: SPED 200 or permission of the instructor; corequisite: SPED 317.

SPED 319. Managing Classroom Behavior. 2 credits.
This course focuses on techniques used to manage the behavior of all students. Emphasized are strategies used to prevent inappropriate behavior from occurring and/or worsening. Several systematic interventions are briefly discussed. Prerequisite: SPED 315 or permission of the instructor; corequisite: SPED 320.

SPED 320. Field Experience in Managing Classroom Behavior. 1 credit.
Students are required to demonstrate various classroom behavior management strategies in the classroom and/or in simulations. Prerequisite: SPED 313 or permission of the instructor; corequisite: SPED 319.
SPED 401. Problems in Special Education. 1-3 credits.
Coniders current problems and issues in special education as they relate to the professional education of teachers.

SPED 402. Teaching Mildly Disabled Students in Regular Classes. 1 credit.
Categories and characteristics of the disabled will be examined. Modifications in teaching methods and materials for students with disabilities in general education classes at the secondary level will be presented. Not available for major or minor credit in early, middle and special education.

SPED 461. Special Methods for Teaching Academics to the Disabled. 2 credits.
A study of instructional approaches for educating students with mild disabilities. The course emphasizes specific methods and materials for teaching academic and related areas. Prerequisite: SPED 313 or permission of the instructor; corequisite: SPED 462.

SPED 462. Field Experience in Special Methods for Teaching Academics to the Disabled. 1 credit.
Students are required to demonstrate in field and/or simulated settings teaching skills developed in SPED 401. Prerequisite: SPED 313 or permission of the instructor; corequisite: SPED 461.

SPED 463. Consultative Skills for Working with Schools, Community Agencies and Parents. 2 credits.
This course focuses on skills necessary in assisting regular educators, community agencies and parents to work with students with disabilities. Skills in providing in-service programs, working as a part of a team and consultation are developed. Prerequisite: SPED 313 or permission of the instructor; corequisite: SPED 464.

SPED 464. Field Experience in Consultative Skills for Working with Schools, Community Agencies and Parents. 1 credit.
Students are expected to demonstrate in field and/or simulated settings the consultational skills developed in SPED 463. Prerequisite: SPED 319 or permission of the instructor; corequisite: SPED 463.

SPED 480. Student Teaching in Special Education. 8 credits.
Enables students to apply those skills and attitudes acquired in all components of their teacher education program. Under the guidance of university supervisors, students are provided opportunities to familiarize themselves with the classroom teacher's role.

SPED 490. Special Studies in Special Education. 1-3 credits each semester.
Designed to allow the student to complete independent study under faculty supervision. Prerequisite: Permission of the department head.

SPED 499. Honors. 6 credits.
See catalog descriptions titled “Graduation with Distinction” and “Graduation with Honors.”

Regularly Scheduled Studies Abroad Courses

Semester in Florence

ARTH 313. Masterpieces of Italian Renaissance Art. 3 credits.
Exploration of the invention of perspective and techniques of Renaissance realism including masterpieces by major artists such as Giotto, Donatello and Michelangelo. Weekly visits to museums and churches.

A study of the evolution of Italian cinema. Emphasis given on the following directors: Rossellini, Visconti, De Sica, Fellini, Antonioni, Bertolucci, Wertmuller, Scola, Taviani and Salvatores. Instruction is in Italian.

ILS 290F/ENG 302F. Florence in Literature. 3 credits.
Impressions of Florence and the Renaissance Age through the eyes of English/American writers including Twain, Forster, Shelley, Browning and Dickens. Directed readings and excursions. Journal required.

ITAL 101-102. Intensive Beginning Italian. 6 credits.
Emphasis on speaking (pronunciation, vocabulary, comprehension), grammar and reading to the intermediate level.

ITAL 231-232. Intermediate to Advanced Italian. 3 credits.
Review of grammar and syntax; development of reading and writing skills. Improvement of listening comprehension and fluency.

ITAL 320F. Advanced Grammar. 3 credits.
Advanced course in morphology and syntax with extensive practice in composition. Instruction is in Italian.

ITAL 335F. Introduction to Italian Literature. 3 credits.
A survey of Italian literature from its beginning to the present. Textual analysis of sample writings representative of the most important literary movements. Instruction is in Italian.

ITAL 425. Modern Italian Literature. 3 credits.
A study of the works of major 20th-century Italian writers. Instruction is in Italian.

*MUS 200F. Music in General Culture. 3 credits.
Study of music from classic Western heritage including Gregorian chant, symphonic music and comic opera. Weekly opera or concerts. Meets liberal studies fine arts requirement. Taught in English.

POSC 361F. Contemporary Problems in International Relations: Italy and European Politics Since 1914. 3 credits.
Examination of contemporary problems in the field of international relations with special emphasis on Italy and its role in European politics. (Fall semester only).
POSC 361F. The European Union. 3 credits.
Overview of the European Union. (Spring semester only).

Semester in London

ARTH 315. Masterpieces of British Architecture. 3 credits.
The history and theory of British architecture. Visits to outstanding structures in England from prehistoric to modern.

ARTH 316. Masterpieces of British Art. 3 credits.

ENG 302R. London in Literature. 3 credits.
London as reflected in the works of its most famous writers. Weekly walks through the still-folded parts of London.

ENG 458L. Shakespeare in London. 3 credits.
Students study and view Shakespeare’s comedies and tragedies. Visits to the theater depending upon what is playing in London at the time. Restricted enrollment.

HIST 392L. British History 1485-1760. 3 credits.
The history of England as seen in its institutions, buildings and landscapes. Weekly outings to museums and areas of historic interest. (Not offered every semester.)

ILS 290L. London in Cultural Perspective. 3 credits.
Directed readings and independent excursions designed to complement the student’s studies in London; supervised by the JMU faculty member in residence. The student is required to keep an extensive journal.

*MUS 200L. Music in General Culture. 3 credits.
Study of music from the classic Western heritage. Other types of music will be considered. Weekly concerts. Meets general education fine arts requirements.

POSC 361L. British Legal and Political Institutions. 3 credits.
An introduction to English government and law. Outings include visits to the Houses of Parliament, trials and other events of political and legal import. (Not offered every semester.)

THEA 449/ENG 232. The London Theatre. 3 credits.
Classical and contemporary drama on the London stage. Weekly plays from the best of commercial theater including productions by the Royal Shakespeare Company and the National Theatre. Taught in English.

Semester in Martinique

DANC 143. International Folk Dance. 2 credits.
Traditional folk dance steps and native folk dances.

ENG 345. American Romanticism. 3 credits.
Selected works of major figures such as Emerson, Thoreau, Hawthorne, Poe, Melville and Whitman.

ENG 421M/FR 446D. Studies in French Caribbean Literature. 3 credits.
A survey of the literary achievement of novelists and poets of the Caribbean. The works will highlight the social, political and educational aspects of West Indian life within the Caribbean.

FR 335M. Introduction to French Literature. 3 credits.
A study of the main literary schools from Classicism to the Nouveau Roman. Textual analysis of sample writings representative of the most important literary movements. Instruction is in French. Prerequisite: FR 300.

FR 440M. Stylistics and Translation. 3 credits.
An intensive course in writing and translation from and into English and French. Contemporary topics taken from various fields. Comparative terminology. Prerequisite: FR 300 or equivalent.

FR 490M. Special Studies in French Literature. 3 credits.
Topics include French textual analysis and history of French literature.

ILS 290M. Martinique in Cultural Perspective. 3 credits.
Global study of French Caribbean culture through history, literature, music, dance, French Creole language with field trips to museums, gardens, theaters and concerts.

Semester in Paris

ARTH 317. Masterpieces of French Art. 3 credits.
Survey based on the masterpieces to be found in Paris, with visits to all the major museums of Paris including the Louvre, the Musee D’Orsay, the Cluny and the Centre Pompidou. Taught in English.

ENG 302P. Paris in Cultural Perspective. 3 credits.
Selected readings from Dickens, James, Hugo, Hemingway and Orwell with excursions in Paris. Extensive journal required. Will also count as an upper-level English elective. Taught in English.

ENG 380P. Film Genres. 3 credits.
Examination of classical cinema and 20th-century French cinema viewed from sociological and cultural viewpoints. Film outings focus on cinema classics and works of contemporary European directors and producers. (Alternate semesters).

FR 300P. French Conversation and Composition. 3 credits.
Intensive training in conversation, composition, idiomatic expressions and comprehension of modern, everyday French. Required for French majors, as well as for international business and international affairs majors. Taught in French.

FR 307P. History of French Civilization. 3 credits.
Social, economic, political and artistic development of France from the Middle Ages to the present with visits to historical monuments. Required for French majors. Taught in French.
FR 308P. Contemporary French Civilization. 3 credits.
   A study of French life and culture with emphasis on contemporary France. Required for French, international business and international affairs majors. Taught in French.

FR 420P. French Theater (Fall Semester). 3 credits.
   A study of dramatic genres from the Middle Ages to the 20th century. Students attend performances of plays from most of the major historical periods. Taught in French.

FR 490P. New French Theater and Cinema (Spring Semester). 3 credits.
   Anti-theater and New Wave cinema, including authors such as Ionesco, Beckett, Truffaut and Godard. Taught in French.

*MUS 200P. Music in General Culture. 3 credits.
   Study of music from the classic Western heritage, including French influence in the development of music. Students attend concerts, opera and ballet. Taught in English.

POSC 361P. Special Studies in French Politics (Fall Semester). 3 credits.
   Introduction to the French political system, with emphasis on contemporary problems in France. Visits to political institutions, museums and monuments. Taught in English.

Semester in Salamanca

ARTH 314/SPAN 490T. Masterpieces of Spanish Art. 3 credits.
   A study of the art and architecture of Spain from medieval times through the present. Concentration on specific artists, as well as general movements in the history of Spanish art. Prerequisite: SPAN 300 or equivalent.

ECON 312. Comparative Economic Systems. 3 credits.
   An examination of the distinguishing characteristics, institutions and performances of the economic systems of Spain and the United States.

ILS 290S. Special Studies: Salamanca in Literature. 3 credits.
   A study of Salamanca in cultural perspective. Directed readings and independent excursions are designed to complement the student’s studies in Salamanca. The student is required to keep an extensive journal.

POSC 361S. Comparative Politics: Spain/United States. 3 credits.

SPAN 300. Spanish Conversation and Composition. 3 credits.
   Intensive training in the use and comprehension of modern everyday Spanish with emphasis upon conversation and composition to give the student confidence in expressing himself in simple idiomatic Spanish. Prerequisite: SPAN 232 or equivalent.

SPAN 307. History of Spanish Civilization. 3 credits.
   A study of Spanish life and culture and the outstanding contributions of Spain to world civilization. Review of historical and contemporary figures. Prerequisite: SPAN 232 or equivalent.

SPAN 315. Phonetics. 3 credits.
   Intensive drills in Spanish sounds and intonation patterns. Continued emphasis on conversation. Prerequisite: SPAN 232 or equivalent.

SPAN 320. Advanced Grammar. 3 credits.
   Advanced course in morphology and syntax with extensive practice in composition. Prerequisite: SPAN 300 or equivalent.

SPAN 400. Advanced Conversation and Composition. 3 credits.
   Intensive training in conversation and composition through discussions in Spanish dealing with topics of current interest. Prerequisite: SPAN 300 or equivalent.

SPAN 490L. Spanish Literature: 19th-20th Century Spanish Novel or Golden Age Literature in Spain. 3 credits.
   Readings and discussions of works of literature. Analysis and practice in critical compositions and research papers. Prerequisite: Three years of college Spanish or equivalent plus the completion of any survey literature course.

Theater

School of Theatre and Dance

THEA/DANC 171. Performance Production. 3 credits.
   An introduction to the methods of the production of scenery, properties, costumes, lighting, sound and performance management for theater and dance performances. Instruction in the skills required for the operation of associated tools and equipment and instruction in the skills required for the operation of lighting and sound equipment will be taught.

THEA 190. Topics in Theater. 1-3 credits, repeatable to 6 credits.
   Study of the practice of the various aspects of theater. Emphasis on applied projects structured to provide technical and performance experience. Offered in summer session only with the consent of the director and the instructor. Will not count as credit toward major.

THEA 200. Theater Practicum. 1 credit.
   Students who participate in cocurricular theater activities may receive one hour credit per semester. May be repeated during junior and senior years. No student may enroll in more than one practicum per semester. Majors may apply a maximum of four hours practicum credit toward meeting major requirements.

*GTHE 210. Introduction to Theater. 3 credits.
   Study of the theater as an art form. Emphasis on introducing students to a broad spectrum of theatrical activity and opinion. Consideration of the components that comprise a theater event including acting, directing, design, costuming, lighting and playwriting.
THEA 211. Survey of Theater. 3 credits.
The study of theater art as revealed in dramatic literature. A survey of the major historical periods of theater through the study of representative plays. An introduction to the methods of play analysis, criticism and practice.

THEA 251. Basic Acting. 3 credits.
A study of basic acting as a performance experience. Emphasis on fundamentals of performance including concentration, transitions, interaction and the structuring of action.

THEA 261. Voice for the Stage. 3 credits.
Theories and exercises designed to equip the student with proper speech for the stage through a fundamental understanding of phonetics and articulation.

THEA 271. Technical Theater. 3 credits.
Study of the technical aspects of stage production. Emphasis upon practical experience in the use of stage and shop facilities. Consideration of the physical elements of stage, construction, painting and rigging of scenery as applied to theatrical and television production.

THEA 273. Visual Aspects of Theater. 3 credits.
Study of the interrelationship between the playwright, director and actor with the scenic, lighting and costume designers; introduction of the basic documents of the design process; survey of current and historical trends in theatrical design; no artistic or technical skills necessary.

THEA 300. Theater Practicum. 1 credit.
Students who participate in cocurricular theater activities may receive one hour credit per semester. May be repeated during junior and senior years. No student may enroll in more than one practicum per semester. Majors may apply a maximum of four hours practicum credit toward meeting major requirements.

THEA 303. Topics in Theater. 1-3 credits, repeatable to 6 credits.
Study of current topics and issues in theater. Emphasis on contemporary themes of immediate concern. Prerequisite: Permission of the instructor.

THEA 316. Theater in Society. 3 credits.
Study of the history of the theater within broad social and cultural contexts. Emphasis on how theater influences and is influenced by the society in which it exists. Consideration of theatrical art within specifically selected societies.

THEA 320. History of Performance in Motion Pictures. 3 credits.
A survey of motion pictures as records of the forms, techniques and social impact of dramatic performance. Emphasis on the shaping of performance style within changing cultural contexts. Consideration of particular films and performers as exemplars of important periods.

THEA 331. Technical Costuming. 3 credits.
Introduction to the technical aspects involved in building complete costume ensembles for the stage, screen and dance. Emphasis placed on experiencing unique problems in production situations, including specialized costume and accessory construction, ornamentation, fabric treatment, difficulties and alternatives in presenting historical clothing and renovating and exploiting available materials.

THEA 332. Survey of Costume Fashion and Manners. 3 credits.
A survey of Western world costume from 4000 B.C. to the present as it reflects the sociocultural and socioeconomic aspects of the times. Emphasis on the evaluation of historic costume in relation to architecture, sculpture, painting and other art forms.

THEA 333. Costume Design. 3 credits.
The study of basic design and construction techniques of stage costumes. Emphasis on costuming in terms of the total production concept including directorial approach, setting and lighting design. Consideration of the process of costuming a theatrical production from first production meetings to opening night.

THEA 336. History, Theory and Practice of Stage Makeup. 3 credits.
Study of the history and practice of makeup for ceremonial and theatrical presentations of selected major cultures, from ancient Egypt to the present. Consideration given to make-up as a reflection of the social organization of each culture. Emphasis on makeup as an important element in the history of design aesthetics as well as a vital part of the performing arts.

THEA/ENG 347. Playwriting. 3 credits.
Study of the process of writing plays. Consideration of plot, character, thematic material, conflict and dramatic structure. Emphasis on individual writing assignments.

THEA 351. Intermediate Acting. 3 credits.
Study of the fundamental theories and methods of acting. Emphasis on laboratory experience in the preparation of scenes. Consideration of various acting techniques through performance with maximum individual on-stage instruction. Prerequisite: THEA 251 or permission of the instructor.

THEA 353. Music Theatre Performance. 3 credits.
Study of the fundamental theories and methods of music theatre performance. Emphasis on laboratory experience in the preparation of musical scenes. Consideration of various audition and performance techniques with maximum individual on-stage instruction. Prerequisite: THEA 251 or consent of instructor. Audition may be required.

THEA 355. Directing for the Theater. 3 credits.
Study of the principles, problems and techniques of play direction. Emphasis on historical and modern theories. Techniques of direction considered as applied to the stage and cinematography. Prerequisite: THEA 251 and either THEA 210 or 316.

THEA/MUS 357. Music Theater History. 3 credits.
A survey study of the history of music theater. Consideration of the chronological and stylistic development of the popular forms of music theater. Emphasis on historical trends and theatrical viability through the study of specific masterworks.

THEA 371. Advanced Technical Theater. 3 credits.
Advanced study of the technical aspects of stage production. Emphasis upon contemporary scenographic techniques. Consideration of construction, decoration, rigging and touring problems in theater production. Prerequisite: THEA 171 or permission of the instructor.
THEA 374. Stage Lighting. 3 credits.
Study and analysis of stage lighting. Consideration given to basic elements of electricity, electrical control and circuitry, reflection, refraction and color. Emphasis on the lighting design and aesthetics of a theatrical production.

THEA 376. Scene Design. 3 credits.
Study and analysis of the visual elements of theatrical production. Emphasis on the principles and elements of design, drafting and rendering. Consideration of the aesthetics of stage design through specific applied projects.

THEA 382. Contemporary Theater. 3 credits.
Study of contemporary American theater with particular attention to the current New York season. Plays recently in New York and of their reception by the New York critics are primarily emphasized.

THEA 390. Directed Projects. 3 credits, repeatable to 6 credits.
Supervised projects related to the study of theater. Credit given for original, individual or group programs beyond the usual course offerings in theater. A suitable completed project or report is required before credit can be awarded. Prerequisite: Permission of the instructor.

THEA 440. Seminar in Theater. 3 credits.
Studies of topics in theater. Emphasis on research methods unique to theater studies. Consideration of topics in both theoretical and practical aspects of theater.

THEA 441. Senior Thesis. 3 credits.
Independent study for theater majors leading to a senior thesis. Students select a play and write on how it might be produced. Attention is given to the play’s historical context and how a production concept is to be carried out in scenery, costumes, lighting, makeup and acting.

THEA 449. London Theater. 3 credits.
Study of London theater. Consideration given to current productions of classic and contemporary works. Emphasis on production elements including acting, directing, design, writing and economic considerations. Prerequisite: Semester-in-London students only.

THEA 452. Advanced Acting. 3 credits.
Critical study and appreciation of acting developed by readings, discussions and presentations of individual and group scenes. Consideration of dramatic literature from the classical Shakespearean and Restoration periods. Emphasis on analysis and understanding of how these works can be performed. Prerequisite: THEA 351.

THEA 453. Advanced Performance Techniques. 3 credits.
Study of advanced techniques for auditioning and performing on the stage and in the studio. Emphasis on practical preparation for performance work. Prerequisite: THEA 351.

THEA 466. Media Performance. 3 credits.
Study of the principles and techniques of dramatic performance for the camera and microphone. Emphasis on the adaptation of each student’s performance and production skills to the recording and filming of narrative works. Consideration of the differing problems and potentials of stage, video and film presentations. Prerequisite: THEA 452 or permission of the instructor.

THEA/DANC 471. Stage Management. 3 credits.
Study and analysis of stage management. Consideration given to the methods and strategies for successful stage management for theater, dance and other performances. Emphasis on developing management and organizational skills. Prerequisite: THEA 171.

THEA 481. Dramatic Literature and Theory. 3 credits.
Classical and neoclassical theater art. The study of the theoretical basics for theater, aesthetics and an examination of plays as examples of theater art. Particular attention paid to the relationship between the classical and neoclassical approaches to the theater. Prerequisite: THEA 316.

THEA 482. Dramatic Literature and Theory. 3 credits.
Theater art of the 18th, 19th and 20th centuries. The study of the origins of modern popular theater in sentimentalism and melodrama including an examination of the theories of sentimentalism, romanticism and melodrama as they relate to works for the theater. Particular attention paid to the historical and theoretical foundations of modern dramatic presentations. Prerequisite: THEA 316.

THEA 483. Music Theatre Script and Score Analysis. 3 credits.
Study and analysis of music theatre literature. Consideration of dramatic and musical structures. Particular attention paid to the work and processes of composers, lyricists and librettists. Prerequisite: THEA/MUS 357.

THEA 485. American Theater History. 3 credits.
Study and analysis of the American theater experience as presented in the dramatic literature of the country. Emphasis on basic American themes. Consideration of plays, playwrights and performers significant to the development of American theater.

THEA 488. Experimental Theater. 3 credits.
Study of avant garde theater. Emphasis on motivating and guiding advanced students to a higher degree of aesthetic appreciation of the theater. Consideration of the relationship of experimental theater to the traditional theater.

THEA 490. Special Studies in Theater. 1-3 credits.
An independent study for students to pursue individual research under the guidance of a faculty adviser. Prerequisite: Senior theater majors in good standing and permission of the director.

THEA 495. Internship in Theater. 3-6 credits.
A faculty-arranged, prepared and monitored off-campus internship program designed to provide practical experience in theater for students preparing for careers in those areas. Prerequisite: Permission of the director.

THEA 499. Honors in Theater. 6 credits.
Year course.
Technical and Scientific Communication

Institute of Technical and Scientific Communication

TSC 210. Introduction to Technical and Scientific Communication. 3 credits.
Introduction to the practice of central components of technical writing, including the technical summary, definition, mechanism description, process or procedure description, and proposal. Examines the process involved in planning, researching, writing and revising technical documents attuned to specific audiences and directed by clearly defined purposes.

TSC 220. Technical and Scientific Communication for Non-Native Speakers of English. 3 credits.
Introduction to central components of technical communication, such as the technical summary, definition, mechanism description, process or procedure description, proposal and manual. Emphasizes the common problems confronted by technical communicators who are native speakers of English, including macro and micro organization, style, paragraphing, grammar, usage, punctuation and idiomatic language.

Introduction to research methodology in technical and scientific communication, covering techniques for collecting information or data through primary and secondary research. Emphasizes extended bibliographic research through projects that employ conventional bound and electronic texts, including CD-ROM and Internet.

TSC 240. Technical and Scientific Editing. 3 credits.
Introduction to the central responsibilities of editors when guiding a document through the editorial process, including establishing the need, purpose and scope of a document; developing levels-of-edit; copyediting; conducting substantive edits; determining document design; editing graphic aids; collaborating with authors; and proofreading.

Study of the ethical and legal issues confronted by technical communicators in a range of fields. Examines the role of ethics in the field, the nexus of ethics and the law, ethical theories and critical thinking in moral reasoning, falsification of information or data, ownership of information, confidentiality, copyright and trademark laws, conflicts of interest and causes of unethical behavior. Prerequisite: TSC 210 or TSC 220 or permission of instructor.

TSC 260. Rhetorical Analysis. 3 credits.
Study of how writers and editors in technical and scientific communication structure the semantics and syntax of language to achieve rhetorical objectives. Examines methods for applying principles of effective rhetoric to the design and writing of documents in the field. Emphasizes extensive textual analysis of rhetorical models and work-world documents. Prerequisite: TSC 210 or TSC 220 and TSC 230 or permission of instructor.

TSC 270. Proposal Writing. 3 credits.
Study of the planning and writing of proposals with emphasis on research and planning proposals. Covers proposal strategies that address central components of a successful proposal, including the executive summary, purpose and scope, problem definition, need, methodology, project feasibility, facility requirements, personnel qualifications, cost and proposal presentation. Prerequisite: TSC 210 or TSC 220; TSC 230 and TSC 240 or permission of instructor.

TSC 280. Legal Writing. 3 credits.
Study of central components of legal writing - such as legal analysis, representation of facts and evidence, reasoning, logic and argumentation. Addresses such key rhetorical elements of legal documents as clarity and conciseness of style, coherent and unified organization, legal reasoning, logic and argumentation. Addresses such key rhetorical elements of legal documents as clarity and conciseness of style.

TSC 290. Government Writing. 3 credits.
Study of writing genres from a variety of fields within government. Examines the purposes, audiences and formats unique to government publications. Directs students in writing original and editing existing government documents. Prerequisite: TSC 210 or TSC 220; TSC 230 and TSC 240 or permission of instructor.

TSC 300. Medical Writing. 3 credits.
Study of the theory and practice of writing about technical and scientific information in medical and health science fields. Examines the role of the medical writer in medical and health care professions, the ethical issues involved in medical writing and writing clear and concise documentation. Emphasizes writing about medical practices for non-technical audiences such as patients and their families. Prerequisite: TSC 210 or TSC 220; TSC 230 and TSC 240 or permission of instructor.

TSC 310. Science and Technology in Literature. 3 credits.
Exploration of the ongoing dialogue between science, technology and literature through the reading of literary responses to the effects of such technologies and resulting social phenomena as machine production, urbanization, quantum mechanics, computerization, genetic engineering and the alienation of the worker. Prerequisite: TSC 210 or TSC 220 and TSC 230 or permission of instructor.

TSC 320. Presenting Technical and Scientific Information. 3 credits.
Study of presentations designed for specific speaking situations within technical or scientific fields. Addresses audience analysis and adaptation; techniques of support and visualization; organization for clarity and accuracy; integration of visual aids; and techniques for soliciting, interpreting and answering questions. Emphasizes seminar reports and professional conference reports. Prerequisite: TSC 210 or TSC 220 and TSC 230 or permission of instructor.

TSC 330. Science and Technology in Literature. 3 credits.
Exploration of the ongoing dialogue between science, technology and literature through the reading of literary responses to the effects of such technologies and resulting social phenomena as machine production, urbanization, quantum mechanics, computerization, genetic engineering and the alienation of the worker. Prerequisite: TSC 210 or TSC 220 and TSC 230 or permission of instructor.

TSC 340. Proposal Writing. 3 credits.
Study of the planning and writing of proposals with emphasis on research and planning proposals. Covers proposal strategies that address central components of a successful proposal, including the executive summary, purpose and scope, problem definition, need, methodology, project feasibility, facility requirements, personnel qualifications, cost and proposal presentation. Prerequisite: TSC 210 or TSC 220; TSC 230 and TSC 240 or permission of instructor.
TSC 450. Computer User Documentation. 3 credits.
Study of theory and practice on computer documentation for end users. Emphasizes documentation design and production, online documentation, usability testing and writing of user’s guide for actual computer software. Prerequisite: TSC 210 or TSC 220; TSC 230 and TSC 240 or permission of instructor.

TSC 460. Special Topics in Electronic and Online Publication. 3 credits.
Study of electronic and online publications, including World Wide Web pages, electronic newsletters and magazines and online help. Emphasizes principles in designing, writing and producing publications using such current authoring tools as the hypertext mark-up language HTML. Prerequisite: TSC 210 or TSC 220; TSC 230 and TSC 240, may be repeated when content changes. Approval of department head required.

TSC 480. Special Topics in Technical and Scientific Communication. 3 credits.
Advanced writing and research course designed to give students experience in writing technical and scientific documents in a variety of technical communication genres, including government writing, medical writing, legal writing and proposal writing. Prerequisite: TSC 210 or TSC 220; TSC 230 and TSC 240, may be repeated when content changes. Approval of department head required.

TSC 490. Advanced Independent Study in Technical and Scientific Communication. 3 credits.
Individualized projects in technical, scientific or professional communication. Available only to junior or senior majors. Prerequisite: TSC 210 or TSC 220; TSC 230, TSC 240 and permission of instructor. May be repeated when course content changes. Approval of department head required.

TSC 495. Internship in Technical and Scientific Communication. 3 credits.
Work-world experience within industry, government or the university in technical or scientific communication. Designed to allow students to incorporate field experience with TSC course work through internships in government, business, industry or education where they can observe communication processes and apply effective written, interpersonal and public communication skills. Prerequisite: TSC 210 or TSC 220; TSC 230, TSC 240 and permission of instructor. Should be taken in senior year and cannot be repeated.

TR 400. Text Revision. 3 credits.
Text revision focuses on the principles of linguistic revision applied to texts translated into English or written in English. It also involves the relationship between the translator and the reviser. Texts are evaluated and corrected on several levels: spelling, punctuation, syntax, semantics, stylistics, pragmatics. Prerequisite: TR 300.

TR 495. Internship in Translation or Terminology. 3 credits.
Real experience in a translation bureau, an in-house translation department, or any other business/government entity needing translation services. The internship leads to a report, which will be evaluated by a panel. Prerequisite: TR 300 and at least one specialized translation class. Permission of instructor.

TR 496. Freelance Translation or Terminology. 3 credits.
Real experience with clients needing translation services, terminology management or other linguistic consulting services. Students are supervised by their JMU adviser. The freelance activity leads to a report, which will be evaluated by a panel. Prerequisite: TR 300 and at least one specialized translation class. Permission of instructor.

Vocational Education

School of Education

VOED 240. Organization and Administration of Vocational Education. 3 credits.
An introduction to the field of vocational education. Emphasis is placed on an examination of the philosophical foundations of vocational education, legislative foundations and programmatic structures.

VOED 380. Competency-Based Education in Vocational Education. 3 credits.
Methods, procedures and techniques in using the V-TECS system and other related instructional materials necessary for effective implementation of competency-based instruction in vocational education.

VOED 383. Classroom Methodology and Lab Management. 3 credits.
A study of the appropriate techniques and programmatic structures necessary to provide instruction in vocational education at the secondary level. Emphasis is placed on hands-on activities to strengthen instructional skills.

VOED 385. Advising Student Organizations. 3 credits.
A study of the role and nature of cocurricular student organizations in secondary vocational education programs. Emphasis is placed on the skills necessary for the effective administration of such programs. Field experiences are required.
VOED 400. Cooperative Vocational Education Methods. 3 credits.
A study of cooperative vocational education programs and the appropriate methodology to administer those programs. Emphasis placed on the skills necessary to operate effective cooperative education programs. Field experience is included.

Women’s Studies
College of Arts and Letters

WMST 200. Introduction to Women’s Studies. 3 credits.
Interdisciplinary introduction to theories and scholarship in women’s studies. Course also examines implications of gender, society’s definition of women and the experiences and contributions of women. Provides a foundation for subsequent work in the women’s studies minor. Prerequisite: Sophomore standing.

WMST 400. Issues and Research in Women’s Studies. 3 credits.
A capstone course for the women’s studies minor. This seminar requires a knowledge of seminal works. A major portion of the course is devoted to individual research related to critical issues in women’s studies. Prerequisite: WMST 200 and nine additional credits approved by the Women’s Studies Advisory Committee.

WMST 490. Special Studies in Women’s Studies. 3 credits.
Designed to give capable students in women’s studies an opportunity to complete independent study under faculty supervision. Admission by recommendation of the instructor and permission of the program coordinator.

WMST 492. Internship in Women’s Studies. 1-3 credits.
Provides the student with practical experience in employing and refining women’s studies concepts in a public or private agency, under faculty supervision. Prerequisite: Nine hours of women’s studies courses, including WMST 200.

WMST 495. Special Topics in Women’s Studies. 3 credits.
In-depth examination of selected topics of current importance to the field of women’s studies. Offered only with approval of the program coordinator and dean of the College of Arts and Letters. May be repeated for credit when course content changes. Prerequisite: WMST 200 or consent of instructor.