Course Descriptions

ACCOUNTING

ACCT 210. FINANCIAL ACCOUNTING (3)
Three hours per week.
Prerequisite: none
Introduction to accounting principles: accumulation, measurement, and evaluation of accounting data. Topics include internal controls, financial statement analysis and interpretation, and use of spreadsheets in accounting applications.

ACCT 220. MANAGERIAL ACCOUNTING (3)
Three hours per week.
Prerequisite: none
Continues the exploration of accounting principles and topics: investing and financing activities, cost and budgeting systems, cash flow analysis, accounting for debt and equity, and introduces using accounting data for decision-making.

ACCT 300. APPLIED MANAGERIAL ACCOUNTING (3)
Three hours per week.
Prerequisite: ACCT 210, ACCT 220
Use of accounting data for budgeting, cost control, pricing, performance measurement, and general decision-making within the business organization.

ANTHROPOLOGY

ANTH 102. CULTURAL ANTHROPOLOGY (3)
Three hours per week.
Prerequisite: none.
The study of recent and modern societies using a cross-cultural perspective to gain an understanding on the range of human expression in culture and society. Issues discussed include ethnicity, gender, family structure, kinship, sex and marriage, socio-economic class, religion and the supernatural, language and culture, economics, political and social organization, art, and culture change.
GenEd: D

ANTH 103. HUMAN BEGINNINGS: BIOLOGICAL AND CULTURAL EVOLUTION (3)
Three hours per week.
Prerequisite: none.
Human biological and cultural evolution from 5 million years ago to the present using archaeological and physical anthropology. How and when did we become human? What physical and cultural adaptations were necessary as we spread across the Earth? How did hunters and gatherers become sedentary horticulturalists and pastoralists? What role did humans play in the domestication of plants and animals?
GenEd: D

ANTH 110. WHO DONE IT? AN INTRODUCTION TO FORENSICS (3)
Three hours per week.
Prerequisite: none.
Interdisciplinary approaches to forensic science, with lectures based on Anthropology, Art, Biology, Chemistry, Computer Science, History, Literature, Physics, Psychology, Sociology. How have fictional detectives in novels, TV, and film reflected and influenced forensics? How have scientific and archaeological methods been incorporated into crime scene analysis? How have crimes been viewed and punished through time? How have different cultures defined crimes? How do forensic specialists identify forgeries in art, cartography, and documents? How have computer scientists contributed to forensics? How are cybercrimes solved? How do psychologists profile criminals? How do biologists use DNA, pollen, seeds, and insects to solve crimes? How do chemists and physicists analyze forensic materials?
Same as CHEM 110.
GenEd: B1, D

ANTH 120. THE WORLD EATERS: CO-EVOLUTION OF HUMAN AND NATURAL SYSTEMS (3)
Three hours per week.
Prerequisite: none.
Are natural systems real, or have humans so altered the Earth to meet our needs that no purely natural systems survive? This course examines the human impact on the environment from the discovery of fire to the present, using case studies from throughout the world, including fire farming in Australia, deforestation in Africa, Asia, and America; and human roles in faunal and floral extinctions through time.
Same as ESRM 120.
GenEd: D

ANTH 320. WORLD CULTURES: PEOPLES, PLACES, AND THINGS (3)
Three hours per week.
Prerequisite: none.
This course examines the ethnology of cultures from throughout the world. Using archaeological, historical, and ethnographic sources, this course introduces the methods and theories used in placing comparative cross-cultural analysis in an ecological context. Focuses on issues of cultural history, environmental adaptations, political and economic systems, population, family, gender, religion, ideology, and contemporary issues in culturally distinct regions of the world.
GenEd: D, C3B

ANTH 321. WORLD CULTURES: ETHNICITY IN THE UNITED STATES (3)
Three hours per week.
Prerequisite: none.
This course surveys the diversity of the United States from an historical perspective, tracing the various ethnic groups who came to the US and were variously assimilated. The myth of the American Melting Pot will be explored. Why did some groups cast off their ethnicity (or did they really?) while others maintained their ethnic identity for generations?
GenEd: D, C3B

ANTH 322. WORLD CULTURES: NORTH AMERICA (3)
Three hours per week.
Prerequisite: none.
This course examines the development of Native American peoples and cultures as they adapted to their environments. The environmental history of the last glacial and post-glacial periods will be examined to provide a backdrop for human history. Using archaeological, historical, and ethnographic sources, the cultural history of these peoples will be traced from antiquity to the present, to provide the student with a broad context for understanding the region.
GenEd: D

ANTH 323. WORLD CULTURES: CALIFORNIA TO THE 1850S (3)
Three hours per week.
Prerequisite: none.
This course examines the development of Native American peoples and cultures in California as they adapted to the diverse environments there. The environmental history of the last glacial and post-glacial periods will be examined to provide a backdrop for human history. Using archaeological, historical, and ethnographic sources, the culture and history of California's Native Americans will be traced from antiquity to the 1850s. The impact of Spanish exploration, colonization, and the mission system will be traced from the perspectives of both the Native Americans

and their colonizers.
GenEd: D

ANTH 330. ECOLOGY AND THE ENVIRONMENT (4)
Three hours lecture per week; three hours lab per week
Prerequisite: none.
Ecological characteristics of natural ecosystems and basic effects of human society upon those systems. Plant and animal distribution patterns in relation to past and present physical and biotic factors. Issues of resource management, population, food production, global environmental problems will also be emphasized to explore future directions. A standard lab fee is required.
Same as BIOL 330.
GenEd-ID: B1

ANTH 332. POPULATION AND RESOURCE CONSTRAINTS (3)
Three hours per week.
Prerequisite: none.
This human ecology course places humans into the environment in historical and global contexts. Discusses systems theory as it applies to human adaptation to the environment. Studies the relations between political power, ideology, and resources, integrating concepts from ecology with those from social sciences. Theories and forecasts of human population growth and migration among regions and cultures. Social and environmental impacts of population and age distribution. Natural resource constraints on growth. Topics from land development, resource planning, environmental quality, politics, economic growth, conflicts and wars.
GenEd-ID: D

ANTH 333. CIVILIZATIONS OF AN ANCIENT LANDSCAPE: WORLD ARCHAEOLOGY (3)
Three hours per week.
Prerequisite: none.
Traces the relationship between the physical geography and the development of ancient civilizations in Pre-Columbian America, Africa, Asia, and Europe, beginning with the post-glacial period and ending with the rise of feudalism in Europe and Japan. The change from hunting and gathering groups to sedentary agriculturalists and pastoralists giving rise to later complex social organizations. Art, architecture, science, religion, economic trade and social systems are included.
GenEd-ID: D

ANTH 334. WARS AND CONFLICTS IN THE MODERN WORLD (3)
Three hours per week.
Prerequisite: none.
Cross-cultural perspectives on the development of the modern world in the future. Can the Earth sustain an American style culture for everyone? How do Third and Fourth World countries view the developed countries? Can conflicts over resources be resolved peacefully? This course exams war and terrorism in the context of resources and modernity.
GenEd-ID: D

ANTH 341. CULTURE AND PERSONALITY (3)
Three hours per week.
Prerequisite: none.
This course provides a cross-cultural perspective on the relationships between culture and personality. The nature/nurture debate is examined in different cultures. Team taught with psychology.
Same as PSY 341.
GenEd-ID: D, E

ANTH 343. ANTHROPOLOGY OF ORGANIZATIONS (3)
Three hours per week.
Prerequisite: none.
Anthropological perspective on human organizations in terms of communication, spatial relations, product development, technology, marketing, and group behavior. Explores principles of effectively organizing and directing work groups.
Same as BUS 343
GenEd-ID: D

ANTH 345. BIOANTHROPOLOGY: HUMAN EVOLUTION AND DIVERSITY (3)
Three hours per week.
Prerequisite: none.
Human biological evolution from the African savannah of 5 million years ago to the present, focusing upon adaptation to environmental conditions, disease, and diet. Includes segments on ecology, evolutionary theory, genetics, natural selection, non-human primates. Discusses the concept of race from an anthropological perspective. Includes issues of speciation and race, adaptation to cold, heat, desert, tropics, diseases. Compares ethnicity vs. race.
GenEd-ID: B1

ANTH 346. SCIENTIFIC AND PROFESSIONAL ETHICS (3)
Three hours per week.
Prerequisite: none.
Discussion of ethical issues and societal challenges derived from scientific research and professional activities. Examines the sources, fundamental principles, and applications of ethical behavior; the relationship between personal ethics and social responsibility of organizations; and the stakeholder management concept. Applies ethical principles to different types of organizations: business, non-profits, government, health care, science/technology, and other professional groups. Topics also include integrity of scientific research and literature and responsibilities of scientists to society, intellectual property, ethical practices in professional fields, ethical dilemmas in using animal or human subjects in experimentation, gene cloning, animal cloning, gene manipulation, genetic engineering, genetic counseling, and ethical issues of applying biotechnology in agricultural fields. Emphasizes cases to explore ethical issues.
Same as BIOL 346, MGT 346, CHEM 346, and MATH 346.
GenEd-ID: A3

ANTH 443. MEDICAL ANTHROPOLOGY: CROSS-CULTURAL PERSPECTIVES ON HEALTH AND HEALING (3)
Three hours per week.
Prerequisite: none.
This course provides a cross-cultural perspective on human health issues. Uses biological, cultural, and behavioral approaches to understand the concepts of diseases and their treatment, ethnoscience, health, and alternative medicine placed in a global perspective.
Offered Spring 2003 and alternate years thereafter.

ANTH 483. QUALITATIVE RESEARCH METHODS IN THE SOCIAL SCIENCES (3)
Three hours per week.
Prerequisite: none.
This course provides the student with an understanding of how social scientists collect and analyze data. Explores methods and procedures used in anthropology research, including creating a research design, interviewing, cross-verifying data, and interpreting data. This course also details the various methods employed by ethnographers, folklorists, and oral historians in collecting oral testimony in a structured, systematic method. Particular attention is given to ethical and legal issues.
Same as PSY 483.

ANTH 490. SEMINAR IN ANTHROPOLOGY (3)
Three hours per week.
Prerequisite: none.
This seminar explores a different topic each term. Students may enroll up to four times in different seminars.

ANTH 492. SERVICE LEARNING/INTERNSHIP (3)
Six hours per week.
Prerequisite: none.
Enrollment in this course is with permission of faculty member in charge. Individual internship through service learning. Graded Credit/No Credit.

ANTH 494. INDEPENDENT STUDY RESEARCH (3)
Variable hours per week.
Prerequisite: none.
Individual contracted study/research on topics selected by the student for further study. Enrollment in this course is with permission of faculty member in charge. Graded Credit/No Credit.

ANTH 499. CAPSTONE PROJECT (3)
Variable hours per week.
Prerequisite: Senior status.
This course is an interdisciplinary experience in which students from diverse disciplines and majors work in teams, contributing their expertise to a community-based group project. Graded Credit/No Credit.

ART

ART 100. UNDERSTANDING FINE ART PROCESSES (3)
Two hours lecture and two hours laboratory per week. Lab fee required.
Prerequisite: none (Not available for Art major credit)
Entry level experience for the non major. This course integrates elements of drawing, painting, sculpture and mixed media techniques. Students gain an understanding of the function of the Fine Arts in everyday life through participation in the artistic process.
GenEd: C1

ART 102. CHILDREN'S ART MEDIA AND METHODS (3)
Two hours lecture and two hours laboratory per week. Lab fee required.
Prerequisite: none
Hands-on creation of artistic projects emphasize the importance of art in the child's development. Projects explore basic concepts and materials leading to the student's development of primary skills and an aesthetic appreciation for the creative process.
GenEd: C1

ART 105. DRAWING AND COMPOSITION (3)
Six hours laboratory per week.
Prerequisite: none
Basic fundamentals of drawing are explored through the use of various techniques and media. Investigations into line, value, perspective and composition as related to surface and pictorial space is also investigated.

ART 106. COLOR AND DESIGN (3)
Six hours laboratory per week.
Prerequisite: none
Explorations in basic color theory are conducted within two-and three-dimensional design contexts. Visual elements including line, shape, form and texture are explored along with elements of color interaction, harmony and dissonance within a variety of visual motifs.

ART 107. LIFE DRAWING (3)
Six hours laboratory per week.
Prerequisite: none
The study of the human figure and its representation depicted through gesture, contour value and volume. Anatomy, proportion, foreshortening and structure are explored through observation of props and live models.

ART 108. VISUAL TECHNOLOGIES (3)
Two hours lecture and two hours laboratory per week. Lab fee required.
Prerequisite: none
An introductory survey of visual technologies commonly used by artists and designers. Projects explore software applications as they relate to current methods of digital art production. Emphasis is on the development of fundamental computer skills and an understanding of the relationship between digital media and visual design.

ART 110. PREHISTORIC ART TO THE MIDDLE AGES (3)
Three hours lecture per week.
Prerequisite: none
Survey of the history of art, artifacts and architecture from the Prehistoric era through the Gothic period. The examination of cultural and conceptual contexts will trace the early development of Western artistic traditions.
GenEd: C1

ART 111. RENAISSANCE TO MODERN ART (3)
Three hours lecture per week.
Prerequisite: none
Survey of the history of art and architecture from the European Renaissance through the Modern Art. Cultural and conceptual contexts will examine the evolution of the art object as a form of Western cultural expression.
GenEd: C1

ART 112. ARTS OF THE EASTERN WORLD (3)
Three hours lecture per week.
Prerequisite: none
Survey of the painting, architecture and crafts of India, China, Japan and Southeast Asia. An examination of artistic, cultural, and historical events explore the exchange of influences and ideas related to Eastern cultures.
GenEd: C1

ART 201. PAINTING (3)
Six hours laboratory per week.
Prerequisite: ART 105, ART 106, ART 107
An introduction to basic painting materials and techniques. Experiments in representational and abstract painting will explore oil, acrylic, and water-based media. Particular emphasis will be on the development of fundamental skills and the understanding of color, shape, surface and pictorial structure.

ART 202. SCULPTURE (3)
Six hours laboratory per week.
Prerequisite: ART 105, ART 106, ART 107
An introduction to basic sculpture materials and techniques. Experiments in representational and abstract sculpture will explore a variety of three-dimensional materials through additive and subtractive sculptural processes. Particular emphasis will be on the development of fundamental skills and the understanding of design, form and structural elements.

ART 203. ILLUSTRATION (3)
Six hours laboratory per week.
Prerequisite: ART 105, ART 106, ART 107
An introduction to basic illustration materials and rendering techniques. Experiments in a variety of media and styles explore quash, colored pencils, pen and ink, pastels and markers. Particular emphasis is on

the development of fundamental skills and concepts required to execute successful illustrations.

ART 204. GRAPHIC DESIGN (3)
Six hours laboratory per week.
Prerequisite: ART 105, ART 106, ART 108
An introduction to basic concepts in graphic design for print and electronic media. Projects incorporating traditional and digital media explore typography, layout and visual design. Particular emphasis is on the development of fundamental skills leading to the ability to communicate ideas through the use of text and visual imagery.

ART 205. MULTIMEDIA (3)
Six hours laboratory per week.
Prerequisite: ART105, ART 106, ART 108
An introduction to techniques and concepts involved in the production of interactive multimedia. Projects explore basic interactive technologies utilized in the creation of digital graphics, Websites and computer game designs.

ART 206. ANIMATION (3)
Six hours laboratory per week.
Prerequisite: ART 105, ART 106, ART 107, ART 108
An introduction to basic techniques and processes involved in the production of animation. Projects include elements of concept and story development, character design, storyboarding, timing, key framing and inbetweening, and cell production leading to the creation of short works in animation.

ART 310. TWO-DIMENSIONAL MEDIA AND PROCESSES (3)
Six hours laboratory per week.
Prerequisite: ART 108, ART 201
Studio projects explore media and methodologies in painting, drawing and other two-dimensional art forms. Assignments emphasize the integration of traditional art materials and techniques with related digital art technologies in the creation of two-dimensional art projects.

ART 311. THREE-DIMENSIONAL MEDIA AND PROCESSES (3)
Six hours laboratory per week.
Prerequisite: ART108, ART 202
Studio projects explore media and methodologies in sculpture, ceramics and other three-dimensional art forms. Assignments emphasize the integration of traditional art materials and techniques with related digital art technologies in the creation of three-dimensional art projects.

ART 312. TIME-BASED DIGITAL MEDIA AND PROCESSES (3)
Six hours laboratory per week.
Prerequisite: ART 108, ART 205
Studio projects explore media, methodologies and artistic concepts in digital imaging, non-linear video, digital animation graphics and visual effects. Assignments emphasize the integration of traditional art techniques with digital technology in the development of computer generated imagery and animation. Projects are presented in a digital format.

ART 313. COMMUNICATION DESIGN TECHNOLOGY MEDIA AND PROCESSES (3)
Six hours laboratory per week.
Prerequisite: ART 108, ART 204
Studio projects explore media, methodologies in graphic design and multimedia. Assignments emphasize the integration of traditional design concepts with graphic design technology in projects created for print, internet applications and multimedia presentations.

ART 320. STUDIO TOPICS: TWO-DIMENSIONAL ART (3-3)
Six hours laboratory per week.
Prerequisite: ART 310
Studio topics explore thematic approaches in the development of visual continuity and technical competency working in painting, drawing and related art processes. At this phase of study, projects focus on the integration of artistic concept, technique and proficiency in the use of two-dimensional media in the creation of individual works of art.

ART 321. STUDIO TOPICS: THREE DIMENSIONAL ART (3-3)
Six hours laboratory per week.
Prerequisite: ART 311
Studio topics explore thematic approaches in the development of visual continuity and technical competency working in sculpture, ceramics and related art processes. At this phase of study, projects focus on the integration of artistic concept, technique and proficiency in the use of three-dimensional media in the creation of individual works of art.

ART 322. STUDIO TOPICS: TIME-BASED DIGITAL ART (3-3)
Six hours laboratory per week.
Prerequisite: ART 312
Studio topics incorporate thematic approaches in the development of visual continuity and technical competency working in digital imaging, video compositing, digital animation and visual effects. At this phase of study, projects focus on the integration of artistic concept and technological proficiency in the creation of time-based digital art projects presented on video, CD Rom or DVD.

ART 323. STUDIO TOPICS: COMMUNCATION DESIGN TECHNOLOGY (3-3)
Six hours laboratory per week.
Prerequisite: ART 313
Studio topics explore thematic approaches in the development of visual continuity and technical competency working in graphic design and multimedia. At this phase of study, projects focus on the integration of artistic concept and technological proficiency in the creation of design projects for print, Websites and interactive multimedia.

ART 326. DIGITAL TECHNOLOGIES: 3D COMPUTER ANIMATION (3)
Six hours laboratory per week.
Prerequisite: ART 206, ART 312
Studio topics explore applications of digital technologies utilized in the production of 3D computer animation. Projects involve wireframe modeling, texture mapping, lighting techniques, motion sequencing and animation techniques involved in the creation of computer generated animation projects.

ART 330. CRITICAL THINKING IN A VISUAL WORLD (3)
Three hours lecture per week.
Prerequisite: none
A critical look at subjective responses and objective reasoning in the assessment of visual images that permeate every day aspects of contemporary life. Comparative studies evaluate psychological impact of corporate logos, religious iconography and secular symbolism. The genesis of cultural icons are investigated from a historical perspective in relationship to their role in a global society.
GenEd-ID: A3, C1

ART 331. ART AND MASS MEDIA (3)
Three hours lecture per week.
Prerequisite: none
The study of synergetic relationships between visual art and human communication dating back to the roots of civilization. Comparative studies in art and communication link ancient traditions to the development of contemporary mass media including print, photography, film, television and the internet.

GenEd-ID: C1, D

ART 332. MULTICULTURAL ART MOVEMENTS (3)
Three hours lecture per week.
Prerequisite: none
A survey of the arts and crafts originating in African, Asian, Latin American, Middle Eastern and Native American cultures. Emphasis is on the understanding of traditions and historical contexts as well as the exploration of random intersections of indigenous methods and aesthetics.
GenEd-ID: C1, C3

ART 333. HISTORY OF SOUTHERN CALIFORNIA CHICANA/O ART (3)
Three hours lecture per week.
Prerequisite: none
A survey of the Southern California Chicano/a culture exploring the genesis, vitality and diversity represented in the painting, sculpture and artistic traditions of Mexican American artists. Historical movements, politics, cultural trends and Mexican folklore underlying the development of this dynamic style of art will be investigated within a variety of contexts.
Same as HIST 333.
GenEd-ID: C1, C3

ART 334. THE BUSINESS OF ART (3)
Three hours lecture per week.
Prerequisite: none
Exploration into aspects of "art world" business including the financial activities of art consultants, private dealers, commercial galleries, public museums and international auction houses. Case studies in art marketing, gallery and museum management, contracts and commissions, as well as public image and career development will be investigated.
Same as BUS 334
GenEd-ID: C1, D

ART 335. AMERICAN ETHNIC IMAGES IN NOVELS, FILM AND ART (3)
Three hours lecture per week.
Prerequisite: none
An examination of the portrayal of ethnic groups from an interdisciplinary perspective that includes, but is not limited to, the literary, historical, and artistic modes of analysis. This course highlights the ways in which artistic works have shaped the intellectual landscape of the United States as they relate to ethnic peoples.
Same as ENGL 335, HIST 335.
GenEd-ID: C3, D

ART 338. PSYCHOLOGY OF ART AND ARTISTS (3)
Three hours lecture per week.
Prerequisite: none
An inquiry into the mind of the artist and the psychological dynamics that underlie the creative process. Emphasis is placed on deciphering personal allegory and universal symbolism hidden within a wide range of visual and conceptual genres in painting, sculpture, film and music. The self-image of the artist will be examined from private and public viewpoints.
Same as PSY 338
GenEd-ID: C1, E

ART 420. ADVANCED ARTISTIC PROBLEMS: TWO DIMENSIONAL ART (3-3)
Six hours laboratory per week.
Prerequisite: ART 320
Investigations into the development of in-depth concepts, innovative processes and personal artistic style. Students achieve increased artistic depth and advanced technical proficiency working in two-dimensional media leading to the development of a congruent body of work in painting, drawing and related art forms. Creation and presentation of a professional portfolio is a required component of the course work.

ART 421. ADVANCED ARTISTIC PROBLEMS: THREE-DIMENSIONAL ART (3-3)
Six hours laboratory per week.
Prerequisite: ART 321
Investigations into the development of in-depth concepts, innovative processes and personal artistic style. Students achieve increased artistic depth and advanced technical proficiency working in three-dimensional media leading to the development of a congruent body of work in sculpture, ceramics and related art forms. Creation and presentation of a professional portfolio is a required component of the course work.

ART 422. ADVANCED ARTISTIC PROBLEMS: TIME-BASED DIGITAL ART (3-3)
Six hours laboratory per week.
Prerequisite: ART 322
Investigations into the development of in-depth concepts, innovative processes and personal artistic style. Students achieve increased artistic depth and advanced technical proficiency working in time-based digital media leading to the development of a congruent body of work in digital imaging, video, digital animation and visual effects. Creation and presentation of a professional video, CD Rom or DVD portfolio is a required component of the course work.

ART 423. ADVANCED ARTISTIC PROBLEMS: COMMUNICATION DESIGN TECHNOLOGY (3-3)
Six hours laboratory per week.
Prerequisite: ART 323
Investigations into the development of in-depth design concepts, innovative processes and individual artistic style. Students achieve increased artistic depth and advanced technical proficiency working in graphic design, computer graphics, Web design, and multimedia authoring. Creation and presentation of a professional interactive multimedia portfolio is a required component of the course work.

ART 430. MODERN AND CONTEMPORARY ART (3)
Three hours lecture per week.
Prerequisite: none
From nineteenth century Impressionism, through twentieth-century Cubism, Surrealism, Abstract Expressionism and Pop Art, this course explores the gamut of concepts, periods, trends, and "isms" culminating in international Post Modernism and New Genre art of the twenty-first century.

ART 431. EUROPEAN RENAISSANCE LITERATURE AND ART (3)
Three hours lecture per week.
Prerequisite: Upper division standing
The study of literary and artistic works produced in Europe and England in the fifteenth and sixteenth centuries. This "re-birth" of the human spirit is viewed from historical, philosophical and aesthetic perspectives, emphasizing the relationship between literary and artistic traditions found in Renaissance literature and visual art forms.
Same as ENGL 431.
GenEd-ID: C1, C2

ART 432. ARTS OF THE HARLEM RENAISSANCE (3)
Three hours lecture per week.
Prerequisite: Upper division standing
Study focusing on the dramatic upsurge of creativity in art, music and literature resulting from social and political undercurrents in the African

American cultural revolution in New York during the 1920s. Historical geneses and subsequent artistic legacies will be also be explored.
Same as ENGL 432, MUS 432
GenEd-ID: C1, C3

ART 433. WOMEN IN THE ARTS (3)
Three hours lecture per week.
Prerequisite: Upper division standing
An investigation into the historical roles and influences of women artists in Western and non-Western traditions. Women as subject matter in painting, sculpture, photography, film and video will also be explored as related to artistic, social, historical and political issues.
GenEd: C1, D

ART 489. ARTS SEMINAR (3)
Prerequisite: Senior standing.
Students interact with guest speakers, visiting artists, and industry professionals in a seminar environment. This course also affords students the opportunity to assess their training and summarize artistic achievements through projects that prepare them for a variety of careers in the arts.

ART 492. INTERNSHIP IN THE ARTS (1-3)
Two to six hours activity per week (service learning).
Prerequisite: Senior standing portfolio review and consent of instructor.
Experiential study in a professional artistic environment appropriate to student's interests and artistic goals. Service learning positions are arranged by the university, instructor or student in cooperation with local community organizations or businesses. Internship positions must meet specific criteria set by the university in accordance with the mission of the university.

ART 494. INDEPENDENT STUDY (1-3)
Prerequisite: Senior standing and consent of instructor.
Individualized student projects are created under the guidance of a sponsoring instructor. Independent field work and supervised studio work is required in the development and execution of art projects. Regular progress reports and meetings are mandatory throughout the semester. Project completion is required before receiving course credit.

ART 499. ARTS CAPSTONE PROJECT (3)
One hour seminar and two hours field work per week (service learning).
Prerequisite: Senior standing, portfolio review and consent of instructor.
A culminating interdisciplinary experience in which students from various Fine Arts disciplines work in groups with non-art majors and community members on projects specifically designed to meet a common goal. Activities supervised by sponsoring faculty are executed on campus and/or on-site in conjunction with community businesses or organizations.

BIOLOGY

BIOL 100. GENERAL BIOLOGY (4)
Weekly three-hour lectures and three-hour laboratories.
Prerequisite: none
An introduction to organismal biology, including the diversity, structure, and function of prokaryotes, protists, fungi, plants, and animals. Also includes the principles of evolution, ecology and population biology. No credit given toward the biology major. A standard lab fee is required.
GenEd: B1

BIOL 200. PRINCIPLES OF ORGANISMAL AND POPULATION BIOLOGY (4)
Weekly three-hour lectures and three-hour laboratories.
Prerequisite: none
An introduction to organismal biology, including the diversity, comparative structure, organ system function, development, phylogeny, taxonomy and systematics of prokaryotes, protists, fungi, plants, and animals. Discussion of the principles of evolution including speciation and natural selection, the environmental impact and ecosystem interaction of plants and animals, the behavior of animals, population genetics and population biology. A standard lab fee is required.
GenEd: B1

BIOL 201. PRINCIPLES OF CELL AND MOLECULAR BIOLOGY (4)
Weekly three-hour lectures and three-hour laboratories.
Prerequisite: CHEM 121; BIOL 200 with "C" or better grade for biology majors. (No prerequisite for students in Liberal Studies, Teaching and Learning Option.)
This course will cover principles and applications of basic chemistry, biological macromolecules, prokaryotic and eucaryotic cell structure and function, homeostasis, metabolism including both respiration and photosynthesis, cell cycling, signal transduction, Mendelian genetics, molecular genetics including transcription and translation, and a brief introduction to virology and immunology. The philosophy of science, scientific method and experimental design are foundational to the course. A standard lab fee is required.
GenEd: B1

BIOL 202. BIOSTATISTICS (3)
Weekly three-hour laboratory instruction and exercise.
Prerequisite: A passing score on the Entry Level Mathematics Exam or credit in MATH 105.
Use of probability and statistics in the description and analysis of biological data collected from laboratory and or field experiments.
Same as MATH 202.
GenEd: A3

BIOL 210. HUMAN ANATOMY AND PHYSIOLOGY I (4)
Weekly three-hour lectures and three-hour laboratories.
Prerequisite: BIOL 100.
Gross and microscopic anatomy of the human body with integrated physiological functions of the nine body organ systems studied from organ system through cellular levels of organization including basic chemistry, cell metabolism, acid-base relationships, membrane function, basic genetics, alleles and inherited disorders. A standard lab fee is required.

BIOL 211. HUMAN ANATOMY AND PHYSIOLOGY II (4)
Weekly three-hour lectures and three-hour laboratories.
Prerequisite: BIOL 210.
Continuation of BIOL 210. A standard lab fee is required.

BIOL 212. NEUROBIOLOGY AND COGNITIVE SCIENCE (3)
Weekly three-hour lectures.
Prerequisite. BIOL 100.
Principles of brain organization and function underlying behavior. Topics include neuroanatomy and physiology of language, vision, sexual behavior, memory and abnormal behavior.
Same as PSY 212.
GenEd: B1, E

BIOL 300. CELL PHYSIOLOGY (4)
Weekly three-hour lectures and three-hour laboratories.
Prerequisite: CHEM 122; CHEM 311 and 312 or concurrent enrollment; BIOL 201 with "C" or better grades.
Detailed study of the organization and functioning of cells and cellular organelles at the cellular and molecular levels, emphasizing experimental approaches and structural and functional relationships and their regulation and control. Topics include macromolecules, membrane phenomena,

metabolism, enzyme kinetics, and cellular events associated with excitable cells and tissues. Individual critique on a current aspect of cellular and molecular biology required. A standard lab fee is required.

BIOL 301. MICROBIOLOGY (4)
Weekly three-hours lectures and two one-and-a-half hour-laboratories.
Prerequisite: CHEM 122; BIOL 201 with C or better grades.
Study of microorganisms of the environment, including disease-causing organisms, their structures and functions and their interactions to their host animals and the environment. A standard lab fee is required.

BIOL 302. GENETICS AND EVOLUTION (3)
Weekly three-hour lectures.
Prerequisite: CHEM 122; BIOL 201 with C or better grades.
Principles of classical transmission genetics, population genetics and evolution, with an introduction to modern molecular genetics.

BIOL 310. ANIMAL BIOLOGY AND ECOLOGY (4)
Weekly three-hour lectures and three-hour laboratories with periodic field trips in local ecosystem and its animals.
Prerequisite: BIOL 100 or BIOL 201.
Animal adaptation and diversity and their relationship to the development of evolutionary theory and the environment. Identification of common invertebrate and vertebrate animals. A standard lab fee is required.

BIOL 311. PLANT BIOLOGY AND ECOLOGY (4)
Weekly three-hour lectures and three-hour laboratories with periodic field trips.
Prerequisite: BIOL 100 or BIOL 201.
A general introduction of diverse structures and functions of plants and their relationship to the environment. Identification of common, local native plants and plant communities, uses of native plants by Native Americans, and human and environmental impacts on native plant communities. A standard lab fee is required.

BIOL 312. MARINE BIOLOGY (4)
Weekly three-hour lectures and three-hour laboratories with periodic field trips.
Prerequisite: BIOL 201.
Overview of complexity of marine life including marine plants and animals and the processes that underlie their distribution and abundance in open oceans, coastal regions, estuaries, and wetlands. Diverse interactions of organisms in the intertidal zone, over the continental shelves and in the open oceans. A standard lab fee is required.

BIOL 330. ECOLOGY AND THE ENVIRONMENT (4)
Weekly three-hour lectures and three-hour laboratories, including periodic field trips.
Prerequisite: none
Ecological characteristics of natural ecosystems and basic effects of human society upon those systems. Plant and animal distribution patterns in relation to past and present physical and biotic factors. Issues of resource management, population, food production, global environmental problems will also be emphasized to explore future directions. A standard lab fee is required.
Same as ANTH 330.
GenEd-ID: B1, B2

BIOL 331. BIOTECHNOLOGY IN THE TWENTY- FIRST CENTURY (2)
Weekly two-hour lectures.
Prerequisite: none
Presentation of recent advances in biotechnology and discussion of societal implications. Topics include applications in basic research, medicine, agriculture, consumer products and warfare. No credit given toward the biology major.
GenEd: B1

BIOL 332. CANCER AND SOCIETY (2)
Weekly two-hour lectures augmented by readings and discussion.
Prerequisite: none
The biological, clinical and psychological nature of cancer and its impact on society from perspectives of medical researchers and physicians. No credit given toward the biology major.

BIOL 333. EMERGING PUBLIC HEALTH ISSUES (2)
Weekly two-hour lectures.
Prerequisite: none
Discussion of emerging infectious diseases and other health related issues with global concerns such as AIDS, tuberculosis, sexually transmitted diseases, cardiovascular diseases. Animal and bird diseases which may be transmitted to people, food and blood safety issues, environmental public health hazards, immigration and public health issues, potential biological weapons and their impact on human and animal populations in the world and the ecosystem.
GenEd-ID: B1, E

BIOL 343. FORENSIC SCIENCE (3)
Two hours of lecture and one hour of laboratory per week. Lab fee requird.
Prerequisite: none
A survey of the various chemical and biological techniques used in obtaining and evaluating criminal evidence. Topics include: chromatography; mass spectrometry (LC-MS, GC-MS); atomic absorption spectrometry; IR, UV, fluorescence, and X-ray spectroscopies; fiber comparisons; drug analysis; arson/ explosive residue analysis; toxicological studies; psychological profiling; blood typing; DNA analysis; population genetics; firearm identification; and fingerprint analysis.
Same as CHEM 343.
GenEd-ID: B1

BIOL 346. SCIENTIFIC AND PROFESSIONAL ETHICS (3)
Weekly three-hour lectures and discussions.
Prerequisite: none
Discussion of ethical issues and societal challenges derived from scientific research and professional activities. Examines the sources, fundamental principles and applications of ethical behavior; the relationship between personal ethics and social responsibility of organizations; and the stakeholder management concept. Applies ethical principles to different types of organizations: business, non-profits, government, health care, science/technology, and other professional groups. Emphasizes cases to explore ethical issues.
Same as CHEM 346, MATH 346, MGT 346.
GenEd-ID: A3, D

BIOL 400. MOLECULAR BIOLOGY AND MOLECULAR GENETICS (4)
Weekly three-hour lectures and three-hour laboratories.
Prerequisite: CHEM 314 & 315, 318 or 400; BIOL 300 and 302 with C or better grades.
Study of informational macromolecules and how they direct molecular processes in both eukaryotic and prokaryotic cells. Topics include structure, function and regulation of the genetic material at the molecular level, gene organization, structures and functions of DNA, RNA and proteins, gene transcription and expression, RNA processing, genomics and proteomics. A standard lab fee is required.

BIOL 401. BIOTECHNOLOGY AND RECOMBINANT DNA TECHNIQUES (5)
Weekly three-hour lectures and six-hour laboratories.
Prerequisite: CHEM 318 or 400; BIOL 300 and 302 with "C" or better grades.
Theory and practice of various biotechnologies and recombinant DNA techniques applicable to research and development, drug discovery, clinical therapies, preventative medicine, agriculture, the criminal justice system and a variety of other fields. Modern techniques in genomics and proteomics will be introduced in the laboratories. A standard lab fee is required.

BIOL 402. TOXICOLOGY (3)
Weekly three-hour lectures.
Prerequisite: CHEM 122; BIOL 201 with C or better grades.
An in depth study of toxic chemicals and their interactions within the ecosystems. Topics include the origin, fate, chemical and biological detection, and quantification of pollutants and toxins and their impact on organisms at the molecular, biochemical, cellular, physiological, organismal, and community levels of organization. Basic toxicology, genetic toxicology, environmental mutagenesis and the molecular basis of mutation induction will be covered.

BIOL 410. COMPUTER APPLICATIONS IN BIOMEDICAL FIELDS (3)
Weekly three-hour laboratory instruction and exercise.
Prerequisite: BIOL 201 with C or better grades.
Applications of computers and data processing technology to the understanding and solving of specific problems in biomedical fields.
Same as COMP 410 .

BIOL 420. CELLULAR AND MOLECULAR IMMUNOLOGY (4)
Weekly three-hour lectures and three-hour laboratories.
Prerequisite: CHEM 122; BIOL 301 with C or better grades.
Study of cellular and molecular aspects of the immune system and its responses against infectious agents and/or environmental insults. Included are development of the organs and cells of the immune system, genetics of the molecules of the immune system and their functions and interactions during an immune response, immunological disorders such as immunodeficiencies, autoimmune diseases, transplantation, and contemporary immunological techniques used in clinical diagnosis and other modern research and development applications. A standard lab fee is required.

BIOL 421. VIROLOGY (3)
Weekly three-hour lectures.
Prerequisite: CHEM 122; BIOL 301 with C or better grades.
Study of aspects of molecular structure, genetics, and replication of viruses and other sub-viral agents such as prions and viroids, virus-host interactions, pathogenesis of viral infections, diagnostic virology, and antiviral vaccines and drugs; emphasis on human pathogens.

BIOL 422. MOLECULAR PLANT PHYSIOLOGY (4)
Weekly three-hour lectures and three-hour laboratories.
Prerequisite: CHEM 318 or 400; BIOL 311 recommended; BIOL 300 with C or better grades.
Study of principles and methods of plant physiology at molecular level combined with modern plant technology. Topics include plant tissue and cell culture, genetic engineering and transformation, plant defense and genomics, and applications of DNA technology. A standard lab fee is required.

BIOL 423. CELLULAR AND MOLECULAR NEUROBIOLOGY (3)
Weekly three-hour lectures.
Prerequisite: CHEM 122; BIOL 212 recommended; BIOL 300 with C or better grades.
Study of the nervous system at cellular and molecular levels, including cellular structure of neurons and other types of neuronal cells and their functions and interactions, neurotransmitters and their functions and regulation, chemical agents and their effects on the neuronal cells and their functions, and normal responses by the cells and the molecules of the nervous system and their response under adverse conditions.

BIOL 424. HUMAN PHYSIOLOGY (3)
Weekly three-hour lectures.
Prerequisite: CHEM 122; BIOL 300 with C or better grades.
Study of human physiology at both the cellular and organ system levels, including neurophysiology, muscle physiology, cardiovascular physiology, respiration, kidney function, hormone function and reproduction.

BIOL 425. HUMAN GENETICS (3)
Weekly three-hour lectures.
Prerequisite: CHEM 122; BIOL 300 and 302 with C or better grades.
Basic principles of human inheritance, including the transmission of genetic traits, chromosomal abnormalities and their effects, gene structure and function, pedigree analysis, gene mapping, cytogenetics, mutations and mutagenic agents, cancer genetics, molecular analysis of inherited diseases and genetically controlled phenomena in humans.

BIOL 426. EMBRYOLOGY (4)
Weekly three-hour lectures and three-hour laboratories.
Prerequisite: CHEM 122; BIOL 300 with C or better grades.
Studies in comparative gametogenesis, morphogenesis, and reproductive physiology. A standard lab fee is required.

BIOL 427. DEVELOPMENTAL BIOLOGY (3)
Weekly three-hour lectures.
Prerequisite: CHEM 122; BIOL 300 with C or better grades.
Studies in human developmental sequences from fertilization to adolescence and examine how the developmental processes can be altered due to genetic, drug or environmental factors. Other animal systems (fly, frog, chick, mouse) will also be studied to aid in understanding anatomical, physiological, genetic and molecular mechanisms operating during gametogenesis, fertilization, cleavage, gastrulation and organogenesis.

BIOL 428. BIOLOGY OF CANCER (2)
Weekly two-hour lectures.
Prerequisite: CHEM 122; BIOL 300 with C or better grades.
Principles of oncology are examined. Included are mechanisms of oncogenesis at cellular and molecular levels, characteristics of cancer, advantages and disadvantages of various therapies of cancer treatment.

BIOL 430. RESEARCH DESIGN AND DATA ANALYSIS (3)
Weekly three-hour laboratory instruction and exercise.
Prerequisite: BIOL 202 with C or better grades.
Discussion of experimental design, sampling methods, data collection, and methods of data analysis related to scientific fields.
Same as CHEM 430, MATH 430.
GenEd-ID: A3, B3

BIOL 431. BIOINFORMATICS (4)
Weekly four-hour laboratory instruction and exercise.
Prerequisite: CHEM 318 or 400; COMP 150 recommended; BIOL 400 with C or better grades.
Computational methods for analysis of biological systems at all levels of scale from macromolecules to ecosystems. Topics include development of algorithms, macromolecular sequence analysis to determine structure and function, the study of phylogenetic relationships, imaging in two to four dimensions, and mathematical modeling in biological sciences. Technology applicable to research and development, gene discovery, new molecules which could lead to drug discoveries, clinical therapies.

Applications in preventative medicine, agriculture, criminal justice system, and a variety of other fields. A standard lab fee is required.
Same as COMP 431.
GenEd-ID: B3

BIOL 432. PRINCIPLES OF EPIDEMIOLOGY AND ENVIRONMENTAL HEALTH (3)
Weekly three-hour lectures.
Prerequisite: CHEM 122; BIOL 201 with C or better grades.
Distribution and dynamics of human health problems. Principles and procedures used to determine circumstances under which disease occurs or health prevails and to aid in managing and planning health and environmental systems. The broadened scope of epidemiology is examined through case studies and community and environmental health approach.

BIOL 490. SPECIAL TOPICS (1-3)
Prerequisite: CHEM 122; BIOL 300 with C or better grades.
Group study of a selected topic, the title of which is to be specified in advance. May be repeated for credits as topics change.

BIOL 491. SPECIAL LABORATORY TOPICS (1-3)
Prerequisite: CHEM 122; BIOL 300 with C or better grades.
Group laboratory study of a selected topic, the title of which is to be specified in advance. May be repeated for credits as topics change. A standard lab fee is required.

BIOL 492. BIOTECH INTERNSHIP (2-3)
Prerequisite: CHEM 318 or 400; BIOL 400 and 401 with a minimum overall grade point average of 3.0 or program approval.
Supervised work and study in work situations involving biological research, technical skills, and service learning. Up to three units may be applied toward degree in biology program. All students are required to attend the Biology Program Senior Capstone Colloquium scheduled at the end of each semester to present their projects. Graded credit/no credit.

BIOL 494. INDEPENDENT RESEARCH (2)
Prerequisite: CHEM 122 or 311 and 312, 318 or 400; BIOL 300 with a minimum overall grade point average of 3.0 or consent of instructor and program approval.
Laboratory and/or library research in selected areas in biology conducted under the direction of a faculty member. A total of four units by taking the course twice may be applied toward graduation. All students are required to attend the Biology Program Senior Capstone Colloquium scheduled at the end of each semester to present their projects. Graded credit/no credit.

BIOL 497. DIRECTED STUDY (2)
Prerequisite: CHEM 122; BIOL 300 with "C" or better grades; consent of instructor and program approval.
Reading and library research in an area of biology conducted under the direction of a faculty member in Biology. No more than two units may be applied toward graduation. All students are required to attend the Biology Program Senior Capstone Colloquium scheduled at the end of each semester to present their projects. Graded credit/no credit.

BIOL 499. SENIOR CAPSTONE COLLOQUIUM (1)
Prerequisite: BIOL 492, 494 or 497 with credits.
Oral presentation of completed or work-in-progress projects of BIOL 492, 494, or 497 courses. Only one unit may be applied toward graduation. Graded credit/no credit.

BUSINESS

BUS 110. BUSINESS LAW (3)
Three hours per week.
Prerequisite: none
Introduction to the legal and regulatory environment of business, emphasizing the US legal system. Topics include contracts, personal property, litigation, labor agreements and international trade.

BUS 334. THE BUSINESS OF ART (3)
Three hours per week.
Prerequisite: none
Explores various aspects of the "art world" business including the financial activities of art consultants, private dealers, commercial galleries, public museums and international auction houses. Uses cases to investigate art marketing, gallery and museum management, contracts and commissions, public image and career development. Analyzes the management elements needed to successfully manage an "art world" business.
Same as ART 334
GenEd-ID: D

BUS 340. BUSINESS AND MONEY IN THE AMERICAN NOVEL (3)
Three hours per week.
Prerequisite: none
What is money, really? How does it work in our society and in our literature? These are the starting questions that will form the core of exploration as we read and discuss works of American literature.
Same as ENGL 340.
GenEd-ID: C3

BUS 341. DRUG DISCOVERY AND DEVELOPMENT (3)
Three hours of lecture a week.
Prerequisite: none
How are drugs discovered? What determines the price for a drug? What is the difference between a generic and non-generic drug? These questions will be examined with an interdisciplinary approach. Topics to be covered may include the isolation of compounds from natural sources, the screening of compounds for biological activity, structure-activity relationships of drugs, computer-assisted drug design, combinatorial chemistry, bioinformatics, the FDA approval process for new drugs, and the economic and business aspects of pharmaceutical development.
Same as CHEM 341, ECON 341
GenEd-ID: B1, D

BUS 343. ANTHROPOLOGY OF ORGANIZATIONS (3)
Three hours per week.
Prerequisite: none
Anthropological perspective on human organizations in terms of communication, spatial relations, product development, technology, marketing, group behavior. Explores principles of effectively organizing and directing work groups.
Same as ANTH 343.
GenEd-ID: D

BUS 349. HISTORY OF BUSINESS & ECONOMICS IN NORTH AMERICA (3)
Three hours per week.
Prerequisite: none
Examines the growth and development of the economies of North America since colonial times. Addresses social, ethical, economic and management issues during the development of Canada, the United States, and Mexico. Analyzes the business principles underlying the growth and development of the economies.
Same as HIST 349.

GenEd-ID: D

BUS 410. SPECIAL TOPICS IN BUSINESS (3)
Three hours per week.
Prerequisite: Senior status or consent of professor
In-depth exploration and analysis of topics significant to the contemporary environment. Includes a major research project based on the local business community.

BUS 420. CASES IN STRATEGY (3)
Three hours per week.
Prerequisite: Senior status or consent of professor
A case study seminar that integrates functional areas of business into the development and analysis of strategy and strategic planning. An emphasis will be on practical strategic solutions that could reasonably lead to success in the marketplace.

BUS 424. BUSINESS IN ITS SOCIAL SETTING (3)
Three hours per week.
Prerequisite: BUS 346 or consent of professor
Analytical and interdisciplinary investigation of the evolution and contemporary status of business, especially relative to its environment – political, social, ethical, legal and economic. The dynamic nature of these environmental elements and their inter-relationships are analyzed through case studies and research projects.
GenEd: D

BUS 499. CAPSTONE: GLOBAL STRATEGIC SIMULATION (3)
Three hours per week.
Prerequisite: All Lower Division (24 units) and other Upper Division (33 units) required courses in the Business Major.
Provides an integration of all prior business core subject matter by requiring teams of students to participate in a PC-based simulation of an ongoing (fictitious) international business. Requires decision-making under uncertainty but within strict deadlines, competitor analysis, and formal oral/written reporting of results. Also, provides interdisciplinary exposure to complex business cases via Web-based analytical tools.

CHEMISTRY

CHEM 100. CHEMISTRY AND SOCIETY (4)
Three hours of lecture and one three-hour lab per week. Lab fee required.
Prerequisite: none
An introduction to the basic principles of chemistry and a consideration of the benefits and problems arising from applications of chemistry. Discussions of foods and food additives, drugs, plastics and other materials of everyday life, fuel sources, the atmosphere, and fresh water. Intended for the non-chemistry major.
GenEd: B1

CHEM 105. INTRODUCTION TO CHEMISTRY (3)
Three hours of lecture per week.
Prerequisite: A qualifying score on the ELM Examination or satisfying the ELM exemption requirements.
A one-semester course that introduces the basic principles and concepts in Chemistry. Topics covered include: measurements, units and unit conversion, scientific notation, stoichiometry, atomic structure, the concept of the mole, types of compounds, and problem solving. Intended for the non-chemistry major.

CHEM 110. WHO DONE IT? AN INTRODUCTION TO FORENSICS (3)
Three hours of lecture per week.
Prerequisite: none
Interdisciplinary approaches to forensic science, with lectures based on Anthropology, Art, Biology, Chemistry, Computer Science, History, Literature, Physics, Psychology, and Sociology. How have fictional detectives in novels, TV, and film reflected and influenced forensics? How have scientific and archaeological methods been incorporated into crime scene analysis? How have crimes been viewed and punished through time? How have different cultures defined crimes? How do forensic specialists identify forgeries in art, cartography, and documents? How have computer scientists contributed to forensics? How are cybercrimes solved? How do psychologists profile criminals? How do biologists use DNA, pollen, seeds, and insects to solve crimes? How do chemists and physicists analyze forensic materials? Intended for the non-chemistry major.
Same as ANTH 110.
GenEd: B1, D

CHEM 121. GENERAL CHEMISTRY I AND LABORATORY (4)
Three hours of lecture and one three-hour lab per week. Lab fee required.
Prerequisite: A passing score on the Chemistry Placement Examination or credit in CHEM 105 within the preceding year. One year of high school chemistry is strongly recommended.
An introductory chemistry course which provides an overview of the chemical and physical behavior of matter with a focus on qualitative and quantitative general inorganic, physical, and analytical chemistry.
GenEd: B1

CHEM 122. GENERAL CHEMISTRY II AND LABORATORY (4)
Three hours of lecture and one three-hour lab per week. Lab fee required.
Prerequisite: CHEM 121 with a grade of C or better
An introductory chemistry course which provides an overview of the chemical and physical behavior of matter with a focus on quantitative general inorganic, physical, and analytical chemistry including kinetics and thermodynamics of reactions, gas phase and solution equilibria, and qualitative aspects of radiochemistry, organic chemistry, and polymer chemistry.
GenEd: B1

CHEM 170. PHYSICAL SCIENCES FOR THE ELEMENTARY SCHOOL TEACHER (4)
Three hours of lecture and one three-hour lab per week. Lab fee required.
Prerequisite: A qualifying score on the ELM examination or satisfying the ELM exemption requirements.
Designed to provide K-8 elementary school teachers with an understanding of the physical sciences (Chemistry and Physics) with a focus on (1) the structure and properties of matter and (2) the principles of motion and energy. The areas covered in this course include the physical properties of solids, liquids, and gases; physical and chemical changes in matter; atomic theory and the periodic table; the principles of motion and energy; forces and the motion of particles; sources and transformations of energy including heat, electricity, magnetism, light, and sound; renewable and non-renewable energy sources; and the conservation of energy resources. The laboratory component of this course focuses on demonstrations for the K-8 classroom. Intended for the non-chemistry major.
GenEd: B1, B2

CHEM 250. QUANTITATIVE ANALYSIS (2)
Two hours of lecture per week.
Prerequisite: Must be taken concurrently with CHEM 251. CHEM 122 with a grade of C or better.
An examination of the theory and techniques involved in the quantification of inorganic, organic, and biological species from samples with an

emphasis on the environmental, biological, and medical applications of the analysis techniques.

CHEM 251. QUANTITATIVE ANALYSIS LABORATORY (2)
Two four-hour labs per week. Lab fee required.
Prerequisite: Must be taken concurrently with CHEM 250
A laboratory course designed to provide students with an exposure to the techniques used in the quantification of inorganic, organic, and biological species from samples using gravimetric and volumetric analyses, potentiometric titrations, atomic absorption spectrometry, UV-visible spectroscopy, GC, and GC/MS.

CHEM 311. ORGANIC CHEMISTRY I (3)
Three hours of lecture per week
Prerequisite: CHEM 122 with a grade of C or better
The structure and reactions of simple organic molecules and spectroscopic techniques (NMR, GC-MS, IR, and UV-visible) used to characterize molecules. Students interested in pre-professional programs (pre-medical, pre-veterinary, pre-dental, and pre-pharmacy) should take this course.

CHEM 312. ORGANIC CHEMISTRY I LABORATORY (1)
One four-hour lab per week. Lab fee required.
Prerequisite: CHEM 311 (or taken concurrently with CHEM 311) with a grade of C or better
A laboratory course designed to provide students with an exposure to the techniques and hands-on access to the instrumentation (NMR, GC, GC-MS, LC, IR, and UV-visible) used to purify and characterize organic molecules resulting from organic reactions.

CHEM 313. ORGANIC CHEMISTRY I LEARNING COMMUNITY (1)
One hour of recitation per week.
Prerequisite: Must be taken concurrently with CHEM 311
An instructor/peer-supervised interactive problem-solving session for students in CHEM 311 where students work in small groups on problems related to the content in CHEM 311.

CHEM 314. ORGANIC CHEMISTRY II (3)
Three hours of lecture per week
Prerequisite: CHEM 311 with a grade of C or better.
An examination of the structure, reactions, and spectroscopy of organic compounds containing one or more functional groups, and the structures and reactions of biologically relevant molecules. Students interested in pre-professional programs (pre-medical, pre-veterinary, pre-dental, and pre-pharmacy) or obtaining a minor in Chemistry should take this course.

CHEM 315. ORGANIC CHEMISTRY II LABORATORY (1)
One four-hour lab per week. Lab fee required.
Prerequisite: CHEM 311, 312, and 314 (or taken concurrently with CHEM 314) with grades of C or better
A laboratory course designed to provide students with experience in single-step and multi-step syntheses and characterization of organic molecules with hands-on access to instrumentation (NMR, GC, GC-MS, LC, IR, and UV-visible).

CHEM 316. ORGANIC CHEMISTRY II LEARNING COMMUNITY (1)
One hour of recitation section per week.
Prerequisite: Must be taken concurrently with CHEM 314
An instructor/peer-supervised interactive problem-solving session for students enrolled in CHEM 314 where students work in small groups on problems related to the content in CHEM 314.

CHEM 318. BIOLOGICAL CHEMISTRY (3)
Three hours of lecture per week
Prerequisite: CHEM 311 with a grade of C or better
An integrated Organic Chemistry II and Biochemistry course for biology students. The topics covered in this course include: the structure and synthesis of sugars, amino acids, DNA, RNA, proteins; enzyme catalysis and inhibition; and the reactions involved in biosynthetic and metabolic pathways. Students who are interested in pre-professional programs (pre-medical, pre-veterinary, pre-dental) or students interested in obtaining a minor in Chemistry should take CHEM 314. Intended for the non-chemistry major.

CHEM 341. DRUG DISCOVERY AND DEVELOPMENT (3)
Three hours of lecture per week.
Prerequisite: none
How are drugs discovered? What determines the price for a drug? What is the difference between a generic and non-generic drug? These questions will be examined with an interdisciplinary approach. Topics to be covered may include the isolation of compounds from natural sources, the screening of compounds for biological activity, structure-activity relationships of drugs, computer-assisted drug design, combinatorial chemistry, bioinformatics, the FDA approval process for new drugs, and the economic and business aspects of pharmaceutical development.
Same as ECON 341, BUS 341
GenEd-ID: B1, D

CHEM 343. FORENSIC SCIENCE (3)
Two hours of lecture and one three-hour lab per week. Lab fee required.
Prerequisite: none
A survey of the various chemical and biological techniques used in obtaining and evaluating criminal evidence. Topics include: chromatography; mass spectrometry (LC-MS, GC-MS); atomic absorption spectrometry, IR, UV, fluorescence, and X-ray spectroscopies; fiber comparisons; drug analysis; arson/ explosive residue analysis; toxicological studies; psychological profiling; blood typing; DNA analysis; population genetics; firearm identification; and fingerprint analysis.
Same as BIOL 343.
GenEd-ID: B1

CHEM 344. ENERGY AND SOCIETY (3)
Three hours of lecture per week.
Prerequisite: none
Survey of the physical, chemical, and engineering principles involved in the production of energy from current and potential sources and the economical, environmental, and political issues surrounding energy production. The course will also examine factors that influence worldwide energy policy. Examples of topics that may be included in this course include fossil fuels, solar energy, biomass, fuel cells, and nuclear (fission and fusion) processes.
GenEd-ID: B1

CHEM 346. SCIENTIFIC AND PROFESSIONAL ETHICS (3)
Three hours of lecture/ discussion per week.
Prerequisite: none
Discussion of ethical issues and societal challenges derived from scientific research and professional activities. Examines the sources, fundamental principles, and applications of ethical behavior; the relationship between personal ethics and social responsibility of organizations; and the stakeholder management concept. Applies ethical principles to different types of organizations: business, non-profits, government, health care, science/technology, and other professional groups. Emphasizes cases to explore ethical issues.
Same as BIOL 346, MATH 346, MGT 346.
GenEd-ID: A3, D

CHEM 350. PHYSICAL CHEMISTRY I (3)
Three hours of lecture per week.
Prerequisite: CHEM 122 and MATH 151 with grades of C or better
The fundamentals of physical chemistry including thermodynamics, equilibria, spectroscopy, and kinetics.

CHEM 400. BIOCHEMISTRY I AND LABORATORY (4)
Three hours of lecture and one four-hour lab per week. Lab fee required.
Prerequisite: CHEM 314 with a grade of C or better
An introduction to the physical and chemical properties of proteins and enzymes, enzymatic catalysis and inhibition, the biosynthesis of proteins and nucleic acids, and biosynthetic and metabolic pathways.

CHEM 430. RESEARCH DESIGN AND DATA ANALYSIS (3)
Three hours of lecture/ discussion per week.
Prerequisite: CHEM 121 and 122 with "C" or better grades.
Discussion on experimental design, sampling methods, data collection, and methods of data analysis related to scientific fields.
Same as BIOL 430, MATH 430.
GenEd-ID: A3, B3

CHEM 490. SPECIAL TOPICS IN CHEMISTRY (1-3)
Prerequisite: Consent of instructor.
Specialized topics from the fields of Chemistry and Biochemistry. Variable topic and variable credit (1-3 units). This course may be repeated for credit.

CHEM 492. INTERNSHIP/ SERVICE LEARNING (1-3)
Prerequisite: Consent of instructor.
Provides student credit for internship work and/or service learning in the community that culminates in a written and oral report. Variable credit (1-3 units). This course may be repeated for credit.

CHEM 494. INDEPENDENT RESEARCH (1-3)
Prerequisite: Consent of instructor/ research advisor.
Provides student credit for independent research (laboratory or library) that culminates in a written and oral report. Variable credit (1-3 units). This course may be repeated for credit.

CHEM 497. DIRECTED STUDIES (1-3)
Prerequisite: Consent of instructor.
Provides student credit for independent work. Variable credit (1-3 units). This course may be repeated for credit.

COMMUNICATION

COMM 210. INTERPERSONAL COMMUNICATION (3)
Three hours lecture per week.
Prerequisite: none
Analysis of the role communication plays in interpersonal relationships with special emphasis on intercultural communication. Oral interpersonal communication skills will be stressed.
GenEd: A2

COMPUTER INFORMATION SYSTEMS

CIS 110. BUSINESS COMPUTER SYSTEMS (3)
Three hours per week.
Prerequisite: none
Introduces the fundamentals of computer information systems for business: terminology, hardware, software, database and network concepts. Provides hands-on experience in using PCs to address business problems.

CIS 310. MANAGEMENT INFO SYSTEMS (3)
Three hours per week.
Prerequisite: CIS 110
Application of computer-based information systems to the management of organizations. Topics include use of information to further the organization's mission and strategy, the role of users, the architecture of information, and development of decision-support processes for managers.

COMPUTER SCIENCE

COMP 100. COMPUTERS: THEIR IMPACT AND USE (3)
Three hours of lecture in the lab per week.
Prerequisite: none
An introduction to the uses, concepts, techniques, and terminology of computing. Places the possibilities and problems of computer use in historical, economic, and social contexts. Shows how computers can assist in a wide range of personal, commercial, and organizational activities. Typical computer applications, including word processing, spreadsheets, and databases. Not open to Computer Science majors.

COMP 101. COMPUTER LITERACY (3)
Three hours of lecture in the lab per week.
Prerequisite: none
An introduction to computer applications, including Web applications, word processing, spreadsheets, databases and programming. Includes service learning component. Not open to Computer Science majors.

COMP 102. INTRODUCTION TO ALGORITHMS (3)
Three hours of lecture in the lab per week.
Prerequisite: none
An introduction to the design, development and expression of algorithms. Algorithms and their stepwise refinement. Expression of algorithms in a formal language. This course is intended to be a first course in a two-course sequence, the second being a programming language laboratory. Not open to students who have completed COMP 150.

COMP 103. COMPUTER PROGRAMMING INTRODUCTION (3)
Three hours of lecture in the lab per week.
Prerequisite: none
An introduction to the design, development and expression of algorithms. Algorithms and their stepwise refinement. Expression of algorithms in a formal language. This course is intended to be a first course in programming language (for example VISUAL BASIC or C/C++). Not open to students who have completed COMP 150.

COMP 150. OBJECT ORIENTED PROGRAMMING (4)
Four hours of lecture in the lab per week.
Prerequisite: Students with no programming experience should take COMP 103 first.
Introduction to algorithms, their representation, design, structuring, analysis and optimization. The course introduces the concept of object paradigm and teaches how to design and implement algorithms as structured programs in a high level language. Course includes programming lab.

COMP 151. DATA STRUCTURES AND PROGRAM DESIGN (4)
Four hours of lecture in the lab per week.
Prerequisite: COMP 150.
Introduction to data structures and the algorithms that use them. Review of composite data types such as arrays, records, strings, and sets. The role of the abstract data type in program design. Definition, implementation, and application of data structures such as stacks, queues, linked lists, trees, and graphs. Recursion. Use of time complexity expressions in evaluating algorithms. Comparative study of sorting and searching algo-

rithms. Course includes programming lab.

COMP 162. COMPUTER ARCHITECTURE AND ASSEMBLY LANGUAGE (3)
Three hours of lecture in the lab per week.
Prerequisite: COMP 150.
An introduction to computer architecture, assembly language programming, system software and computer applications. Number systems and data representation. Internal organization of a computer. Primitive instructions and operations. Assembly language. Language translation principles. Overview of operation systems.

COMP 232. PROGRAMMING LANGUAGES (3)
Three hours of lecture in the lab per week.
Prerequisite: COMP 162 and 151.
Discussion of issues in the design, implementation, and use of high-level programming languages. Historical background. How languages reflect different design philosophies and user requirements. Technical issues in the design of major imperative (procedural) programming languages. Other approaches to programming: functional programming, logic programming, and object-oriented programming.

COMP 262. COMPUTER ORGANIZATION AND ARCHITECTURE (3)
Three hours of lecture in the lab per week.
Prerequisite: COMP 151 and 162.
Extension of basic addressing concepts to more advanced addressability such as base register and self-relative addressing. Comparative computer architecture focusing on such organizations as multiple register processors and stack machines. Basics of virtual memory input-output. Introduction to the concept of microprogrammable systems. Low-level language translation process associated with assemblers. System functions such as relocatable loading and memory management. Application of data structure and hashing techniques to the above. Other related topics.

COMP 350. SOFTWARE ENGINEERING (3)
Three hours of lecture in the lab per week.
Prerequisite: COMP 232, 262.
Concepts and techniques for systems engineering, requirements analysis, design, implementation and testing of large scale computer systems. Principles of software engineering for production of reliable, maintainable and portable software products. Emphasis on functional analysis and structured design techniques. Topics include unit, integration and systems testing, configuration management, and software quality assurance practices. Participation in group activities involving analysis, design and implementation of a software intensive system. Introduction to Computer Aided Software Engineering (CASE)

COMP 362. OPERATING SYSTEMS (3)
Three hours of lecture in the lab per week.
Prerequisite: COMP 262.
Examination of the principal types of systems including batch, multiprogramming, and time-sharing. Networked systems are also discussed. The salient problems associated with implementing systems are considered including interrupt or event driven systems, multi-tasking, storage and data base management, and input-output. Emphasis will be placed on some of the simple algorithms used to solve common problems encountered such as deadlocks, queue service, and multiple accesses to data. Projects will be implemented to reinforce the lectures.

COMP 410. COMPUTER APPLICATION IN BIOMEDICAL FIELDS (3)
Three hours of lecture in the lab per week.
Prerequisite: BIOL 201 with C or better grades.
Current applications of computers and data processing technology to the understanding and solving of specific problems in biomedical fields.
Same as BIOL 410.

COMP 420. DATABASE THEORY AND DESIGN (3)
Three hours of lecture in the lab per week.
Prerequisite: COMP 350.
Database structure including: structure definition, data models, semantics of relations, and operation on data models. Database schemas: element definition, use and manipulation of the schema. Elements of implementation. Algebra of relations on a database. Hierarchical data bases. Discussion of information retrieval, reliability, protection and integrity of databases.

COMP 422. DESIGN OF COMPILERS (3)
Three hours of lecture in the lab per week.
Prerequisite: COMP 444
Organization of compiler including lexical and syntax analysis, symbol tables, object code generation, code optimization techniques, and overall design. Compilation techniques and run-time structures.

COMP 424. COMPUTER SYSTEM SECURITY (3)
Three hours of lecture in the lab per week.
Prerequisite: COMP 350.
Security techniques in operating systems, data bases, and computer networks. Analysis of formal security models. Introduction to cryptography, public key security schemas.

COMP 429. COMPUTER NETWORKS (3)
Three hours of lecture in the lab per week.
Prerequisite: COMP 350, COMP 362 and MATH 344.
Basic software design and analysis considerations in networking computers into coherent, cooperating systems capable of processing computational tasks in a distributed manner. Network topology, routing procedures, message multiplexing and process scheduling techniques.

COMP 431. BIOINFORMATICS (4)
Three hours of lecture in the lab per week.
Prerequisite: COMP 150, MATH 151, Statistics.
Basic computational models used in molecular biology and chemistry will be introduced. Topics include algorithms for string alignments, dynamic programming, structural superposition algorithms, computing with differential information, 3D motifs, Hidden Markov Models, phylogenetic trees, statistical/ information techniques for pattern recognition, genetic algorithms.
Same as BIOL 431
GenEd-ID: B3

COMP 444. AUTOMATA, LANGUAGES, AND COMPUTATION (3)
Three hours of lecture in the lab per week.
Prerequisite: MATH. 300.
Study of the relation of languages (i.e. sets of strings) and machines for processing these languages, with emphasis on classes of languages and corresponding classes of machines. Phrase structure languages and grammar. Types of grammars and classes of languages. Regular languages and finite state automata. Context-free languages and pushdown automata. Unrestricted languages and Turing Machines. Computability models of Turing, Church, Markov, and McCarthy. Applications to programming languages, compiler design, and program design and testing.
GenEd: C3

COMP 447. SOCIETAL ISSUES IN COMPUTING (3)
Three hours of lecture in the lab per week.
Prerequisite: COMP 350 and COMP 362 and senior standing.
A survey course on the role of the digital computer in modern society. The dangers of the misuse of computers (as in the invasion of privacy), as well as the proper and intelligent use of the machines, are discussed.
GenEd: D

COMP 449. HUMAN-COMPUTER INTERACTION (3)
Three hours of lecture in the lab per week.
Prerequisite: COMP 350.
The information exchange between humans and computer systems will be examined. Aspects of input/output devices, software engineering, and human factors will be discussed with respect to human-computer interactions. Topics include: text and graphic display; user modeling; program design, debugging, complexity and comprehension; and current research studies and methodologies.
GenEd: E

COMP 462. ADVANCED OBJECT-ORIENTED PROGRAMMING (3)
Three hours of lecture in the lab per week.
Prerequisite: COMP 350.
Principles of object-oriented design and programming based on languages such as JAVA, C++ and Smalltalk will be presented. Understanding of the role of objects, methods, message passing, encapsulation, and inheritance for effective programming will be stressed. Language structure versus particular engineering objectives will be analyzed. Design Patterns techniques will be a unifying theme.

COMP 464. COMPUTER GRAPHIC SYSTEMS AND DESIGN I (3)
Three hours of lecture in the lab per week.
Prerequisite: COMP 350 and MATH 240.
Fundamental concepts of computer graphics. Graphics devices; graphics languages; interactive systems. Applications to art, science, engineering and business. Trade-offs between hardware devices and software support.

COMP 466. COMPUTER GRAPHIC SYSTEMS AND DESIGN II (3)
Three hours of lecture in the lab per week.
Prerequisite: COMP 464.
Advanced concepts of computer graphics. Topics include computer graphics software and hardware, mathematical basis of geometric modeling, data base management in manufacturing environments, imagining and visualization.

COMP 469. ARTIFICIAL INTELLIGENCE/ NEURAL NETS (3)
Three hours of lecture in the lab per week.
Prerequisite: MATH 342, programming skills
An exploration of the use of computers to perform computations normally associated with intelligence, pattern formation and recognition using various backpro iterations. Stacks, decision trees and other modern mining tools and computational models for knowledge representation will be covered. Other topics may include natural language and imagining.

COMP 490. TOPICS IN COMPUTER SCIENCE (3)
Three hours of lecture in the lab per week.
Prerequisite: Junior standing.
Current issues in computer science.

COMP 492. INTERNSHIP (3)
Three hours of lecture in the lab per week.
Prerequisite: Junior standing and Program approval or written proposal of internship studies.
Supervised work and study in industrial setting involving development of degree related skills. All students are required to present their projects at the Senior Seminar. Credit/no credit.

COMP 494. INDEPENDENT RESEARCH (3)
Three hours of lecture in the lab per week.
Prerequisite: Senior standing and Program approval or written proposal of independent research studies.
Supervised project involving theoretical research in the field of computer science or its applications. All students are required to present their projects at the Senior Seminar. Credit/no credit.

COMP 497. DIRECTED STUDY (3)
Three hours of lecture in the lab per week.
Prerequisite: Senior standing and Program approval or written proposal of directed studies.
Supervised project involving library research. All students are required to present their projects at the Senior Seminar.

COMP 499. SENIOR COLLOQUIUM (1)
Three hours of lecture in the lab per week.
Prerequisite: Senior standing.
Oral presentation of current advancements in the field, reports on students' projects, and invited lectures. Repeatable.

ECONOMICS

ECON 110. PRINCIPLES OF MICROECONOMICS (3)
Three hours per week.
Prerequisite: none
The application of economic reasoning to the decisions of consumers and producers. Topics include opportunity cost, resource allocation, the price system, the organization of industry, market failures, distribution of income, public sector economics.
GenEd: D

ECON 111. PRINCIPLES OF MACROECONOMICS (3)
Three hours per week.
Prerequisite: none
Study of the workings of the economy. Topics include national income accounting, business cycles, employment and unemployment, inflation, economic growth, financial institutions, fiscal and monetary policy, international trade.
GenEd: D

ECON 300. FUNDAMENTALS OF ECONOMICS (3)
Three hours per week.
Prerequisite: none
Basic economic training for citizens who wish to exercise a reasoned judgment about economic issues in public affairs. Content generally same as ECON 110, 111 in condensed form. Not open to students with credit in ECON 110 or 111.
GenEd: D

ECON 310. INTERMEDIATE MICROECONOMICS (3)
Three hours per week.
Prerequisite: ECON 110, 111 and either MATH 140 or 150.
Economic analysis of the decisions of consumers and producers. Emphasis on the theory of consumer behavior, the theory of the firm, price and output determination in various market structures, factor markets and externalities.

ECON 311. INTERMEDIATE MACROECONOMICS (3)
Three hours per week.
Prerequisite: ECON 110, 111 and either MATH 140 or 150.
Determinants of levels of national income, employment, and price levels. Analysis of secular and cyclical changes in economic activity, and the effects of monetary and fiscal policies on these changes.

ECON 320. MONEY & BANKING (3)
Three hours per week.
Prerequisite: ECON 110, 111 and either MATH 140 or 150.
Nature and functions of money and its relation to prices; the monetary system of the United States; the functions of banks, bank credit, foreign exchange and monetary control. The impact of monetary policy on economic activity.

ECON 329. MANAGERIAL ECONOMICS (3)
Three hours per week.
Prerequisite: ECON 110, 111 and either MATH 140 or 150.
Development of the tools of marginal analysis and their application to managerial decisions and planning. Topics include demand analysis, production and cost, pricing and output decisions under different market structures. Product and factor markets will be analyzed.

ECON 340. BUSINESS AND MONEY IN THE AMERICAN NOVEL (3)
Three hours per week.
Prerequisite: none
What is money, really? How does it work in our society and literature? These are the starting questions which will form the core of exploration as we read and discuss works of American literature.
Same as BUS 340 and ENG 340.
GenEd-ID: A3, C2

ECON 341. DRUG DISCOVERY AND DEVELOPMENT (3)
Three hours per week.
Prerequisite: none
How are drugs discovered? What determines the price for a drug? What is the difference between a generic and non-generic drug? These questions will be examined with an interdisciplinary approach. Topics to be covered may include the isolation of compounds from natural sources, the screening of compounds for biological activity, structure-activity relationships of drugs, computer-assisted drug design, combinatorial chemistry, bioinformatics, the FDA approval process for new drugs, and the economic and business aspects of pharmaceutical development.
Same as CHEM 341.
GenEd-ID: B1, D

ECON 343. CAPITAL THEORY (3)
Three hours per week.
Prerequisite: none
Intertemporal choice and decision-making under uncertainty in our personal and financial lives. Topics include multiperiod consumption, multiperiod production, capital budgeting, modern portfolio theory and financial management.
Same as FIN 343
GenEd-ID: D

ECON 349. HISTORY OF BUSINESS AND ECONOMICS IN NORTH AMERICA (3)
Three hours per week.
Prerequisite: none
Examines the growth and development of economies of North America since colonial times. Addresses social, ethical, economic and management issues during the development of Canada, the United States, and Mexico. Analyzes the business principles underlying the growth and development of the economies.
Same as HIST 349 and BUS 349.
GenEd-ID: D

ECON 362. INTRODUCTION TO ENVIRONMENTAL ECONOMICS (3)
Three hours per week.
Prerequisite: ECON 110 and 111.
Economic analysis of environmental problems and policy. Market failures due to externalities, public goods, and common property resources will be examined. Private (market) and public (governmental) solutions to environmental problems are examined.

ECON 462. ENVIRONMENTAL ECONOMICS (3)
Three hours per week.
Prerequisite: ECON 310 or 329, 362, 486 or 488 (may be taken concurrently).
The measurement of market and non-market benefits with application in measuring environmental benefits. Theory of consumer choice: indirect utility functions, expenditure functions, consumer surplus, willingness-to-pay and willingness-to-accept. Theory of measurement: hedonic models, recreation demand, contingent valuation, economy-ecosystem interactions, valuing human morbidity and mortality.

ECON 463. ENERGY ECONOMICS (3)
Three hours per week.
Prerequisite: ECON 310 or 329.
Application of economic analysis to energy problems and policies. Representative topics include macroeconomic effects of energy price shocks, international financial fragility, OPEC pricing strategies, determinants of demand and supply, industrial organization and finance, investor and publicly owned utilities, domestic and international policies.

ECON 464. NATURAL RESOURCE ECONOMICS (3)
Three hours per week.
Prerequisite: ECON 310 or 329.
Microeconomic and capital theory applied to problems of conserving and managing natural resources. Analysis of public policies affecting renewable and nonrenewable resources including price controls, taxation and leasing. Representative topics include: forestry, energy, water, and mineral economics.

ECON 486. INTRODUCTION TO ECONOMETRICS (3)
Three hours per week.
Prerequisite: ECON 310 or 329, 311, MATH 340.
Development and application of econometric tools.

ECON 488. QUANTITATIVE METHODS IN ENVIRONMENTAL ECONOMICS (4)
Three hours per week and one hour lab.
Prerequisite: ECON 310 or 329, 362; MATH 150, BIOL 202 or MATH 340.
Economic and social impacts of environmental regulations. Applications of input-output analysis and computable general equilibrium models to measure economic consequences to employment and the economy from environmental regulations.

ECON 490. SEMINAR (3)
Three hours per week.
Prerequisite: None.
This seminar explores a different topic each term. This seminar explores a different topic each term. Students may enroll up to four times in different seminars.

ECON 492. SERVICE LEARNING/INTERNSHIP (3)
Six hours per week.
Prerequisite: None.
Enrollment in this course is with permission of faculty member in charge. Individual internship through service learning. Graded Credit/No Credit.

ECON 494. INDEPENDENT STUDY (3)
Variable hours per week.
Prerequisite: None.
Individual contracted study on topics selected by the student for further study. Enrollment in this course is with permission of faculty member in charge. Graded Credit/No Credit.

ECON 497. DIRECTED STUDY (3)
Variable hours per week.
Prerequisite: None.
Reading and library research under the direction of a faculty member. Enrollment in this course is with permission of faculty member in charge. Graded Credit/No Credit.

EDUCATION

EDUC 101. INTRODUCTION TO EDUCATION (3)
Prerequisite: none
The elementary teaching profession; personal goals, teaching-learning environment, and career opportunities. Experiences that assist students gain accurate knowledge schooling in the 21st century. Field experience in elementary school programs of 2 hours per week required.

EDUC 320. EDUCATION IN MODERN SOCIETY (3)
Prerequisite: none
Survey of educational institutions and practices used in different sectors of society. Historical and philosophical foundations of American education.
GenEd: D

EDUC 510. LEARNING THEORY AND DEVELOPMENT APPLIED IN MULTICULTURAL EDUCATION CONTEXTS (3)
Three hours class time per week and participation/observation in the public schools.
Prerequisite: none.
Introduction to psychology of learning and instruction. Major concepts, principles, theories and research related to child and adolescent development; human learning; the cognitive, linguistic, social, emotional and physical development. Candidates begin to use this knowledge to create learning opportunities that support student development, motivation and learning in a social, cultural, and historical context. Includes learning theories and their application to educational practice in multicultural and multilingual classroom settings.

EDUC 512. EQUITY, DIVERSITY AND FOUNDATIONS OF SCHOOLING (3)
Three hours class time per week.
Prerequisite: none.
Principles of effectively teaching students from diverse language, historical, and cultural backgrounds. Includes, skills and abilities and community values. Focus on the major cultural and ethnic groups. Attention to ways of recognizing and minimizing bias in the classroom and ways to create equitable classroom community that emphasize the physical, social, emotional and intellectual safety of all students. Includes study of gender bias, diverse students, families, schools and communities and the candidate's self-examination of his/her stated and implied beliefs, attitudes and expectations related to these areas of diversity.

EDUC 520. OBSERVING AND GUIDING BEHAVIOR IN MULTILINGUAL/ MULTICULTURAL AND INCLUSIVE CLASSROOMS (3)
Three hours class time per week.
Prerequisite: Must be officially admitted to the Multiple Subject Credential Program. Students must register for at least one unit of Field Experience concurrent with this course.
Through this course students observe children's behavior in multilingual/ multicultural and inclusive classrooms, learn and apply assessment principles and tools; learn how to guide children's social behavior; and communicate with families. Students learn how to organize and write plans for instruction.

EDUC 560. FIELDWORK/STUDENT TEACHING (1-9)
Prerequisite: Must be officially admitted to the Multiple Subject Credential Program.
Observation and teaching in selected schools under the supervision of classroom teacher and University supervisor, with a student teaching seminar.

EDUC 561. STUDENT TEACHING SEMINAR (1)
Weekly Meetings to discuss observations and teaching practice during the student teaching experience.
Prerequisite: Must be officially admitted to the Multiple Subject Credential Program.
Discussion and seminar with University Supervisor to discuss practical issues relevant to the student teaching experience.

EDUCATION MULTIPLE SUBJECTS PROGRAM

EDMS 522. LITERACY I/MULTICULTURAL-MULTILINGUAL (3)
Three hours class time per week.
Prerequisite: Must be officially admitted to the Multiple Subject Credential Program. Students must register for at least one unit of Field Experience concurrent with this course.
Includes developmental theory and practice of the reading and writing process across the grade levels. Includes study skills. Foundations of reading and writing theory and practice for students who speak English as a first or second language. Teaching reading and writing to native English speakers and English Language Learners in English Only, Multilingual and Bilingual contexts. Needs of English Language Learners and exceptional children, technology for teaching and learning is integrated.

EDMS 523. LITERACY II/MULTICULTURAL-MULTILINGUAL (4)
Four hours class time per week.
Prerequisite: Must be officially admitted to the Multiple Subject Credential Program. Students must register for at least one unit of Field Experience concurrent with this course.
Includes differentiated instruction and scaffolding for English language learners, special education (including gifted) and English only students. Focus on reading and writing skills across the content areas and Literature based instruction for native English speakers and English Language Learners in English Only, Multilingual and Bilingual contexts. Needs of English Language Learners and exceptional children, technology for teaching and learning is integrated.

EDMS 526. MODERN METHODS IN MATHEMATICS TEACHING (3)
Three hours class time per week.
Prerequisite: Must be officially admitted to the Multiple Subject Credential Program. Students must register for at least one unit of Field Experience concurrent with this course.
Students learn to apply techniques and materials to teaching mathematics in elementary and middle schools. Special attention will be given to mathematical reasoning, problem solving skills, multiple representations and approaches including verbal, symbolic, and graphic. Modern methods, including mathematical modeling, use of new technology and modern educational software will be stressed. Needs of English Language Learners and exceptional children, technology for teaching and learning is integrated.

EDMS 527. HISTORY AND SOCIAL STUDIES AND INTEGRATED ARTS (4)
Four hours class time per week.
Prerequisite: Must be officially admitted to the Multiple Subject Credential Program. Students must register for at least one unit of Field Experience concurrent with this course.
Focuses on curriculum for History, Social Sciences and Arts as delin-

eated by the California Content Area Standards and the Curriculum Frameworks. Includes curriculum development, methods, techniques, planning and assessment in history, social studies and integrated arts. Needs of English Language Learners and exceptional children, technology for teaching and learning is integrated.

EDMS 529. SCIENCE, HEALTH AND PHYSICAL EDUCATION (4)
Four hours class time per week.
Prerequisite: Must be officially admitted to the Multiple Subject Credential Program. Students must register for at least one unit of Field Experience concurrent with this course.
Through this course students learn and apply recommended methods for teaching physical, life and earth science, health and physical education to students (K-8) based on research and theory. Students reflect upon their personal development and abilities to integrate theory and practice in science, health and physical education with other subject areas. Needs of English Language Learners and exceptional children, technology for teaching and learning is integrated.

ENGLISH

ENGL 100. COMPOSITION AND RHETORIC (3)
Three hours lecture/discussion per week
Prerequisite: none
Instruction and practice in writing university-level expository prose. The subject matter of the course will be thematic and variable. The focus of the course is development of proficiency in conceptualizing, analyzing and writing academic papers.
GenEd: A1

ENGL 120. AMERICAN LITERATURE I (3)
Three hours lecture/discussion per week
Prerequisite: ENGL 100 or equivalent
Study of major works of American literature from colonial times through 1850, with special attention to literary movements. Major writers will be addressed, as well as lesser known writers from various cultural and regional backgrounds.
GenEd: C2

ENGL 150. BRITISH AND EUROPEAN LITERATURE I (3)
Three hours lecture/discussion per week
Prerequisite: ENGL 100 or equivalent
Survey of major authors in English and European literature from Beowulf to approximately 1650, with special emphasis on the intellectual backgrounds of the Medieval and Renaissance periods.
GenEd: C2

ENGL 220. AMERICAN LITERATURE II (3)
Three hours lecture/discussion per week
Prerequisite: ENGL 100 or equivalent and ENGL 120 or equivalent
Study of major works of American literature from 1850 to the present, with special attention to literary movements. Major writers will be addressed, as well as lesser known writers from various cultural and regional backgrounds.
GenEd: C2

ENGL 250. BRITISH AND EUROPEAN LITERATURE II (3)
Three hours lecture/discussion per week
Prerequisite: ENGL 100 or equivalent and ENGL 150 or equivalent
Study of major works of English and European literature from approximately 1650 to the present, with special attention to various literary movements.
GenEd: C2

ENGL 310. RESEARCH METHODS (3)
Three hours lecture/discussion per week
Prerequisite: ENGL 100 or equivalent
Comprehensive investigation of research modalities, including the various forms of electronic research. Writing intensive.

ENGL 312. INTRODUCTION TO CHILDREN'S LITERATURE (3)
Three hours lecture/discussion per week
Prerequisite: ENGL 100 or equivalent
An inquiry into children's and adolescent literature. Students analyze narrative and expository texts. Focus will be on critical reading for K-12 students and analysis of perspective in fiction and non-fiction. Works studied will be representative of several genres, cultures, and periods of literature. Students evaluate the use of elements of persuasive argument in print, speech, videos, and in other media.

ENGL 315. INTRODUCTION TO LANGUAGE STRUCTURE AND LINGUISTICS (3)
Three hours lecture/discussion per week
Prerequisite: ENGL 100 or equivalent
An examination of the basic components of human language, including phonology, morphology, syntax and semantics, and the differences/similarities between languages. Students will identify examples of speech parts, their function, morphology, and syntax.

ENGL 326. MAJOR BRITISH AND EUROPEAN AUTHORS (3)
Three hours lecture/discussion per week
Prerequisite: ENGL 100 and ENGL 250 or equivalents
Concentrated study of selected British and/or European authors. Authors selected change from term to term; therefore, students may take the course for credit more than once. Repeatable by topic.

ENGL 327. MAJOR AMERICAN AUTHORS (3)
Three hours lecture/discussion per week
Prerequisite: ENGL 100 and ENGL 220 or equivalent
Concentrated study of selected American authors. Authors selected change from term to term; therefore, students may take the course for credit more than once. Repeatable by topic.

ENGL 328. MYTHOLOGY (3)
Three hours lecture/discussion per week
Prerequisite: ENGL 100 or equivalent and one literature course.
Study of mythology and the influence it has had on literature, art, music, and the development of cultures. Course topics may include Classical Mythology, Eastern Mythology, Mythology of the Americas, Egyptian Mythology, and others. Repeatable by topic.

ENGL 330. WRITING IN THE DISCIPLINES (3)
Three hours lecture/discussion per week
Prerequisite: ENGL 100 or equivalent
Individual and collaborative writing in a variety of styles and forms. Students will learn writing and research techniques of various types, with special emphasis on writing for their chosen majors. Oral presentations form a portion of the course.
GenEd-ID: A1, A2

ENGL 333. MULTICULTURAL DRAMA IN PERFORMANCE/PRODUCTION (3)
Three hours lecture/discussion per week. May require additional meetings.
Prerequisite: ENGL 100 or equivalent and ENGL 220 or equivalents
America is a country of many cultures, and each of these has brought legacies of its roots to the American stage. In this course we will read plays written by Native Americans, Hispanic Americans, Asian Americans, African Americans and others. We will also stage mini-

productions of one or more of those plays.
Same as TH 333.
GenEd-ID: C2, C3

ENGL 334. NARRATIVES OF SOUTHERN CALIFORNIA (3)
Three hours lecture/discussion per week
Prerequisite: ENGL 100 and ENGL 220 or equivalents
Ours is a region made up of many cultures which produce the one we call Southern California. In this class we will take a historical approach to study of the narratives—oral, written and filmed—of Southern California. Course work may also include obtaining oral histories and compiling them.
Same as HIST 334.
GenEd-ID: C3

ENGL 335. AMERICAN ETHNIC IMAGES IN NOVELS FILM AND ART (3)
Three hours lecture/discussion per week
Prerequisite: ENGL 100 or equivalent
American Ethnic Images in Novels and Film examines the portrayal of ethnic groups from an interdisciplinary perspective that includes, but is not limited to, the literary, historical, and artistic modes of analysis. The course highlights the ways in which artistic works have shaped the intellectual landscape of the United States as they relate to ethnic peoples.
Same as ART 335 and HIST 335.
GenEd-ID: C3, D

ENGL 337. LITERATURE OF THE ENVIRONMENT (3)
Three hours lecture/discussion per week
Prerequisite: ENGL 100 or equivalent
Literature of the Environment is structured to involve the student in many forms of dialogue on issues pertinent to humanity's relationship with Earth. By reading works by writers from diverse fields and by writing in response, the student will gain a better understanding of our planet, its needs, and a better control of writing in response to learning.
GenEd-ID: A3, C2

ENGL 339. PSYCHOPATHOLOGY IN LITERATURE (3)
Three hours lecture/discussion per week
Prerequisite: ENGL 100 or equivalent
This course is co-developed and co-taught by faculty from Psychology and English. Human psychology and its manifestations in literature are the topics of the course, and students will use skills from both disciplines to address the ideas and issues presented by the literature.
Same as PSY 339.
GenEd-ID: C2, E

ENGL 340. BUSINESS AND MONEY IN THE AMERICAN NOVEL (3)
Three hours lecture/discussion per week
Prerequisite: ENGL 100 or equivalent, ENGL 330 suggested
What is money, really? How does it work in our society and in our literature? These are the starting questions which will form the core of exploration as we read and discuss works of American literature.
Same as BUS 340 and ECON 340.
GenEd-ID: A3, C2

ENGL 349. SPECIAL INTERDISCIPLINARY TOPICS (3)
Three hours lecture/discussion per week
Prerequisite: ENGL 100 or equivalent
These courses will vary by topic, but they will all be interdisciplinary by nature, involving information and ways of knowing from at least two disciplines.

ENGL 400. CONTEMPORARY LITERATURE (3)
Three hours lecture/discussion per week
Prerequisite: ENGL 100 or equivalent and one upper division literature course.
Survey of world trends in literature, possibly including fiction, non-fiction, poetry and/or drama. Specific topics vary from term to term; the class is therefore repeatable for credit. Repeatable by topic.

ENGL 410. SHAKESPEARE'S PLAYS (3)
Three hours lecture/discussion per week
Prerequisite: ENGL 100 or equivalent and one upper division literature course.
Study of the many aspects of Shakespeare's plays as literature— language, context, form and style—as well as the ways in which these elements work as parts of a whole, which includes spoken speech and other sounds as well as physical form and movement. Choices are: Shakespeare's Early Plays (pre-1600) and Shakespeare's Later Plays (post-1600). Repeatable by topic.

ENGL 430. LITERARY THEORY (3)
Three hours lecture/discussion per week
Prerequisite: ENGL 100 or equivalent and one upper division literature course.
Survey of literary theory and critical study which investigates various approaches, perspectives, and modes of inquiry. Literary Criticism extends beyond literature to intersect with anthropology, philosophy, psychology, linguistics, political science, and other disciplines, and critical analysis by "literary" scholars encompass all forms of cultural production, literary and non-literary.

ENGL 431. EUROPEAN RENAISSANCE LITERATURE AND ART (3)
Three hours lecture/discussion per week
Prerequisite: ENGL 100 or equivalent
The Renaissance of the 15th and 16th centuries in Europe and England provided the world with a new way of looking at humankind and our surroundings. By reading the literature of this period and studying the art produced during that time, we will gain an understanding of this "rebirth" of the human spirit and a better understanding of the legacies of the Renaissance artists and writers.
Same as ART 431.
GenEd-ID: C1, C2

ENGL 432. ARTS OF THE HARLEM RENAISSANCE (3)
Three hours lecture/discussion per week
Prerequisite: ENGL 100 or equivalent
The Harlem Renaissance was one of the most exciting epochs in American history. The art, literature and music produced in Harlem during the '20s and '30s has had a significant impact on American and world cultures. In this class, we will study these art forms and their historical genesis and legacy.
Same as ART 432, MUS 432.
GenEd-ID: C1, C2

ENGL 449. PERSPECTIVES ON MULTICULTURAL LITERATURE (3)
Three hours lecture/discussion per week
Prerequisite: ENGL 220, ENGL 310 suggested
Each of the cultures present in America today has its own set of qualities which make it different from that of other cultures. In this class, we will study some of those, but the focus of the class will be on issues and/or ideas which affect each of these literatures and discover ways in which they inform each other.
GenEd: C2, C3

ENGL 450. NATIVE AMERICAN LITERATURE (3)
Three hours lecture/discussion per week
Prerequisite: ENGL 449
In this course students study the novels and poetry written by Native American authors. In order to understand the development of the literature, we will also read essays relevant to the events, issues and concerns attending the historical interactions between Native Americans and Euro-Americans in North America.

ENGL 451. AFRICAN/AFRICAN AMERICAN LITERATURE (3)
Three hours lecture/discussion per week
Prerequisite: ENGL 449
In this course students study the novels and poetry written by African American authors. In order to understand the development of the literature, we will also read essays relevant to the events, issues and concerns attending the historical interactions between African Americans and other peoples in North America. Authors writing in African countries may also be included in order to gain a more global perspective on the literature.

ENGL 452. ASIAN/ASIAN AMERICAN LITERATURE (3)
Three hours lecture/discussion per week
Prerequisite: ENGL 449
In this course students study the novels and poetry written by Asian American authors. In order to understand the development of the literature, we will also read essays relevant to the events, issues and concerns attending the historical interactions between Asian Americans and other peoples in North America. Authors writing in Asian countries may also be included in order to gain a more global perspective on the literature.

ENGL 453. HISPANIC/HISPANIC AMERICAN LITERATURE (3)
Three hours lecture/discussion per week
Prerequisite: ENGL 449
In this course students study the novels and poetry written by Hispanic American authors. In order to understand the development of the literature, we will also read essays relevant to the events, issues and concerns attending the historical interactions between Hispanic Americans and other peoples in North America. Authors writing in Spain, Mexico, Central America or South American countries may also be included in order to gain a more global perspective on the literature.

ENGL 454. MULTICULTURAL LITERATURE PROJECT/SEMINAR (3)
Hours Variable
Prerequisite: Consent of instructor and completion of ENGL 449, 450, 451, 452 and 453.
As the culmination of the Multicultural Literature Emphasis, the purpose of this independent study course is to produce a significant work in the genre of the student's choice, chosen in consultation with his or her instructor.

ENGL 460. PERSPECTIVES ON CREATIVE WRITING (3)
Three hours lecture/discussion per week
Prerequisite: ENGL 330
This course will be writing intensive, but the focus of the course will be reading and discussing what others have written about the processes involved in the creative writing endeavor. Guest lectures by published writers, publishers and other experts may be part of the course.

ENGL 461. FICTION WRITING (3)
Three hours lecture/discussion per week
Prerequisite: ENGL 460
The writing of fiction is the focus of this class. The seminar format allows students the opportunity to talk about their writing and to receive critiques from their peers as well as the instructor.

ENGL 462. POETRY WRITING (3)
Three hours lecture/discussion per week
Prerequisite: ENGL 460
The writing of poetry is the focus of this class. The seminar format allows students the opportunity to talk about their poetry and to receive critiques from their peers as well as the instructor.

ENGL 463. WRITING FOR THE STAGE AND SCREEN (3)
Three hours lecture/discussion per week
Prerequisite: ENGL 460
The writing of stage plays and/or screen plays is the focus of this class. The seminar format allows students the opportunity to talk about their writing and to receive critiques from their peers as well as the instructor.

ENGL 464. CREATIVE NON-FICTION (3)
Three hours lecture/discussion per week
Prerequisite: ENGL 460
The writing of creative non-fiction is the focus of this class. The seminar format allows students the opportunity to talk about their writing and to receive critiques from their peers as well as the instructor.

ENGL 465. CREATIVE WRITING PROJECT (3)
Hours Variable
Prerequisite: Consent of instructor and completion of ENGL 460, 461, 462, 463 and 464.
As the culmination of the Creative Writing Emphasis, the purpose of this independent study course is to produce a significant work in the genre of the student's choice, chosen in consultation with his or her instructor.

ENGL 475. LANGUAGE IN SOCIAL CONTEXT (3)
Three hours lecture/discussion per week
Prerequisite: Completion of ENGL 100 or equivalent and consent of instructor.
Focus is on the nature of literacy, with emphasis on literacy development for English Only (EO) and English Language Learners (ELLs), investigation and knowledge of the development and acquisition of English literacy, and understanding the role of concepts and contexts in word meanings, vocabulary development, and multiple meanings. Also stressed will be differences between English and other languages that impact the acquisition of English literacy by ELLs, the role of primary language literacy in the development of English language among ELLs, and the impact of disabilities on oral and written English language development.

ENGL 476. LANGUAGE DEVELOPMENT AND ASSESSMENT (3)
Three hours lecture/discussion per week
Prerequisite: Completion of ENGL 100 or equivalent and consent of instructor.
Introduction to language development issues for first and second language speakers. Examination of the linguistic theories of language acquisition including the study of child language development and situated in a cognitive, social, and cultural context. Study of second language acquisition in children, adolescents and adults. Includes the nature of assessment for language development, including speaking, reading, and writing.

ENGL 477. LITERATURE FOR ENGLISH SECONDARY EDUCATION (3)
Three hours lecture/discussion per week
Prerequisite: Admission to the Secondary Education Program
An inquiry into adolescent literature. A survey of adolescent literature in which students analyze narrative and expository texts. Questions raised may include: What purpose does literature serve in the cultural milieu of a community? What cultural patterns, symbols, mythologies and traditions are included? Focus will be on critical reading for single subject subject matter preparation. Specific works studied will be representative

of several genres, cultures, and periods of literature.

ENGL 478. WRITING FOR ENGLISH SECONDARY EDUCATION (3)
Three hours lecture/discussion per week
Prerequisite: Admission to the Secondary Education Program
Introduction to current theory and practice of teaching writing in the secondary schools, in a writing context and across the curricula. Special attention to advanced critical reading, thinking, and writing skills.

ENGL 482. TECHNICAL WRITING (3)
Three hours lecture/discussion per week
Prerequisite: ENGL 330
This course is an overview of the field of technical writing. Research, interviewing, and the various forms of technical writing are addressed. Students will produce work in a variety of forms of technical writing.

ENGL 483. TECHNICAL VISUAL COMMUNICATION (3)
Three hours lecture/discussion per week
Prerequisite: none.
The focus of this course is two-fold. First, the student will research and write a presentation on a topic of his or her choice, suitable for a specific application (conference, meeting, etc.) and receive critiques from his or her peers and the professor. Second, the student will use that paper to form the basis of a visual presentation using up-to-date technology of various forms.
GenEd: A2

ENGL 484. TECHNICAL WRITING FOR THE SCIENCES (3)
Three hours lecture/discussion per week
Prerequisite: ENGL 330. For Technical Writing Certificate students, ENGL 482
Writing for the Sciences requires a specialized understanding of the process of writing as well as the content of the final essay or article. Students will learn to do research in specialized fields and to write for a variety of scientific journals and other publications.

ENGL 485. TECHNICAL WRITING PROJECT/SEMINAR (3)
Hours Variable
Prerequisite: ENGL 310, 330, 482, 483, and 484, and a passing portfolio of work from the prerequisite courses.
As the culmination of the Technical Writing certificate program, this course may be an internship, independent study, seminar or a project course. Projects will be devised in consultation with an advisor.

ENGL 494. INDEPENDENT STUDY/SENIOR RESEARCH (3)
Hours Variable
Prerequisite: senior status and consent of instructor.
Students may do an independent study to further coursework begun in other courses, obtain an internship which utilizes knowledge gained thus far, or do research in preparation for the senior project.

ENGL 499. CAPSTONE PROJECT/SENIOR SEMINAR (3)
Three hours lecture/discussion per week
Prerequisite: Senior status, a passing evaluation of the cumulative portfolio, and consent of instructor or advisor.
This course is an interdisciplinary experience in which students work in teams, contributing their expertise to a community-based group project.

ENVIRONMENTAL SCIENCE AND RESOURCE MANAGEMENT

ESRM 120. THE WORLD EATERS: CO-EVOLUTION OF HUMAN AND NATURAL SYSTEMS (3)
Three hours per week.
Prerequisite: None.
Are natural systems real, or have humans so altered the Earth to meet our needs that no purely natural systems survive? This course examines the human impact on the environment from the discovery of fire to the present, using case studies from throughout the world, including fire farming in Australia, deforestation in Africa, Asia, and America; human role in faunal and floral extinctions through time.
Same as ANTH 120.
GenEd-ID: D

ESRM 328. INTRODUCTION TO GEOGRAPHICAL INFORMATION SYSTEMS (3)
Two hours of lecture and one two-hour lab per week. Lab fee required.
Prerequisite: None
Introduction to fundamental concepts and techniques of geographic information systems, including problems of acquiring and processing machine-readable map data.

ESRM 330. ENVIRONMENTAL INSTITUTIONS, LAW AND REGULATION (3)
Two hours of lecture and one hour lab discussion per week.
Prerequisite: None
Political institutions, property rights, federal and state roles in decision-making, and challenges for environmental policy. Decision-making is examined in the context of the rights and limits of both private parties and the broad public interest. Emphasis is on the use of science in decision-making, choices between regulations and incentives, and the role of bureaucracy in resource policy. Examples of legal principles as applied to environmental regulation by federal and state governments. Case studies from air pollution, water pollution, land development, wetlands and coastal management.
GenEd-ID: D

ESRM 332. POPULATION AND RESOURCE CONSTRAINTS (3)
Three hours of lecture per week.
Prerequisite: None
This human ecology course places humans into the environment in historical and global contexts. Discusses systems theory as it applies to human adaptation to the environment. Studies the relations between political power, ideology, and resources, integrating concepts from ecology with those from social sciences. Theories and forecasts of human population growth and migration among regions and cultures. Social and environmental impacts of population and age distribution. Natural resource constraints on growth. Topics from land development, resource planning, environmental quality, politics, economic growth, conflicts and wars.
Same as ANTH 332.
GenEd-ID: D

ESRM 410. ENVIRONMENTAL IMPACT ANALYSIS (3)
Three hours of lecture per week.
Prerequisite: BIOL 330, ECON 362, ESRM 328 and 330
Required components of environmental impact reports and assessments, and the processes involved in preparation and approval. Problems related to environmental impacts, mitigation, alternatives, benefits, costs, and consequences.

ESRM 481. TOPICS IN ENVIRONMENTAL POLLUTION (3)
Three hours of lecture/discussion per week.
Prerequisite: BIOL 330 and 432, CHEM 250 and 251
Analysis of pollution transformation and transport. Impacts on human and natural systems. Examples from tropospheric air pollution, water pollution, soil pollution, climate change. May be repeated for credit, with permission.

ESRM 482. TOPICS IN ENVIRONMENTAL PLANNING & RESOURCE MANAGEMENT (3)
Three hours of lecture/discussion per week.
Prerequisite: BIOL 330, ECON 362, ESRM 330
Topics from land use planning and urban development, forest management, integrated water resource planning and demand-side management, surface water run-off, air quality management, coastal development and planning, marine protected area planning and management, preservation of cultural and natural heritage, recycling and waste management, and power plant siting. May be repeated for credit, with permission.

ESRM 483. TOPICS IN GLOBAL RESOURCE MANAGEMENT (3)
Three hours of lecture/discussion a week.
Prerequisite: BIOL 330, ECON 362, ESRM 330
International pollution and resource use. Topics from climate change, ocean resources, tropospheric air pollution, ozone depletion, water pollution, and water use. May be repeated for credit, with permission.

ESRM 490. SEMINAR (3)
Three hours per week.
Prerequisite: None.
This seminar explores a different topic each term. Students may enroll up to four times in different seminars.

ESRM 492. SERVICE LEARNING/INTERNSHIP (3)
Six hours per week.
Prerequisite: None.
Enrollment in this course is with permission of the faculty member in charge. Individual internship through service learning. Credit/No Credit.

ESRM 494. INDEPENDENT STUDY (3)
Variable hours per week.
Prerequisite: None.
Individual contracted study on topics or research selected by the student for further study. Enrollment in this course is with permission of faculty member in charge. Credit/No Credit.

ESRM 497. DIRECTED STUDY (3)
Variable hours per week.
Prerequisite: None.
Reading and library research under the direction of a faculty member. Enrollment in this course is with permission of the faculty member in charge. Credit/No Credit.

ESRM 499. CAPSTONE (3)
Two hours of lecture and one hour of discussion/field trips per week.
Prerequisite: Upper division required courses in the ESRM major
This course consists of an interdisciplinary evaluation of the physical, biological, social, economic, and legal dimensions of environmental decision-making. The instructor will select from Southern California ecosystems – and decisions with associated environmental impacts – for evaluation and analysis. Examples include decisions to reduce, control, or treat surface water run-off, establishing or changing the management of marine protected areas, dredging in harbors, and permits for coastal development. Students will transmit results to appropriate national, state, or local agencies for consideration and deliberation in administrative decisions.

FINANCE

FIN 343. CAPITAL THEORY (3)
Three hours per week.
Prerequisite: none
Intertemporal choice and decision-making under uncertainty in our personal and financial lives. Topics include multiperiod consumption, multiperiod production, capital budgeting, modern portfolio theory and financial management.
Same as ECON 343
GenEd-ID: D

GEOLOGY

GEOL 121. PHYSICAL GEOLOGY (4)
Three hours of lecture and one three-hour lab per week.
Prerequisite: none
This course examines the basic composition of the Earth and the dynamic forces which have altered the Earth's surface through time, including sedimentation, erosion, volcanism, earthquakes, plate tectonics, and mountain-building. Students will gain an appreciation for the immense processes affecting their environment. Lab fee required.
GenEd: B2

GEOL 122. HISTORICAL GEOLOGY (3)
Three hours lecture per week.
Prerequisite: none
This course focuses upon the geological history of the Earth and the Solar System from the origin of the cosmos to the explosion of Mt. St. Helens, tracing the evolution of the continents and ocean basins, and the broad development of plants and animals through time. Surveys events in Earth's past of relevance to present environmental issues.
GenEd: B2

GEOL 300. FOUNDATIONS OF EARTH SCIENCE (4)
Three hours lecture and one three-hour lab per week. Lab fee required.
Prerequisite: CHEM 170.
An analysis of the Earth's physical systems and the solar system/ universe. Selected topics include climates of the world, minerals and rocks, flood hazards, aspects of physical oceanography, plate tectonics, natural resources, and the motion of planets and planetary bodies.
GenEd: B2

GEOL 321. ENVIRONMENTAL GEOLOGY (3)
Three hours of lecture and three hours of laboratory per week.
Prerequisite: none
Interrelationships between human and natural geologic hazards: tsunamis, earthquakes, landslides, subsidence, volcanoes. Explores environmental impact of resource extraction and usage. Importance of understanding the geologic processes and landscape in land use planning. Means of using geology to minimize conflicts in resource management and disaster preparation.
GenEd: B2

GEOL 327. OCEANS AND THE GLOBAL ENVIRONMENT (3)
Three hours lecture per week.
Prerequisite: none
Oceanography is explored to present the student with an understanding of the interrelationship between oceans and global climate. Other topics include marine geology, plate tectonics, evolution of ocean basins, coastal erosion and sea level changes, energy resources.

HISTORY

HIST 211. WORLD HISTORY: ORIGINS TO 1500 (3)
Three hours lecture per week.
Prerequisite: completion of lower division writing requirement.
This survey examines world civilizations beginning with the Neolithic age. Topics include the development and growth of religions, economics,

and other cultural institutions.

HIST 212. WORLD HISTORY: SINCE 1500 (3)
Three hours lecture per week.
Prerequisite: completion of lower division writing requirement.
This survey examines world civilizations from both regional and global perspectives. The intellectual, political, and cultural development of nations will be among the major themes of the course.

HIST 270. THE UNITED STATES TO 1877 (3)
Three hours lecture per week.
Prerequisite: completion of lower division writing requirement.
Survey of the political, social, economic as well as cultural institutions of the United States from the pre-colonial era to reconstruction. Issues of multiculturalism, race, sexuality, and gender frame many of the problems examined in the course.

HIST 271. THE UNITED STATES SINCE 1865 (3)
Three hours lecture per week.
Prerequisite: completion of lower division writing requirement.
Survey of the political, social, economic as well as cultural institutions of the United States from the gilded age to the present. Issues of multiculturalism, race, sexuality, and gender frame many of the problems examined in the course.

HIST 331. HISTORY OF MATHEMATICS (3)
Three hours lecture per week.
Prerequisite: completion of lower division writing requirement.
Study of breakthrough mathematical ideas and their creators, including historical and scientific context. Important concepts of current mathematics are studied: inception, development, difficulties, significance and various viewpoints will be presented. Lecture-discussion. At least one significant writing assignment is required.
Same as MATH 331.
GenEd-ID: B3, D

HIST 333. HISTORY OF SOUTHERN CALIFORNIA CHICANA/O ART (3)
Three hours lecture per week.
Prerequisite: completion of lower division writing requirement.
A survey of the Southern California Chicana/o culture exploring the genesis, vitality and diversity represented in the painting, sculpture and artistic traditions of Mexican American artists. Historical movements, politics, cultural trends and Mexican folklore underlying the development of this dynamic style of art will be investigated within a variety of contexts.
Same as ART 333.
GenEd-ID: C1, C3

HIST 334. NARRATIVES OF SOUTHERN CALIFORNIA (3)
Three hours lecture per week.
Prerequisite: completion of lower division writing requirement.
Ours is a region made up of many cultures which produce the one we call "Southern Californian." In this class we will take a historical approach to study of the narratives--oral, written and filmed--of Southern California. Course work may also include obtaining oral histories and compiling them.
Same as ENGL 334.
GenEd-ID: C3

HIST 335. AMERICAN ETHNIC IMAGES IN NOVELS, FILM AND ART (3)
Three hours lecture per week.
Prerequisite: completion of lower division writing requirement.
American Ethnic Images in Novels and Film examines the portrayal of ethnic groups from an interdisciplinary perspective that includes, but is not limited to, literary, historical, and artistic modes of analysis. The course highlights the ways in which artistic works have shaped the intellectual landscape of the United States as they relate to ethnic peoples.
Same as ART 335, ENGL 335
GenEd-ID: C3, D

HIST 349. HISTORY OF BUSINESS & ECONOMICS IN NORTH AMERICA (3)
Three hours per week.
Prerequisite: none
Examines the growth and development of the economies of North America since colonial times. Addresses social, ethical, economic and management issues during the development of Canada, the United States, and Mexico. Analyzes the business principles underlying the growth and development of the economies.
Same as BUS 349.
GenEd-ID: D

HIST 350. CHICANO HISTORY AND CULTURE (3)
Three hours lecture per week.
Prerequisite: completion of lower division writing requirement.
An examination of the settlement and culture of Mexicanos in the United States to the present. Particular attention is given to the relationship of Mexicanos to the political and economic institutions of the United States.

HIST 365. THEMES IN WORLD CIVILIZATION BEFORE 1500 (3)
Three hours lecture per week.
Prerequisite: completion of lower division writing requirement.
Compares and contrasts the cultural, economic, political, and social development of World Civilizations before 1500.

HIST 366. THEMES IN WORLD CIVILIZATION SINCE 1500 (3)
Three hours lecture per week.
Prerequisite: completion of lower division writing requirement.
Compares and contrasts the cultural, economic, political, and social development of World Civilizations since 1500.

HIST 369. CALIFORNIA HISTORY AND CULTURE (3)
Three hours lecture per week.
Prerequisite: completion of lower division writing requirement.
Examines the cultural and institutional development of California prior to the 16th century and since.

HIST 370. UNITED STATES COLONIAL HISTORY (3)
Three hours lecture per week.
Prerequisite: completion of lower division writing requirement.
Examines the European colonization of the United States from the 1600s to the French and Indian War. The transformation of social, political, and cultural institutions of Europe in North America are studied.

HIST 371. THE FOUNDING OF THE UNITED STATES (3)
Three hours lecture per week.
Prerequisite: completion of lower division writing requirement.
Study of the Revolutionary era and its influence on the constitution of the nation politically as well as socially.

HIST 372. UNITED STATES INDUSTRIALIZATION AND PROGRESSIVISM (3)
Three hours lecture per week.
Prerequisite: completion of lower division writing requirement.
This course examines the nation's geographic and industrial expansion. Social and political problems are concurrently examined to the end of World War I.

HIST 374. UNITED STATES SINCE1945 (3)
Three hours lecture per week.
Prerequisite: completion of lower division writing requirement.
Examines the social and political movements of the nation after World War II. Among the various topics of the course, specific attention is given to how international affairs influenced domestic policy politically as well as socially.

HIST 401. UNITED STATES IMMIGRATION HISTORY, 1840-1945 (3)
Three hours lecture per week.
Prerequsites:None
Examines the experiences and contributions of immigrant groups in the United States. Constitutional, political, and social considerations of United States immigrant history frames the content study of this course.

HIST 402. SOUTHERN CALIFORNIA HISTORY AND CULTURE (3)
Three hours lecture per week.
Prerequisite: completion of lower division writing requirement.
Examines the cultural, economic, political, and social experience of Mexicanos of the region since the American conquest to the 1990s. Particular attention is given to the interactions of this community with other ethnic and racial groups. Although designed within the disciplinary framework of history, the course utilizes literature, film, and art as mediums of learning about the culture and history of Chicanos. (G.E.)

HEALTH

HLTH 322. HEALTH FOR EDUCATORS (2)
Prerequisite: none
Survey of school health programs with in-depth study of selected health education curricula and topic areas, including alcohol, tobacco, drugs, communicable diseases and nutrition. Development of strategies and methods for teaching controversial areas.

HLTH 344. HEALTH PSYCHOLOGY (3)
Prerequisite: none
This course will focus on those areas of psychology which relate to health and medicine including, mind-body interactions, Psychoneuroimmunology, psychology as it relates to nutrition, psychology as it relates to illness, and behavioral medicine.
Same as PSY 330
GenEd-ID: E

LIBERAL STUDIES

LS 392. INTERNATIONAL EXPERIENCE (1-3)
Prerequisite: none
Provides an opportunity for students to earn credit for travel and study in a country outside the US, where the student is immersed in a foreign language and culture. A student may, in consultation with a faculty advisor, obtain credit for his or her international experience by participating in a university-sponsored trip abroad or a personal trip abroad. In either case, a plan of study must be approved by the faculty advisor prior to the experience.
GenEd: C3

LS 492. INDEPENDENT RESEARCH (1-3)
Prerequisite: Upper Division Standing in the Liberal Studies Major.
Students design and implement a study project in conjunction with a faculty member.

LS 494. SERVICE LEARNING/INTERNSHIP (1-3)
Prerequisite: Upper Division Standing required in the Liberal Studies Major.
Students design a community project, individually or in small group, related to areas studied in Liberal Studies major. The project must respond to a community need, involve participants in reciprocal activities, provide opportunities for student's on-going reflection, and evaluate the activity.

LS 497. DIRECTED STUDIES (1-3)
Prerequisite: Upper Division Standing in the Liberal Studies Major.
Supervised project involving research or creative activity related to Liberal Studies.

LS 499. CAPSTONE PROJECT (1-3)
Prerequisite: Senior Standing in the Liberal Studies Major.
Provides an integration of prior subject matter by requiring teams of students to design, enlighten, and/or solve a problem. Also, provides interdisciplinary exposure to complex issues using Web, library and community-based analytical processes.

MATHEMATICS

The University entrance requirements for freshmen (two years of high school algebra and one year of geometry) and a passing score on the Entry Level Mathematics (ELM) Examination or an approved exemption are the basic prerequisites to all math courses. Additional prerequisites may be listed in the course descriptions that follow.

MATH 101. COLLEGE ALGEBRA (3)
Three hours of lecture in the lab per week.
Basic set theory, number systems and their algebraic properties; systems of equations and inequalities; basic analytic geometry, matrix algebra and elementary functions. Problem solving.

MATH 105. PRE-CALCULUS (4)
Three hours of lecture in the lab per week.
Number systems and their algebraic properties; systems of equations and inequalities; basic analytic geometry of lines and conic sections; elementary functions including polynomial, rational, exponential, and logarithmic, with emphasis on trigonometric functions, fundamental theorem of algebra and theory of equations; polar equations and curves.

MATH 108. MATHEMATICAL THINKING (3)
Three hours of lecture in the lab per week.
A course presents the diversity of mathematics and the spirit in which it is employed in various situations, including different problem solving strategies, inductive- deductive reasoning, paradoxes, puzzles and mathematical modeling. The contributions of various cultures and influences of other disciplines are studied. At least one significant writing assignment is required.
GenEd: A3, B3

MATH 140. CALCULUS FOR BUSINESS APPLICATIONS I (3)
Three hours of lecture in the lab per week.
Prerequisite: A passing score on the Entry Level Mathematics Examination, or credit in Math 105.
An integrated course in analytic geometry and calculus in the context of business and economics applications. Functions, limits, derivatives, integrals and mathematical modeling are used in problem solving in decision making context.
GenEd: B3

MATH 150. CALCULUS I (4)
Three hours of lecture in the lab per week.
A course in analytic geometry and calculus. Elementary and transcendental functions are introduced and their properties are studied, limits, derivatives, integrals and mathematical modeling are used in problem solving in sciences.
GenEd: B3

MATH 151. CALCULUS II (4)
Three hours of lecture in the lab per week.
Prerequisite: MATH 150 with a Grade of C or better.
Includes the study of differentiation, integration, sequences, infinite series, and power series.

MATH 202. BIOSTATISTICS (4)
Three hours of lecture in the lab per week.
Prerequisite: A passing score on the Entry Level Mathematics Exam or credit in MATH 105.
Introduction to modern statistical methods in biosciences, especially in studies of population and experimental data analysis. Descriptions of sample data, probability, theoretical frequency distributions, sampling, estimation, testing hypotheses. Course will include treatment of quantitative data, problems and problem-solving techniques, and use of technology in statistics.
Same as BIOL 202.
GenEd-ID: A3

MATH 208. MODERN MATH FOR ELEMENTARY TEACHERS I- NUMBERS AND PROBLEM SOLVING (3)
Three hours of lecture in the lab per week.
Current issues of modern math curriculum including abstract thinking and problem solving approaches to teaching. Content covers systems of numeration, nature of numbers and fundamental operations, relations and functions, properties of integers, rational and real numbers, and mathematical modeling. Problem solving strategies and geometric interpretations are stressed. Designed for students intending to teach in K-8. This course is not open to students who have credit for Calculus.
GenEd: B3

MATH 230. LOGIC (3)
Three hours of lecture in the lab per week.
Introduction to modern deductive logic. Critical thinking and abstract approach to common language. Includes abstract sets and number sets, relations, prepositional logic- including common language cases, and theory of quantification.
GenEd: A3

MATH 240. INTRODUCTION TO LINEAR ALGEBRA (3)
Three hours of lecture in the lab per week.
Prerequisite: Completion of MATH 151.
Vector spaces, linear transformations, orthogonality, characteristic polynomial, quadratic forms, spectral decomposition.

MATH 250. CALCULUS III (3)
Three hours of lecture in the lab per week.
Prerequisite: Completion of MATH 151 with a grade of C or better.
Functions of several variables, solid analytic geometry, partial differentiation, multiple integrals with applications. Vector analysis, line and surface integrals.

MATH 300. DISCRETE MATHEMATICS (3)
Three hours of lecture in the lab per week.
Prerequisite: MATH 151 and MATH 230.
Sets, algebraic systems, axioms, definitions, propositions and proofs. Combinatorics, graph theory, moduli calculus. Coding, coding errors and Hamming codes. Students are expected to write mathematical proofs, and communicate mathematical ideas clearly in written and oral form.

MATH 308. MODERN MATHEMATICS FOR ELEMENTARY SCHOOL TEACHERS II- GEOMETRY, PROBABILITY AND STATISTICS (3)
Three hours of lecture in the lab per week.
Current issues of modern math curriculum including abstract thinking and problem solving approaches to teaching. Content covers systems of geometry and geometric interpretation of real numbers, geometric constructions, mathematical modeling, basic probability and statistics. Problem solving strategies are stressed. Designed for students intending to teach.

MATH 318. MATHEMATICS FOR SECONDARY SCHOOL TEACHERS II- GEOMETRY, PROBABILITY AND STATISTICS (3)
Three hours of lecture in the lab per week.
Current issues of modern secondary school math curriculum including abstract thinking and problem solving approaches to teaching. Content covers systems of geometry, algebra, precalculus, calculus, probability and statistics. Designed for students intending to teach.

MATH 330. MATHEMATICS FOR ARTISTS (3)
Three hours of lecture in the lab per week.
The course is specially designed for students interested in fine arts, with the emphasis on understanding geometric patterns and concepts by self-explorations. Instead of concentrating on abstraction, the course creates a vast reservoir of art-related examples and hands-on experiences, and will give an innovative mathematical background for future artistic endeavors of students.
GenEd: B3, A1

MATH 331. HISTORY OF MATHEMATICS (3)
Three hours of lecture in the lab per week.
Study of breakthrough mathematical ideas and their creators, including historical and scientific context. Important concepts of current mathematics are studied: inception, development, difficulties, significance and various viewpoints will be presented. Lecture-discussion. At least one significant writing assignment is required.
Same as HIST 331.
GenEd-ID: B3, D

MATH 340. STATISTICS FOR BUSINESS AND ECONOMICS (3)
Three hours of lecture in the lab per week.
Introduction to modern statistical methods used in business analysis and economics, especially in experimental data evaluation and decision making contexts. Topics include: sampling, probability, various distributions, correlation and regression, statistical inferences, hypothesis testing, problem solving and the consequences to underlying economical systems. Includes a project in the community.
GenEd: A3, B3

MATH 342. PROBABILITY AND STATISTICS (3)
Three hours of lecture in the lab per week.
Prerequisite: MATH 151.
Data gathering, analysis and display. Validity of sampling methods and statistical conclusions. Probability, conditional probability, Bayes' Theorem, discrete and continuous random variables and their distribution (e.g., binomial, Poisson, hypergeometric, negative binomial, normal, exponential, gamma), moments, bivariate distributions, transformations of random variables, central and other limit theorems. Bayesian estimates, tests of hypotheses, nonparametric tests, decision theory. Modern computer software applications in statistics.
GenEd: A3, B3

MATH 344. ANALYSIS OF ALGORITHMS (3)
Three hours of lecture in the lab per week.
Prerequisite: MATH 300 and some computer programming experience.
Computer oriented study of seminumerical and non-numerical algorithms. Sorting, tree searching, generation of combinatorial structures, algorithm proof techniques, best algorithms, programming complexity, string matching.
GenEd: B3

MATH 346. SCIENTIFIC AND PROFESSIONAL ETHICS (3)
Three hours of lecture in the lab per week.
Examines the sources, fundamental principles, and applications of ethical behavior; the relationship between personal ethics and social responsibility of organizations; and the stakeholder management concept. Applies ethical principles to different types of organizations: business, non-profits, government, health care, science/technology, and other professional groups. Emphasizes cases to explore ethical issues.
Same as BIOL346, MGT 346, CHEM 346
GenEd-ID: A3, D

MATH 350. DIFFERENTIAL EQUATIONS AND DYNAMICAL SYSTEMS (3)
Three hours of lecture in the lab per week.
Prerequisite or Corequisite: MATH 250.
Ordinary differential equations, existence and uniqueness of solutions. Linear equations. Laplace methods. Flows and diffeomorphisms, limit sets, iterations of maps. Positive entropy systems, chaotic behavior of trajectories.

MATH 351. REAL ANALYSIS (3)
Three hours of lecture in the lab per week.
Prerequisite or Corequisite: MATH 250
Real number system, metric spaces, norms, function spaces. Continuity, differentiability, integrability of functions. Sequences and series.

MATH 393. ABSTRACT ALGEBRA (3)
Three hours of lecture in the lab per week.
Prerequisite: MATH 300.
Rings, modules, fields and their extensions. Groups and group actions, crystallographic groups.

MATH 430. RESEARCH DESIGN AND DATA ANALYSIS (3)
Three hours of lecture in the lab per week.
Prerequisite: MATH 324 or MATH 202
Experimental design, sampling methods, sampling distributions and statistical conclusions in biomedical fields. Bayesian estimates, tests of hypotheses, nonparametric tests. Regression and correlation. Replication, experimental errors, randomization. Modern computer software applications in statistics.
Same as BIOL 430, CHEM 430.
GenEd-ID: B1, B3

MATH 440. OPERATIONS RESEARCH (3)
Three hours of lecture in the lab per week.
Prerequisite: Course in statistics.
Introduction to applied mathematical methods in management sciences. Topics include linear programming, managerial optimization methods, duality and equilibrium theorems, the simplex method, development of tools and methods required to make decisions and to solve operational problems in economy, decision and risk analysis, modeling and game theory. Other topics selected from parametric programming, large scale methods, generalized programming.
GenEd: B3, D

MATH 450. PARTIAL DIFFERENTIAL EQUATIONS AND MATHEMATICAL PHYSICS (3)
Three hours of lecture in the lab per week.
Prerequisite: MATH 350 or consent of instructor. Vector field theory, Fourier series.

MATH 451. NUMERICAL ANALYSIS (3)
Three hours of lecture in the lab per week.
Prerequisite: MATH 350 and COMP 151.
Techniques of applied mathematics, solution of equations, finite differences, wavelets.

MATH 452. COMPLEX ANALYSIS (3)
Three hours of lecture in the lab per week.
Prerequisite: MATH 250.
Complex variable, analytic functions, complex integration, power series and conformal mappings.

MATH 480. DIFFERENTIAL AND RIEMANNIAN GEOMETRY (3)
Three hours of lecture in the lab per week.
Prerequisite: MATH 351.
Implicit Function theorem. Reimannian manifolds, curvature, local isometries. Gauss- Bonnet Theorem.

MATH 482. NUMBER THEORY AND CRYPTOGRAPHY (3)
Three hours of lecture in the lab per week.
Prerequisite: MATH 300.
Unique factorization theorem, congruencies, primitive roots and indices, quadratic residues and the law of quadratic reciprocity, distribution of primes. Cryptography.

MATH 484. ALGEBRAIC GEOMETRY AND CODING THEORY (3)
Three hours of lecture in the lab per week.
Prerequisite: MATH 393
Study of algebraic varieties over algebraically closed fields. Modern application to coding theory.

MATH 490. TOPICS IN MODERN MATHEMATICS (3)
Prerequisite: Junior standing.
New developments in mathematics.

MATH 492. INTERNSHIP (3)
Prerequisite: Junior standing and Program approval of written proposal of internship studies.
Supervised work and study in industrial or scientific setting involving development of degree related skills. All students are required to present their projects at the Senior colloquium. Graded credit/no credit.

MATH 494. INDEPENDENT RESEARCH (3)
Prerequisite: Senior standing and Program approval of written proposal of independent research studies.
Supervised project involving theoretical research in the field of mathematics or its applications. All students are required to present their projects at the Senior Seminar.

MATH 497. DIRECTED STUDY (3)
Prerequisite: Senior standing and Program approval of written proposal of directed studies.
Supervised project involving library research. All students are required to present their projects at the Senior Seminar.

MATH 499. SENIOR COLLOQUIUM (1)
Prerequisite: Senior standing.
Oral presentation of current advancements in the field, reports on students' projects, and invited lectures. Repeatable.

MANAGEMENT

MGT 307. MANAGEMENT OF ORGANIZATIONS (3)
Three hours per week.
Prerequisite: none
Explores the fundamental concepts of managing people within an organizational context. Uses cases and in-class exercises to present management principles. Topics include planning, staffing, directing, measuring and controlling.

MGT 310. MANAGEMENT OF INTERNATIONAL BUSINESSES (3)
Three hours per week.
Prerequisite: none
Identification and analysis of management systems in cross-border environments. Explores the impact of economic, social, cultural political variables on the conduct of profit-making business. Extensive use of case analysis; and a "country study" project.

MGT 325. ENTREPRENEURIAL MANAGEMENT (3)
Three hours per week.
Prerequisite: none
Explores the management of start-up and small businesses. Concentrates on initial strategy, location, financing, staffing, daily activities and controls, taxes. Students develop a business plan for a small business.

MGT 346. SCIENTIFIC & PROFESSIONAL ETHICS (3)
Three hours per week.
Prerequisite: none
Discussion of ethical issues and societal challenges derived from scientific research and professional activities. Examines the sources, fundamental principles, and applications of ethical behavior; the relationship between personal ethics and social responsibility of organizations; and the stakeholder management concept. Applies ethical principles to different types of organizations: business, non-profits, government, health care, science/technology, and other professional groups. Emphasizes cases to explore ethical issues.
Same as BIOL 346, CHEM 346, MATH 346.
GenEd-ID: A3, D

MGT 421. HUMAN RESOURCE MANAGEMENT (3)
Three hours per week.
Prerequisite: MGT 307
Principles, methods and procedures in the management of human resources. Topics include developing planning objectives for HR management, legal compliance, job analysis, recruiting, selection, training, compensation and employee relations.

MGT 425. MANAGEMENT OF EDUCATIONAL ORGANIZATIONS (3)
Three hours per week.
Prerequisite: MGT 307
Explores the principles of management of organizations and applies them to the unique environment of educational organizations. Topics include design and management of educational programs, goal setting and budgeting, resource management, differentiated staffing, performance measurement and special problems in school administration.

MGT 426. MANAGEMENT OF HEALTHCARE ORGANIZATIONS (3)
Three hours per week.
Prerequisite: MGT 307
Explores the principles of management of organizations and applies them to the unique environment of healthcare organizations. Topics include volatile environment, escalating costs, identification of stakeholders, organizational design, use of technology, quality control, and special issues in healthcare management (bio-ethics, chemical dependency, stress, workforce diversity).

MGT 427. MANAGEMENT OF NOT-FOR-PROFIT ORGANIZATIONS (3)
Three hours per week.
Prerequisite: MGT 307
Explores the principles of management of organizations and applies them to the unique environment of not-for-profit organizations. Topics include differences with profit-making organizations, identification of stakeholders, organizational and governance structure, financial sources, reward processes and accountability measures.

MARKETING

MKT 310. PRINCIPLES OF MARKETING (3)
Three hours per week.
Prerequisite: none
Presents and analyzes the fundamental principles of modern marketing: planning, pricing, distribution, and promotion. Applies the principles to products and services. Topics include market research, consumer behavior and market success measures. Focuses on domestic and international markets.

MUSIC

MUS 333. VARIETIES OF MUSICAL EXPERIENCES (3)
Three hours per week.
Prerequisite: none
The study of music in its cultural and historical contexts, with an emphasis on the role of music as a form of human expression. A broad range of musical styles will be studied, including, but not limited to, European, Asian, and Middle Eastern classical music; American jazz and popular music; and folk music of Western and non-Western cultures. Students will study the unifying and authenticating nature of music within groups of people, as well as study the experience of music on a personal level.

MUS 432. ARTS OF THE HARLEM RENAISSANCE (3)
Three hours lecture per week.
Prerequisite: Upper division standing
Study focusing on the dramatic upsurge of creativity in art, music and literature resulting from social and political undercurrents in the African American cultural revolution in New York during the 1920s. Historical geneses and subsequent artistic legacies will be also be explored.
Same as ENGL 432, ART 432.
GenEd-ID: C1, C3

PHYSICAL EDUCATION

PHED 101. WALKING FOR HEALTH (1)
Three hours per week.
Prerequisite: none
Knowledge of cardiovascular fitness, including walking as aerobic exercise. Physical development through cardiovascular training, muscle strengthening, and stretching.

PHED 102. SEMINAR IN TRADITIONAL ASIAN MARTIAL ARTS - TAI JI (1)
Three hours per week.
Prerequisite: none
Development of personal skills in traditional martial and health arts. Understanding history, cultural background, patterns, and strategies for participation in and effects on personal health.

PHED 103. YOGA (1)
Three hours per week.
Prerequisite: none
Development of personal skills in yoga. Understanding of effects on strength, flexibility and mind body connections.

PHED 105. ZEN OF SURFING (1)
Three hours per week.
Prerequisite: none
Exploration into the physiological and psychological benefits that result from human interaction with forces of nature. Students develop an increased understanding of the ocean and complex dynamics that underlie the sport of surfing. The interrelationship between physical activity and personal aesthetics are explored through weekly surfing activities.

PHED 302. MOTOR LEARNING, FITNESS AND DEVELOPMENT IN CHILDREN (2)
Three hours per week.
Prerequisite: none
Factors affecting motor learning; theories of learning and their application to the learning of physical skills; motor learning at beginning through advanced skill levels; health, fitness and activities for children; planning and teaching age appropriate developmental movement experiences.

PHYSICS

PHYS 200. GENERAL PHYSICS I (4)
Three hours of lecture and one three-hour lab per week. Lab fee required.
Prerequisite: MATH 150
An introduction to the properties of matter, classical mechanics, wave motion and thermal physics.
GenEd: B2

PHYS 201. GENERAL PHYSICS II (4)
Three hours of lecture and one three-hour lab per week. Lab fee required.
Prerequisite: PHYS 200
An introduction to electromagnetic theory, light, and atomic and nuclear physics.
GenEd: B2

PSYCHOLOGY

PSY 100. INTRODUCTION TO PSYCHOLOGY (3)
Three hours lecture per week.
Prerequisite: none
The purpose of this course is to introduce the theories, research and applications that constitute the field of psychology as it is broadly defined. Students will learn about the field of psychology through lectures, discussions, demonstrations, group activities, and multi-media presentations. Emerging issues in the field of psychology, what different types of psychologists do, and how to critically evaluate psychological literature will be covered.
GenEd: E

PSY 200. HISTORY AND SYSTEMS OF PSYCHOLOGY (3)
Three hours lecture per week.
Prerequisite: Psychology major
This course examines the historical development of psychological thought and methodology from its origins in philosophy, its attempts to become a natural science, through the diaspora of contemporary psychological thought. The major schools of psychology (e.g., Behaviorism, Cognitive, Gestalt, Humanistic, Psychoanalysis), will be explored in context of their philosophical and cultural influences.

PSY 210. LEARNING, COGNITION AND DEVELOPMENT (3)
Three hours lecture per week.
Prerequisite: none
This course presents an overview of the theories of learning and human development. Major theories of learning and of psychological, emotional, and ethical development will be addressed across the lifespan from birth to old age, with consideration given to the application of these theories in real life setting such as schools and other organizations.
GenEd: E

PSY 212. NEUROBIOLOGY AND COGNITIVE SCIENCE (3)
Three hours lecture per week.
Prerequisite: BIOL 100
Principles of brain organization and function underlying behavior. Topics include neuroanatomy and physiology of language, vision, sexual behavior, memory and abnormal behavior.
Same as BIOL 212.
GenEd-ID: B1

PSY 215. COGNITION AND LEARNING (3)
Three hours lecture per week.
Prerequisite: PSY 300 / equivalent or consent of instructor
This courses examines psychological theories of cognition as they apply to learning. Theories introduced in this course will seek to explain learning phenomena and provide a conceptual framework for understanding and discussing behavior and cognition. Practical applications and current research in the cognitive sciences will also be discussed.

PSY 220. HUMAN SEXUAL BEHAVIOR (3)
Three hours lecture per week.
Prerequisite: none
This course covers knowledge about the processes and variations in: sexual functions and reproduction; intimate relationships; sexual and gender role development and behavior; and the social, cultural, historical and moral contexts of sex and love.
GenEd: E

PSY 330. HEALTH PSYCHOLOGY (3)
Three hours lecture per week.
Prerequisite: none
This course will focus on those areas of psychology which relate to health and medicine including, mind-body interactions, Psychoneuroimmunology, psychology as it relates to nutrition, psychology as it relates to illness, and behavioral medicine.
Same as HLTH 344.
GenEd-ID: E

PSY 333. MEASUREMENT AND TESTING OF GROUPS AND INDIVIDUALS (3)
Three hours lecture per week.
Prerequisite: none
This course covers the principles of measurement as applied to group standardized measures of achievement, special aptitude, intelligence, personality, and interest for use in educational settings. This course will also survey the administering, scoring, and interpreting of these measures. Language and culture issues related to testing will be discussed.

PSY 338. PSYCHOLOGY OF ART AND ARTISTS (3)
Three hours lecture per week.
Prerequisite: none
An inquiry into the mind of the artist and the emotional dynamics that underlie the creative process. Emphasis is placed on deciphering personal allegory and universal symbolism hidden within a wide range of

visual and conceptual genres. Concepts underlying the evolution of artistic style, spirituality, and aesthetics in traditional Eastern and Western cultures will also be examined.
Same as ART 338.
GenEd-ID: C1, E

PSY 339. PSYCHOPATHOLOGY IN LITERATURE (3)
Three hours lecture/discussion per week.
Prerequisite: ENGL 100 or equivalent
This course is co-developed and co-taught by faculty from Psychology and English. Human psychology and its manifestations in literature are the topics of the course, and students will use skills from both disciplines to address the ideas and issues presented by the literature.
Same as ENGL 339.
GenEd-ID: C2, E

PSY 341. CULTURE AND PERSONALITY (3)
Three hours lecture per week.
Prerequisite: none
This course provides a cross-cultural perspective on the relationships between culture and personality. The nature/nurture debate is examined in different cultures.
Same as ANTH 341.
GenEd-ID: D, E

PSY 344. PSYCHOLOGY AND TRADITIONAL ASIAN THOUGHT (3)
Three hours lecture per week.
Prerequisite: consent of instructor
This course examines the differences and similarities between the Western practice of psychology and traditional Asian systems of philosophy and religion. Concepts of health, well-being & enlightenment, and pathology will be considered from both Western and Asian viewpoints. Particular attention will be given to Buddhism, Taoism, and depth psychologies. Readings will be drawn from classical Asian literature as well as contemporary psychology. Mediation and other practices will be explored the context of Western Psychology.
GenEd-ID: E

PSY 345. INDIVIDUALS WITH DISABILITIES AND SOCIETY (3)
Three hours lecture per week.
Prerequisite: none
Major types of disabilities and giftedness, including definitions, causes, characteristics, and educational implications. Disability perspectives. Social, legal, and educational considerations of disability issues.
Same as SPED 345

PSY 349. TRADITIONAL AND ALTERNATIVE VIEWS OF HEALING (3)
Three hours lecture per week.
Prerequisite: none
This course surveys the history and cultural contexts of health and healing from around the world. Through presentations of different medical traditions, the psychological, cultural, practical, and spiritual dimensions of traditional and alternative healing systems will be elucidated. When appropriate the empirical, theoretical and scientific foundations of selected healing systems will be discussed. This course will also attempt to place traditional Western modes of healing including biomedicine and clinical psychology in context of some of the other traditions.

PSY 350. CLINICAL AND COUNSELING PSYCHOLOGY (3)
Three hours lecture per week.
Prerequisite: PSY 300 / equivalent or consent of instructor
This course introduces students to the clinical practice of psychology. The major theories of psychotherapy and the process of psychotherapy will be covered as well as other modalities for the treatment of mental and behavioral disorders such as learning therapies and psychopharmacology. The course will also seek to develop an awareness of ethnic and cultural differences related to the practice of psychology.

PSY 355. ORGANIZATIONAL AND INDUSTRIAL PSYCHOLOGY (3)
Three hours lecture per week
Prerequisite: PSY 300 or consent of instructor
This course surveys the field of industrial/organizational Psychology. Subfields of personnel psychology, human factors engineering, industrial social, and industrial clinical Psychology will be viewed from practical and theoretical perspectives. The course will also cover concepts of organizational development, communication, and corporate group behavior.

PSY 457. CRIMINAL BEHAVIOR (3)
Three hours lecture per week.
Prerequisite: PSY 300 / equivalent or consent of instructor
This course introduces students to the fundamentals of criminal psychology through the study of the psychological factors which relate to or cause criminal behavior in individuals. The practice of forensic psychology, the legal system, law enforcement psychology, prison psychology, and the criminal behavior of groups will also be discussed.
GenEd: E

PSY 461. ADVANCED TOPICS IN CHILD AND ADOLESCENT DEVELOPMENT (3)
Three hours lecture per week.
Prerequisite: Previous course in developmental psychology or consent of instructor
This course represents an in-depth study of aspects of growth and development which influence behavior of school-age children and adolescents. Using primary sources and current research findings students will gain an understanding of research methods in child development and a critical appreciation of the practice of child psychology. Different areas of child and adolescent development will be considered from cross-cultural perspectives.

PSY 473. BIZARRE BEHAVIOR AND CULTURE BOUND SYNDROMES (3)
Three hours lecture per week.
Prerequisite: PSY 350 or previous course in clinical or counseling psychology or consent of instructor
This course examines behaviors which seem to be at the extreme edge of the human repertoire. Nevertheless, such behaviors have at different times and cultures been considered normal. Students in this course will examine such behaviors with an open mind, while attempting to understand that so-called normal behaviors in our own culture could be construed as “bizarre”.
GenEd: E

PSY 482. SEMINAR IN QUANTITATIVE METHODS (3)
Three hours lecture per week.
Prerequisite: Consent of instructor
This course examines the application of various quantitative methodologies in detail. Topics can vary but may include non-parametric methods such as logistic, survival analysis, and non-linear regression.

PSY 483. QUALITATIVE RESEARCH METHODS IN THE SOCIAL SCIENCES (3)
Three hours per week.
Prerequisite: none.
This course provides the student with an understanding of how social scientists collect and analyze data. Explores methods and procedures used in anthropology research, including creating a research design, interviewing, cross-verifying data, and interpreting data. This course also details the various methods employed by ethnographers, folklorists, and

oral historians in collecting oral testimony in a structured, systematic method. Particular attention is given to ethical and legal issues.
Same as ANTH 483.

PSY 489. ADVANCED TOPICS IN PSYCHOLOGY (1-3)
Three hours lecture per week.
Prerequisite: PSY 300 / equivalent or consent of instructor
A seminar course, which provides an in-depth study of some aspect of psychology. Content varies and so the course is repeatable.

PSY 492. PSYCHOLOGICAL INTERNSHIP OR SERVICE LEARNING (1-3)
Three hours lecture per week
Prerequisite: Consent of instructor.
Supervised work/volunteer experience in an appropriate setting with supervision in the field from an appropriate person with credentials and/or experience in a specialty related to psychology. Students are required to write a report of their experience.

PSY 494. INDEPENDENT RESEARCH IN PSYCHOLOGY (1-3)
Three hours lecture per week
Prerequisite: Consent of instructor.
Research project for undergraduate students supervised by members of the psychology faculty. Research to be elected on basis of interest of student. A written report of the research is required.

PSY 497. DIRECTED STUDY IN PSYCHOLOGY (1-3)
Three hours lecture per week
Prerequisite: Consent of instructor.
An intensive study of some aspect of psychology, Usually via an in-depth review of the literature. Intended for undergraduate students supervised by members of the psychology faculty. A written report summarizing the study is required.

PSY 499. SENIOR CAPSTONE COURSE (1-3)
Three hours lecture per week
Prerequisite: Senior standing as a Psychology student.
This course is an interdisciplinary experience in which students work in teams, contributing their expertise to a community-based project group.

SPECIAL EDUCATION

SPED 345. INDIVIDUALS WITH DISABILITIES IN SOCIETY (3)
Prerequisite: none
Major types of disabilities and giftedness, including definitions, causes, characteristics, and educational implications. Disability perspectives. Social, legal, and educational considerations of disability issues.
GenEd: D

THEATRE

TH 333. MULTICULTURAL DRAMA IN PERFORMANCE/ PRODUCTION (3)
Prerequisite: none
America is a country of many cultures, and each of these has brought legacies of its roots to the American stage. In this course we will read plays written by Native Americans, Hispanic Americans, Asian Americans, African Americans and others. We will also stage mini-productions of one or more of those plays.
Same as ENGL 333.
GenEd-ID: C2, C3

TH 410. SHAKESPEARE'S PLAYS (3)
Prerequisite: one writing course and one upper division literature course.
Study of the many aspects of Shakespeare's plays as literature— language, context, form and style—as well as the ways in which these elements work as parts of a whole, which includes spoken speech and other sounds as well as physical form and movement. Choices are: Shakespeare's Early Plays (pre-1600) and Shakespeare's Later Plays (post-1600). Repeatable by topic
Same as ENGL 410.