

BIOL 291. Biology Laboratory (1) I, II

Prerequisites: Recommendation by department and consent of instructor.

Special course to allow makeup of program laboratory deficiencies. Student will be assigned to a laboratory section of the appropriate course.

- A. Laboratory for Biology 201A. (Formerly numbered Biology 291B.)
- B. Laboratory for Biology 201B. (Formerly numbered Biology 291A.)
- C. Laboratory for Biology 215.

BIOL 296. Experimental Topics (1-4)

Selected topics. May be repeated with new content. See Class Schedule for specific content. Limit of nine units of any combination of 296, 496, 596 courses applicable to a bachelor's degree.

BIOL 299. Special Study (1-3)

Individual research experience and interaction with researchers at an introductory level. Projects involve approximately 45 hours of laboratory or fieldwork per unit and a research report. Hours are flexible and arranged between the student and the researcher. Maximum credit four units.

**UPPER DIVISION COURSES
(Intended for Undergraduates)**

Writing Requirement: Completion of the Graduation Writing Assessment Requirement or the eligibility to enroll in an upper division writing course is a prerequisite for all upper division biology courses numbered 450 and above.

BIOL 305. Scientific Scuba Diving (3)

Two lectures and three hours of laboratory.

Prerequisites: Upper division standing. Swimming competency evaluation, physical examination approval for scuba diving, waiver for scuba diving.

Entry level scientific diver training and certification course. Theory and practical diving skills to include diving physiology, hyperbaric conditions, medical hazards, proper selection, care and operation of diving equipment, marine environment, emergency procedures, scientific diving techniques and regulations. Not open to students with credit in Biology 306 or Exercise and Nutritional Sciences 320, 323, 324. (Formerly numbered Oceanography 305.)

BIOL 306. Scientific Scuba Diving for Certified Divers (3)

Two lectures and three hours of laboratory.

Prerequisites: Biology 305 and Advanced or Scientific Diving Certification, diving skills proficiency evaluation, acceptable open-water diving equipment, physical examination approval for scuba diving, waiver for scuba diving.

Scientific diving operations, techniques and procedures; dive planning and lead diver responsibilities; underwater work, mapping, search and salvage, navigation, deep, night and small boat diving; emergency procedures and rescue. Physics, physiology, medicine, decompression theory, oceanography, marine life and marine environment. Master Diver Certification. Not open to students with credit in Exercise and Nutritional Sciences 324. (Formerly numbered Oceanography 306.)

BIOL 307. Biology of Sex (3) [GE]

Prerequisite: Completion of the General Education requirement in Foundations II.A.2. Life Sciences. If a biological science course is not taken to satisfy General Education II.A.2. Life Sciences, a college course in biological science is required.

Reproductive adaptations in humans, and comparatively in other species. Topics include sex differences, mate choice and mating behavior, fertility regulation, fertilization and embryonic development, sex ratios, parental investment, effects of aging, and life history strategies. Not applicable to biological sciences majors.

BIOL 315. Ecology and Human Impacts on the Environment (3) [GE]

Prerequisite: Completion of the General Education requirement in Foundations II.A. Natural Sciences and Quantitative Reasoning. If a biological science course is not taken to satisfy General Education II.A.2. Life Sciences, a college course in biological science is required.

Ecological characteristics of natural ecosystems and basic effects of human society upon those systems, emphasizing resource management, food production, global environmental problems, and future directions. Not applicable to biological sciences majors.

BIOL 319. Evolution (3) [GE]

Prerequisite: Completion of the General Education requirement in Foundations II.A.2. Life Sciences. If a biological sciences course is not taken to satisfy General Education II.A.2. Life Sciences, a college course in biological sciences is required.

Modern theory of organic evolution with emphasis on processes involved as they relate to past, present, and future evolution of mankind. Not applicable to biological sciences majors; see Biology 352.

BIOL 324. Life in the Sea (3) [GE]

Prerequisite: Completion of the General Education requirement in Foundations II.A.2. Life Sciences. If a biological sciences course is not taken to satisfy General Education II.A.2. Life Sciences, a college course in biological sciences is required.

Overview of complexity of marine life. Diverse interactions of organisms in the intertidal zone, over the continental shelves and in the open oceans. Current controversies concerning the marine biosphere. Not applicable to biological sciences majors.

BIOL 326. Plants, Medicines, and Drugs (3) [GE]

Prerequisite: Completion of the General Education requirement in Foundations II.A.2. Life Sciences. If a biological sciences course is not taken to satisfy General Education II.A.2. Life Sciences, a college course in biological sciences is required.

Medicinal plants, toxic-poisonous plants, herbal medicines, psychoactive plants, preparation of medicines and mechanisms of action; current research results on medicinal plants and drugs used in diseases such as diabetes, cancer, and heart diseases. Not applicable to biological sciences majors.

BIOL 327. Conservation of Wildlife (3) [GE]

Prerequisite: Completion of the General Education requirement in Foundations II.A.2. Life Sciences. If a biological sciences course is not taken to satisfy General Education II.A.2. Life Sciences, a college course in biological sciences is required.

Global ecosystems and their dynamics, with emphasis on sustainable human use and preservation and biodiversity. Not applicable to biological sciences majors.

BIOL 336. Principles of Human Physiology (3) [GE]

Prerequisite: Completion of the General Education requirement in Foundations II.A.2. Life Sciences. If a biological sciences course is not taken to satisfy General Education II.A.2. Life Sciences, a college course in biological sciences is required.

Systems of the human body, their interrelationships and control systems which regulate them. Not open to students with credit in a college course in human physiology. Not applicable to biological sciences majors.

BIOL 340A. Preventive Dentistry Program (1-2) Cr/NC

Four hours of clinical and other activities per unit.

Prerequisites: Upper division standing and active pre dental file in the Preprofessional Health Advising Office.

Participation in clinic, dental observation, marketing activities and two field trips. Maximum credit four units. Not applicable to biological sciences majors.

BIOL 340B. Preventive Dentistry Leaders (2-4)

Four hours of activity per unit.

Prerequisites: Biology 340A and consent of instructor.

Supervision of one component of Preventive Dentistry Program. Maximum credit four units. Not applicable to biological sciences majors.

BIOL 341. The Human Body (3) [GE]

Prerequisite: Completion of the General Education requirement in Foundations II.A.2. Life Sciences.

Survey of human body with emphasis on intricacy of design and integration of various organ systems. Not open to nursing, exercise and nutritional sciences, or biological sciences majors, or to students with credit in any college level human physiology or anatomy course.

BIOL 344. Advanced Human Anatomy (2)

One lecture and three hours of laboratory.

Prerequisite: Biology 212 and consent of instructor.

Advanced topics in human anatomy with emphasis toward dissection of human cadavers. Dissection techniques, pathology, and special training in prosection. Not applicable to biological sciences majors.

BIOL 348. Health Professions Internship (1-3)

Prerequisites: 3.0 overall GPA, completion of lower division writing competency requirement, and consent of instructor.

Internship in a health care setting; term paper required. Maximum credit three units. Not applicable to biological sciences majors.

BIOL 350. General Microbiology (4) I, II

Two lectures and six hours of laboratory.

Prerequisites: Biology 201A, 201B, and 215; Chemistry 231.

Actions and reactions of microorganisms in response to their environment, both natural and as changed by other organisms, including man. Also includes an introduction to pathogens.

BIOL 352. Genetics and Evolution (3) I,II

Prerequisites: Biology 201A, 201B, and 215.

Principles of transmission genetics, population genetics, and evolution.

BIOL 354. Ecology and the Environment (3) I, II

Prerequisites: Biology 201A, 201B, 215; and Mathematics 122

Fundamental concepts in population, community, and ecosystem ecology.

BIOL 354L. Experimental Ecology (2)

One hour of discussion and three hours of laboratory.

Prerequisite: Credit or concurrent registration in Biology 354.

Methods of research in ecology; approaches to analysis of populations, communities, and ecosystems.

BIOL 366. Biochemistry, Cell and Molecular Biology II (4) I,II

Prerequisite: Chemistry 365.

Concepts of modern integrated molecular biology, cell biology, and biochemistry.

BIOL 366L. Biochemistry, Cell and Molecular Biology Laboratory I (2)

Six hours of laboratory.

Prerequisite: Credit or concurrent registration in Biology 366.

Basic laboratory approaches in biochemistry, cell biology, and molecular biology.

BIOL 436. Human Physiology Laboratory (2)

One lecture and three hours of laboratory.

Prerequisite: Credit or concurrent registration in Biology 336 or 590.

Human physiology and rationale of current week's laboratory and experimental outcomes of previous week's laboratory. Not open to students with credit in Biology 261.

BIOL 452. Science Concept Development and Integration (3)

Two lectures and three hours of activity.

Prerequisite: Senior standing, or participation in the science single subject credential program.

Development and integration of biological science content knowledge, introduction to learning theory, and transformation of knowledge. Designed for students preparing for the single subject teaching credential in life sciences.

BIOL 460. Economic Botany (3)

Two lectures and three hours of laboratory.

Prerequisites: Biology 201A and 201B.

Plants of agricultural, economic, and historical importance. Topics include basic plant morphology, anatomy, and taxonomy, plant genetics, agricultural breeding and propagation techniques, vegetables and fruits, spices and herbs, beverage plants, woods and plant fibers.

BIOL 461. Underwater Research Methods and Techniques (3)

Two lectures and three hours of laboratory.

Prerequisites: Biology 201B and Exercise and Nutritional Sciences 323 or Biology 306, and three upper division units in biology, Advanced Openwater or Scientific Scuba Diving Certification, diving skills proficiency evaluation, acceptable openwater diving equipment, medical examination, approval for scuba diving and waiver for scuba diving.

Preparation for scientific research underwater; scientific methods, techniques, operations and specialized equipment; scientific diver training and certification requirements; diving procedures and regulations; diving equipment; diving physiology hyperbaric conditions, fitness, practical diving skills, safety and emergency procedures.

BIOL 474. Histology (4)

Two lectures and six hours of laboratory.

Prerequisite: Biology 201B. Recommended: Biology 212.

Descriptive microscopic anatomy of cells, tissues and organs of mammals with special emphasis on humans.

BIOL 485. Principles of Immunology (3)

Prerequisites: Biology 201A, Chemistry 365, credit or concurrent registration in Biology 366.

Basic areas of immunology to include inflammation, generation of immune response, antibody production, lymphocyte development and function, hypersensitivities and AIDS, major histocompatibility complex and cytokines. Designed to give a basic background in the immune system.

BIOL 490. Undergraduate Honors Research (3)

Prerequisites: Upper division standing with GPA of at least 3.20, four units of Biology 499, and approval of honors research program coordinator.

Experience in designing and carrying out independent research in a laboratory setting plus a written record of experimental design and results in the form of an honors research thesis to be presented at an undergraduate research forum and/or defended before a committee. Does not satisfy laboratory requirement in major. Maximum credit six units.

BIOL 496. Experimental Topics (1-4)

Selected topics. May be repeated once with new content. See Class Schedule for specific content. Limit of nine units of any combination of 296, 496, 596 courses applicable to a bachelor's degree.

BIOL 497. Undergraduate Research (1-3) I, II, S

Fifty hours of research per unit.

Prerequisites: Upper division status in good standing and consent of instructor.

Individual research project, supervised by faculty. Research course with research paper or other presentation of results. Maximum credit six units applicable to general biology major, three units to microbiology major, for any combination of Biology 497 and 499.

BIOL 499. Special Study (1-3) I, II, S

Fifty hours of activity per unit.

Prerequisites: Upper division status in good standing and consent of instructor.

Individual study, internship, other supervised laboratory or field project or experience. Credit involves 50 hour activity per unit per semester and a report. Maximum credit six units applicable to general biology major, three units applicable to microbiology major, for any combination of Biology 497 and 499.

UPPER DIVISION COURSES
(Also Acceptable for Advanced Degrees)

Writing Requirement: Completion of the Graduation Writing Assessment Requirement or the eligibility to enroll in an upper division writing course is a prerequisite for all upper division biology courses numbered 450 and above.

BIOL 508. Coevolution (3)

Prerequisites: Biology 352 and 354.

Coevolution in interspecific interactions, like herbivory, predation, parasitism, competition, pollination, and mimicry.

BIOL 509. Evolutionary Biology (3)

Two lectures and two hours of activity.

Prerequisite: Biology 352.

Evolutionary biology including genetics of populations, speciation, systematic biology, adaptation, role of development in evolution, evolution of behavior, and comparative biology. Evolutionary biology as the central organizing principle of biology.

BIOL 510. Molecular Evolution (3)

Prerequisites: Biology 352 and 366 or graduate standing.

Molecular evolution including concepts of homology and convergence, the nearly neutral theory of evolution, evolution of new protein function, detecting selection, multi-gene family evolution and evolutionary genomics.

BIOL 511. Evolution of Development (3)

Prerequisites: Biology 352 and 366.

Dynamic relationship between regulatory functions that control development and the evolutionary process, and vice versa, illustrated with evidence derived from developmental, phylogenetic, paleontological, computational, and ecological research. Emphasis on genomic regulatory networks of transcriptional regulatory elements and cell-signaling pathways.

BIOL 512. Evolution and Ecology of Marine Mammals (3)

Two lectures and three hours of laboratory.

Prerequisites: Biology 352 and 354.

Biology of marine mammals including pinniped, cetacean and sirenian evolution, diet and foraging strategies, social organization, reproductive strategies, echolocation, diving physiology, and conservation.

BIOL 514. Biology of the Algae (4)

Three lectures and three hours of laboratory.

Prerequisites: Biology 201B and six units of upper division coursework in the major.

Evolution, life histories, morphology, physiology, and ecology of micro and macro algae, with attention to both marine and freshwater taxa, and of sea-grasses.

BIOL 515. Marine Invertebrate Biology (4)

Two lectures and six hours of laboratory.

Prerequisite: Biology 201B. Strongly recommended: Completion of three to six upper division units in the major.

Structure and function, ecology, behavior, physiology and phyletic relationships of marine invertebrate animals.

BIOL 517. Marine Ecology (4)

Two lectures and six hours of laboratory.

Prerequisite: Biology 354.

Ecological concepts as applied to pelagic and benthic marine organisms and their environment. Field and laboratory experience in oceanographic techniques, particularly the coastal environment.

BIOL 520. Ichthyology (4)

Three lectures and three hours of laboratory.

Prerequisite: Biology 201B. Strongly recommended: Completion of three to six upper division units in the major.

Identification, systematics, evolution, structure, physiology, behavior and ecology of fishes.

BIOL 521. Advanced General Microbiology (2)

Prerequisites: Biology 350 or an introductory course in microbiology and consent of instructor.

Taxonomy, comparative physiology and ecology of representative microorganisms found in various natural environments.

BIOL 521L. Advanced Microbiology Laboratory (3)

One lecture and six hours of laboratory.

Prerequisites: Biology 350, 366, 366L, and credit or concurrent registration in Biology 521 or 584. Strongly recommended: Credit or concurrent registration in an upper division writing course.

Procedures and methods for isolation, characterization and identification of prokaryotes from soil, water and humans; includes both pathogenic and non-pathogenic prokaryotes.

BIOL 523. Herpetology (4)

Two lectures and six hours of laboratory.

Prerequisite: Biology 201B. Recommended: Biology 352.

Evolution, systematics, distribution, and ecology of amphibians and reptiles of the world.

BIOL 524. Ornithology (4)

Two lectures, six hours of laboratory or field excursions, and a field project.

Prerequisite: Biology 201B. Strongly recommended: Completion of three to six upper division units in the major.

Study and identification of birds, especially those of the Pacific Coast and the San Diego region.

BIOL 525. Mammalogy (4)

Two lectures and six hours of laboratory.

Prerequisite: Biology 201B. Strongly recommended: Completion of three to six upper division units in the major.

Evolution, systematics, distribution and ecology of mammals of the world.

BIOL 526. Terrestrial Arthropod Biology (4)

Two lectures and six hours of laboratory.

Prerequisite: Biology 201B. Strongly recommended: Biology 352 and completion of three to six upper division units in the major.

Structure, function, behavior, ecology, evolution, and relationships of major groups of terrestrial arthropods, including insects, arachnids, and myriapods. Identification and natural history of southern California diversity.

BIOL 528. Microbial Ecology (3)

Two lectures and three hours of laboratory.

Prerequisites: Biology 201A and 201B. Recommended: Biology 350 and 354.

Roles of microorganisms in soil, aquatic and marine ecosystems, microbial adaptations to the environment, and interactions within microbial communities and between microbes and multicellular organisms. Laboratory techniques to isolate and study microbes.

BIOL 530. Plant Systematics (4)

Two lectures and six hours of laboratory, field trips.

Prerequisite: Biology 201B. Strongly recommended: Completion of three to six upper division units in the major.

Plant description, identification, classification, and nomenclature with emphasis on evolutionary patterns, interdisciplinary data acquisition, and phylogenetic analysis.

BIOL 531. Taxonomy of California Plants (4)

Two lectures and six hours of laboratory.

Prerequisites: Biology 201A and 201B.

Fundamentals of plant taxonomy with emphasis on identification of plants native and naturalized to California. Plant collecting techniques. Field trips are required.

BIOL 535. Plant Ecology (4)

Three lectures and three hours of laboratory.

Prerequisites: Biology 201A and 201B. Strongly recommended: Biology 354.

Plant adaptation and response to living and non-living environment including aspects of plant evolution, demography, ecophysiology community and ecosystem dynamics and soil-plant relationships. Terrestrial systems emphasized.

BIOL 537. Population Modeling for Conservation (3)

Two lectures and three hours of laboratory.

Prerequisite: Biology 354.

Applied population modeling in context of conservation. How mathematical models can be used to simulate population dynamics of single and multiple species and rank conservation management options.

BIOL 538. Environmental Policy and Regulations (3)

Prerequisite: Biology 354.

History of biological conservation and environmental laws; regulations governing biological resources; role of biologists; environmental impact analysis, operation of regulatory and resource agencies; biologists as expert witnesses; wetland protection and mitigation, state heritage programs, role of nongovernmental agencies.

BIOL 540. Conservation Ecology (3)

Two lectures and three hours of laboratory.

Prerequisite: Biology 354.

Human impacts on ecosystems, the resultant endangerment and extinction of plant and animal species, and strategies for the protection and recovery of threatened forms.

BIOL 541. Ecology of Fishes and Fisheries Biology (3)

Two lectures and three hours of laboratory.

Prerequisite: Biology 354. Recommended: Biology 520.

Ecology of fishes, including environmental constraints, habitats, feeding, behavior, growth, reproduction, biotic interactions, population dynamics and assemblage structure. Fisheries biology concepts, including stock recruitment models, climates and fisheries, density dependence and population regulation, and populations dynamics theory.

BIOL 549. Microbial Genetics and Physiology (3)

Prerequisite: Biology 350 or 366.

Physiology of microbial growth, bacterial structure and function, genetics of bacteriophages and bacteria.

BIOL 551. Recombinant DNA (3)

Prerequisites: Biology 350, 366, 366L, Chemistry 365, and credit or concurrent registration in Biology 549 or 567.

Theory and practice of recombinant DNA techniques.

BIOL 554. Molecular Virology (3)

Prerequisites: Biology 366 and Chemistry 365.

Molecular aspects of structure, genetics, and replication of viruses, virus-host interactions, pathogenesis of virus infections, diagnostic virology, and antiviral vaccines and drugs; emphasis on human pathogens.

BIOL 555. Principles of Electron Microscopy (1)

Prerequisites: Biology 201B and Physics 180B.

Principles of scanning and transmission electron microscopy including theoretical basis of sample preparation.

BIOL 556. Scanning Electron Microscopy Laboratory (2)

Six hours of laboratory.

Prerequisite: Credit or concurrent registration in Biology 555.

Biological specimen preparation and operation of scanning electron microscope.

BIOL 557. Transmission Electron Microscopy Laboratory (3)

One lecture and six hours of laboratory.

Prerequisite: Credit or concurrent registration in Biology 555.

Biological sample preparation and operation of transmission electron microscope.

BIOL 560. Animal Physiology (3)

Prerequisites: Biology 201A, 201B; Chemistry 365; Physics 180B, 182A, and 182B.

Physiology of vertebrate and invertebrate animals with emphasis on diversity of solutions to physiological problems and on functional integration of organ systems.

BIOL 561. Radiation Biology (3)

Prerequisites: Biology 201A and 201B; Physics 180B, 182A, and 182B. Recommended: Biology 366.

Principles underlying radiological reactions of ionizing radiations. Effects of ionizing radiations at the biochemical, cell, organ, and organism levels.

BIOL 567. Advanced Biochemistry, Cellular, and Molecular Biology (4)

Prerequisites: Biology 366 and Chemistry 365.

Advanced concepts of cellular biology, molecular biology, and biochemistry. (Formerly numbered Biology 467.)

BIOL 568. Bioinformatics (3)

Prerequisite: Biology 366.

Bioinformatics analysis methods and programming skills. Practical bioinformatic software for sequence analysis, bioinformatic algorithms and programming fundamentals.

BIOL 570. Neurobiology (3)

Prerequisite: Biology 366 or 590 or Psychology 260.

Structure and function of the nervous system to include cellular and molecular mechanisms underlying neuronal excitability and synaptic function, nervous system development, cellular and systems analysis of sensory, motor and higher brain functions. Emphasis on experimental approaches.

BIOL 575. Molecular Basis of Heart Disease (3)

Prerequisite: Biology 366 or 590.

Current literature on the molecular basis of disordered physiology leading to heart disease.

BIOL 576. Developmental Biology (3)

Prerequisite: Biology 366. Strongly recommended: Biology 567.

Fundamental processes of development from fertilized egg to organism. Emphasis on cellular and molecular mechanisms common to development of metazoan organisms.

BIOL 584. Medical Microbiology (3)

Prerequisites: Biology 350 and 366.

Major bacterial and viral pathogens; molecular mechanisms of pathogenesis, microbial toxins and antimicrobial agents; immune response to microbial infections; biochemical and molecular diagnostics.

BIOL 585. Cellular and Molecular Immunology (3)

Prerequisites: Biology 366. Recommended: Credit or concurrent registration in Biology 567 and Chemistry 467L.

Cellular and molecular aspects of the immune response. Genetics of immunoglobulins, major histocompatibility complex, lymphocyte development and their manifestations on immune responsiveness, lymphokines immunopathologies including AIDS, and contemporary immunological techniques. Not open to students with credit in Biology 485.

BIOL 590. Physiology of Human Systems (4)

Three lectures and one hour of discussion.

Prerequisites: Chemistry 365, Physics 180B, 182B; or for the bioengineering emphasis: Physics 195, 196, 197. Recommended: Biology 366.

Human physiology presented at both cellular and organ system levels; neurophysiology, muscle physiology, cardiovascular physiology and respiration, kidney function, hormone function and reproduction. For students majoring in a natural science or pre-professional studies.

BIOL 594. Biotechnology Research Rounds (2) Cr/NC

Prerequisites: Biology 366 and credit or concurrent registration in Biology 567.

Research methods in biotechnology community. Speakers from local biotechnology companies and research institutes discuss power and limitations of current research methods being applied to develop new therapeutics. Evaluation of approaches, results, and utility of these technologies. Not applicable to biological sciences majors.

BIOL 595. Computers in Biomedical Research (3)

Prerequisite: Biology 366 or 590. Recommended: Computer Science 107.

Application of micro- and minicomputers to tasks encountered by biomedical scientists in research laboratories (data acquisition and reduction, experiment control) and by physicians in medical care delivery (noninvasive imaging, clinical laboratory automation, patient file processing).

BIOL 596. Special Topics in Biology (1-4)

Prerequisite: Consent of instructor.

Advanced selected topics in modern biology. May be repeated with new content. See Class Schedule for specific content. Limit of nine units of any combination of 296, 496, 596 courses applicable to a bachelor's degree. Maximum combined credit of six units of 596 and 696 applicable to a 30-unit master's degree. Additional units acceptable with the approval of the graduate adviser.

BIOL 597A. Univariate Statistical Methods in Biology (3)

Two lectures and three hours of laboratory.

Prerequisite: Biology 350 or 352 or 354 or 366.

Application of univariate statistical techniques in biological sciences.

GRADUATE COURSES

Refer to the *Graduate Bulletin*.

Business Administration (B A)

In the College of Business Administration

LOWER DIVISION COURSES**B A 100A. Exploration of Business I (1) Cr/NC**

Prerequisite: Registration in the Faculty-Student Mentor Program.

Selecting and preparing for business careers. Business departments, faculty, students, and alumni provide information on courses, skills needed, opportunities, and drawbacks of various occupations. Career services provides advice. Students complete skills/interest assessments that are explained by career services.

B A 100B. Exploration of Business II (1) Cr/NC

Prerequisite: Registration in the Faculty-Student Mentor Program.

Continuation of exploration of business careers. Additional business departments and other campus services provide information on courses, skills needed, opportunities, and drawbacks of various occupations.

**UPPER DIVISION COURSES
(Intended for Undergraduates)****B A 300. Ethical Decision Making in Business (1)**

Prerequisite: Approved upper division business major or another major approved by the College of Business Administration.

Theoretical concepts and dimensions of ethics in business decisions. Ethics of decision alternatives using different approaches and philosophies, with application of an integrative ethical decision model to cases from various business subdisciplines.

B A 400. Business Honors Seminar (1) Cr/NC

Prerequisite: Admission to the College of Business Honors Program.

Current issues affecting local, national, and global business environments. Maximum credit four units.

B A 404. Small Business Consulting (3)

Prerequisites: Approved upper division business major; Business Administration 300; Finance 323; Information and Decision Systems 301 or 302; Management 350; Marketing 370; and consent of instructor.

Counseling of existing small businesses. Application of principles from all fields of business administration. Maximum credit six units.

B A 496. Selected Topics in Business Administration (1-4)

Prerequisite: Consent of department chair.

Selected areas of concern in business administration. See Class Schedule for specific content. May be repeated with new content with consent of department chair. Limit of nine units of any combination of 296, 496, 596 courses applicable to a bachelor's degree. Maximum credit six units.

GRADUATE COURSES

Refer to the *Graduate Bulletin*.

Chemistry (CHEM)

*In the Department of Chemistry and Biochemistry
In the College of Sciences*

B A

LOWER DIVISION COURSES**CHEM 100. Introduction to General Chemistry with Laboratory (4) [GE] I, II**

Three lectures and three hours of laboratory.

Elementary principles of chemistry used to illustrate nature and development of modern scientific thought. Not open to students with credit in Chemistry 105 or 200.

CHEM 102. Introduction to General, Organic, and Biological Chemistry with Laboratory (5) I, II

Three lectures and three hours of laboratory.

Prerequisite: High school chemistry or Chemistry 105.

Concepts of general, organic, and biological chemistry necessary to understanding human biochemistry and pharmacology, including chemical bonding, stereochemistry, acidity, thermodynamics, carbohydrates, lipids, enzymes, proteins, and nucleic acids. Open only to students applying for entrance to the nursing major.

CHEM 105. Preparation for General Chemistry (4) I, II

Three lectures and three hours of laboratory.

Prerequisite: Elementary algebra. Algebra test will be given in first week of class. Students who do not earn a passing grade will be required to drop the course.

Elemental principles of chemistry approached from problem-solving perspective necessary for success in Chemistry 200. Not open to students with credit in Chemistry 100 or 200.

CHEM 130. Elementary Organic Chemistry (3) I, II

Prerequisite: Chemistry 100, 105, or 200.

Introduction to compounds of carbon including both aliphatic and aromatic substances. Not open to students with credit in Chemistry 230, 231, or 232.

CHEM 160. Introductory Biochemistry (3)

Prerequisite: Chemistry 130.

Fundamental principles of the chemistry of living processes. This course intended primarily for majors in nursing, nutrition, and related fields.

CHEM 200. General Chemistry (5) I, II

Three lectures and six hours of laboratory.

Prerequisites: High school chemistry or a grade of C or better in Chemistry 100 or 105, and two years of high school algebra.

General principles of chemistry with emphasis on inorganic materials. Students with credit for either Chemistry 100 or 105, and 200 will receive a total of five units of credit toward graduation.

CHEM 201. General Chemistry (5) I, II

Three lectures and six hours of laboratory.

Prerequisite: Chemistry 200.

Continuation of Chemistry 200. General principles of chemistry with emphasis on inorganic materials and qualitative analysis.

CHEM 202. General Chemistry for Engineers (4) I, II

Three lectures and three hours of laboratory.

Prerequisites: Two years of high school algebra. High school chemistry or a grade of C or better in Chemistry 100 or 105.

General principles of chemistry with emphasis on inorganic and physical chemistry and chemistry basics for engineers. Students with credit in Chemistry 100, 105 and 202 will receive a total of four units of credit toward graduation. Not open to students with credit in Chemistry 200. Restricted to engineering majors.

CHEM 231. Organic Chemistry (4) I, II

Three lectures and three hours of laboratory.

Prerequisite: Chemistry 201.

Properties and synthesis of organic compounds including reaction mechanisms. First half of a one-year course. Not open to students with credit in Chemistry 232 or 232L.

CHEM 232. Organic Chemistry (3) I, II

Prerequisites: Chemistry 201 and consent of instructor.

Same course as Chemistry 231 without laboratory. Not open to students with credit in Chemistry 231.

CHEM 232L. Organic Chemistry Laboratory (1) I, II

Three hours of laboratory.

Prerequisites: Chemistry 201 and consent of instructor.

Properties and synthesis of organic compounds including methods of separation and purification techniques. Same course as laboratory portion of Chemistry 231. Not open to students with credit in Chemistry 231.

CHEM 251. Analytical Chemistry (5) II

Three lectures and six hours of laboratory.

Prerequisites: Chemistry 201 and credit or concurrent registration in Mathematics 122 or 150.

Introduction to the theory and practice of analytical chemistry including gravimetric, volumetric, and instrumental methods.

CHEM 296. Experimental Topics (1-4)

Selected topics. May be repeated with new content. See Class Schedule for specific content. Limit of nine units of any combination of 296, 496, 596 courses applicable to a bachelor's degree.

CHEM 299. Special Study (1-4)

Prerequisite: Consent of instructor.

Individual study. Maximum credit six units.

**UPPER DIVISION COURSES
(Intended for Undergraduates)**

CHEM 300. Mysteries and Molecules (3) [GE]

Prerequisites: Chemistry 100 or completion of General Education requirement in Foundations II.A. Natural Sciences and Quantitative Reasoning.

Techniques and case studies of mysteries solved by molecular analysis: chemical and DNA analysis of crime scenes, biochemical explanations of mysterious deaths and accidents, molecular hallmarks of forgery, chemical methods in crime deterrence, chemical causes of fires and structure failure. Not applicable to chemistry majors.

CHEM 308. Chemistry as a Unifying Science (3) [GE]

Prerequisites: Biology 100 or 203; Geological Sciences 104 or Natural Science 100; Geological Sciences 412 or Natural Science 412.

Atomic-molecular theory of matter; use of concepts of chemistry to explain observable phenomena in everyday life, including physical properties and chemical changes; connections between chemistry and biology, earth science, and physical science; alternative conceptions about science. Capstone science course for liberal studies majors. Open only to liberal studies majors. Not applicable to chemistry majors.

CHEM 361. Fundamentals of Biochemistry (3)

Prerequisites: Chemistry 231 and 365.

The chemistry of intermediary metabolism and its regulation. Not open to students with credit in Chemistry 562 or 563. (Formerly numbered Chemistry 361B.)

CHEM 365. Biochemistry, Cell and Molecular Biology I (3)

Prerequisites: Biology 201A and Chemistry 231.

Basic concepts of modern integrated biochemistry, cell and molecular biology. Not open to students with credit in Chemistry 361A or 560. Applicable to chemistry major or minor only with approval from department.

CHEM 368. Enzymes and Macromolecular Interactions (1)

Prerequisite: Credit or concurrent registration in Chemistry 365.

Enzymology of bisubstrate reactions, allosteric enzymes and biochemical control mechanisms, enzyme mechanisms, nucleic acid structure, replication, and function, sequencing, PCR, cellular protein synthesis, oligosaccharide synthesis. Not open to students with credit in Chemistry 361A or 560. Applicable to chemistry major or minor only with approval from department.

CHEM 410A-410B. Physical Chemistry (4-3) I, II

410A: Three lectures and three hours of laboratory.

410B: Three lectures.

Prerequisites: Chemistry 231 and 251; Mathematics 252; Physics 195, 195L and 196, 196L. Recommended: Physics 197 and 197L. Chemistry 410A is prerequisite to 410B.

Theoretical principles of chemistry with emphasis on mathematical relations. Theory and practice in acquisition and statistical analysis of physical measurements on chemical systems.

CHEM 417. Advanced Physical Chemistry Laboratory (2) II

Six hours of laboratory.

Prerequisites: Chemistry 251, 410A, and credit or concurrent registration in Chemistry 410B.

Experimental physical chemistry. Emphasis on interpretation and statistical evaluation of instrument-derived results, record keeping, report writing, and individual initiative in observing results.

CHEM 427. Inorganic Chemistry Laboratory (1) II

Three hours of laboratory.

Prerequisite: Credit or concurrent registration in Chemistry 520A.

Laboratory course designed to introduce students to techniques used in synthesis, characterization, and manipulation of inorganic compounds and materials.

CHEM 431. Organic Chemistry (4) I, II

Three lectures and three hours of laboratory.

Prerequisite: Chemistry 231.

Continuation of Chemistry 231. Not open to students with credit in Chemistry 432 and 432L.

CHEM 432. Organic Chemistry (3) I, II

Prerequisites: Chemistry 231 and consent of instructor.

Continuation of Chemistry 231. Same course as Chemistry 431 without laboratory. Not open to students with credit in Chemistry 431.

CHEM 432L. Organic Chemistry Laboratory (1) I, II

Three hours of laboratory.

Prerequisites: Chemistry 231 and consent of instructor.

Continuation of laboratory portion of Chemistry 231. Not open to students with credit in Chemistry 431.

CHEM 457. Instrumental Methods of Chemical Analysis Laboratory (2) I

Six hours of laboratory.

Prerequisites: Chemistry 251, 431 and credit or concurrent registration in Chemistry 410B; concurrent registration in Chemistry 550.

Application of instrumental methods of chemical separations and analysis frequently used in all subdisciplines of chemistry.

CHEM 467L. Biochemistry, Cell and Molecular Biology Laboratory (2) I, II

Six hours of laboratory.

Prerequisites: Biology 366, 366L, credit or concurrent registration in Biology 567. Recommended: Biology 350.

Intermediate laboratory approaches in biochemistry, cell biology and molecular biology. Not applicable to chemistry major or minor. Not open to students with credit in Biology 592.

CHEM 496. Selected Topics in Chemistry (1-4)

Prerequisite: Consent of instructor.

Selected topics in modern chemistry. May be repeated with new content. See Class Schedule for specific content. Limit of nine units of any combination of 296, 496, 596 courses applicable to a bachelor's degree. Maximum credit six units.

CHEM 497. Undergraduate Research (1-3) Cr/NC I, II, S

Prerequisites: Chemistry 231 and 251.

Individual laboratory investigation. Maximum credit six units.

CHEM 498. Senior Project (1-3) I, II

Prerequisite: Three one-year courses in chemistry.

Individual literature and/or laboratory investigation and report on a problem. Maximum credit three units.

CHEM 499. Special Study (1-4) I, II

Prerequisite: Consent of instructor.

Individual study. Maximum credit six units.

UPPER DIVISION COURSES
(Also Acceptable for Advanced Degrees)

CHEM 510. Advanced Physical Chemistry (3)

Prerequisite: Chemistry 410B.

Problems in chemical thermodynamics, statistical mechanics, chemical kinetics, quantum chemistry and molecular structure and spectroscopy, with applications.

CHEM 520A-520B. Inorganic Chemistry (3-3) I, II

Prerequisite: Chemistry 410A. Chemistry 520A is prerequisite to 520B.

Nature of chemical bond and an advanced systematic study of representative and transition elements and their compounds.

CHEM 531. Synthetic Organic Chemistry (3)

Prerequisite: Chemistry 431.

Modern methods, strategies, and mechanisms in advanced organic synthesis. Retrosynthetic analysis of and synthetic routes towards biologically important compounds.

CHEM 537. Organic Qualitative Analysis (4)

Two lectures and six hours of laboratory.

Prerequisites: Chemistry 431 and credit or concurrent registration in Chemistry 410A. Recommended: Chemistry 417 and 457.

Chemical, physical, and spectral methods discussed and employed to determine structure of organic compounds. Purification and separation techniques stressed.

CHEM 538. Polymer Science (3)

(Same course as Physics 538.)

Prerequisites: Chemistry 200 or 202; and Chemistry 410B or Physics 360 or Mechanical Engineering 350 or 352.

Structure, synthesis, physical properties, and utilities of polymers.

CHEM 550. Instrumental Methods of Chemical Analysis (2) I

Prerequisites: Chemistry 231 and credit or concurrent registration in Chemistry 410A; concurrent registration in Chemistry 457 for undergraduate students only. Chemical Physics majors can replace the Chemistry 457 corequisite with credit or concurrent registration in Physics 311.

Theory and application of those instrumental methods of chemical separation and analysis most frequently used in all subdisciplines of chemistry.

CHEM 551. Advanced Analytical Chemistry (3) II

Prerequisite: Chemistry 550.

Expanded treatment of instrumental methods for separation and quantification not covered in Chemistry 550. Non-instrumental separations, quantitative organic microanalysis, sampling theory and techniques, reaction rate applications and interpretation of experimental data.

CHEM 560. General Biochemistry (3) I, II

Prerequisites: Chemistry 231, credit or concurrent registration in Chemistry 410A and 431.

The structure, function, metabolism, and thermodynamic relationships of chemical entities in living systems. Not open to students with credit in Chemistry 365. (Formerly numbered Chemistry 560A.)

CHEM 562. Intermediary Metabolism (2)

Prerequisites: Chemistry 560 or Chemistry 365 and 368.

Catabolic and biosynthetic pathways of carbohydrate, lipid, amino acid, and nucleotide metabolism; TCA cycle, mitochondrial and chloroplast electron transport chains, ATP generation and their interactions and control. Not open to students with credit in Chemistry 361.

CHEM 563. Nucleic Acid Function and Protein Synthesis (2)

Prerequisites: Chemistry 560 or Chemistry 365 and 368.

DNA replication, RNA transcription, RNA processing, and protein translation, including chemical mechanisms of synthesis and cellular mechanisms of regulating gene expression; genomics, recombinant DNA, and DNA topology. Not open to students with credit in Chemistry 361.

CHEM 564. Receptor Biochemistry and Protein Modification (2)

Prerequisites: Chemistry 560 or Chemistry 365 and 368.

Biochemical study of receptors, second messengers, and cellular proteins that participate in extracellular and intracellular communication, with focus on protein structures, post-translational modifications, and biochemical mechanisms that regulate receptors and effector enzymes.

CHEM 567. Biochemistry Laboratory (3) II

One lecture and six hours of laboratory.

Prerequisite: Chemistry 560.

Theory and practice of procedures used in study of life at molecular level. Includes purification and characterization of enzymes, isolation of cell components, and use of radioactive tracer techniques.

CHEM 571. Environmental Chemistry (3)

Prerequisites: Chemistry 231 and 251; consent of instructor for all other majors.

Fundamentals of chemistry applied to environmental problems. Chemistry of ecosystems; analysis of natural constituents and pollutants; sampling methods; transport of contaminants; regulations and public policy.

CHEM 596. Advanced Special Topics in Chemistry (1-3)

Prerequisite: Consent of instructor.

Advanced selected topics in modern chemistry. May be repeated with new content. See Class Schedule for specific content. Limit of nine units of any combination of 296, 496, 596 courses applicable to a bachelor's degree. Maximum credit of six units of 596 applicable to a bachelor's degree. Maximum combined credit of six units of 596 and 696 applicable to a 30-unit master's degree.

GRADUATE COURSESRefer to the *Graduate Bulletin*.**Chicana and Chicano Studies (CCS)***In the College of Arts and Letters***LOWER DIVISION COURSES****CCS 100. Chicana and Chicano Heritage (3) [GE]**

Cultural achievements and thought of Spanish speaking peoples of North America; development of aesthetic and ethical values. North American intellectual history and influence of philosophical orientations of native and Mestizo peoples. Implications for social change.

CCS 110. Introduction to Chicana and Chicano Studies (3)

Origins, evolution, and current status of Chicana and Chicano studies. Research, theories, methods, and debates in and impact of the field. Current intellectual trends, scholar activism, and societal developments with implications for field. Career pathway possibilities.

CCS 111A. Oral Communication (3) [GE]

Training in the process of oral (speech) expression: addressing the barrio; formal delivery.

Chicana and Chicano Studies 111A is equivalent to Communication 103. Not open to students with credit in Africana Studies 140 or Communication 103 or 204.

CCS 111B. Written Communication (3) [GE]

Prerequisites: Satisfaction of the English Placement Test and Writing Competency requirements. (See Graduation Requirements section of catalog.) **Proof of completion of prerequisites required:** Copy of EPT or competency scores or verification of exemption; or proof of credit (Cr) in Rhetoric and Writing Studies 92A or 92B or 97.

Training for students from Mexican American backgrounds in the process of written expression. English grammar and composition; the essay, the term paper. Chicana and Chicano Studies 111B is equivalent to Rhetoric and Writing Studies 100. Not open to students with credit in Africana Studies 120 or English 100 or Linguistics 100 or General Studies 260A or Rhetoric and Writing Studies 100 or 101 or higher-numbered composition course.

CCS 120A-120B. Chicana and Chicano Role in the American Political System (3-3) [AI]

Semester I: Relationship between Chicana and Chicano community and American political system. Semester II: The Chicana and Chicano in relation to city, county, and state institutions in California. This year-long course satisfies the graduation requirement in American Institutions.

CCS 141A-141B. History of the United States (3-3) [AI]

(Selected sections of Chicana and Chicano Studies 141A offered as distance education.)

Spanish, Mexican, and Chicano influences on US history. Semester I: Comparative development of US and Mexico to 1865. Semester II: Mexican Americans in US history; US and Mexican national histories compared from 1865 to the present. This year-long course satisfies the graduation requirement in American Institutions.

CCS 150. Critical Issues in Chicana Studies (3)

Critical themes in Chicana feminist scholarship: power and resistance; work, family, and culture; cultural representations and presentations; social and biological reproduction.

CCS 200. Intermediate Expository Research and Writing (3) [GE]

Especially designed for bilingual/bicultural students.

Prerequisites: Satisfaction of the English Placement Test and Writing Competency requirements and Chicana and Chicano Studies 111B or Africana Studies 120 or English 100 or General Studies 260A or Linguistics 100 or Rhetoric and Writing Studies 100 or 101. **Proof of completion of prerequisites required:** Test scores or verification of exemption; copy of transcript.

Intermediate composition. Practice in reading, writing, and critical thinking using interdisciplinary sources. Research skills using primary and secondary sources. Argumentative writing skills. Not open to students with credit in Africana Studies 200, English 200, General Studies 260D, Linguistics 200, or Rhetoric and Writing Studies 200.

CCS 255. Introduction to Nahuatl (3)

Language of the Aztecs, Nahuatl vocabulary and grammar. Colonial and modern texts and translations. Cultural context of language. Relation of Nahuatl to Chicana and Chicano identity.

CCS 296. Experimental Topics (1-4)

Selected topics. May be repeated with new content. See Class Schedule for specific content. Limit of nine units of any combination of 296, 496, 596 courses applicable to a bachelor's degree.

**UPPER DIVISION COURSES
(Intended for Undergraduates)**

CCS 301. Political Economy of the Chicano People (3) [GE]

Prerequisite: Completion of the General Education requirement in Foundations II.B., Social and Behavioral Sciences required for nonmajors. Recommended: Chicana and Chicano Studies 110.

Political and economic roots of the oppression and exploitation of the Chicano from historical, institutional and theoretical points of view. Parallels between the experience of the Chicano and other Hispanic groups.

CCS 303. Chicana and Chicano Community Studies (3) [GE]

Prerequisite: Completion of the General Education requirement in Foundations II.B., Social and Behavioral Sciences required for nonmajors. Recommended: Chicana and Chicano Studies 110.

Chicana and Chicano communities from a comparative perspective. Systematic inquiry into methods and issues in community studies. Contemporary social, institutional, and political affairs.

CCS 306. Mexican Immigration (3)

Immigration from Mexico in the context of US immigration history and policies. Comparative study of political, economic, and cultural factors. Undocumented immigration and current US law.

CCS 310. Mexican and Chicano Music (3) [GE] I, II

(Selected sections offered as distance education.)

Prerequisite: Completion of the General Education requirement in Foundations II.C., Humanities required for non-majors.

Music of Mexico and the Southwest including folk dances appropriate for children and adults. Emphasis on the corrido, its history and development in Mexico and the US. Course will be taught bilingually.

CCS 320. Chicana and Chicano Life Styles (3) [GE]

Prerequisite: Completion of the General Education requirement in Foundations II.B., Social and Behavioral Sciences required for nonmajors.

Social relations and cultural evolution in Chicana and Chicano community, female-male relationships, and family. Influence of Spanish-Mexican feudal cultural heritage and US industrial-capitalist society. Comparative cross-cultural social science methodology.

CCS 335. Chicana and Chicano Literature (3) [GE]

Prerequisite: Completion of the General Education requirement in Foundations II.C., Humanities required for nonmajors.

Ideas, forms, history of significant Chicana and Chicano prose, poetry and other literary genres.

CCS 340. Mexican Women in Historical Perspective: PreColumbian to 1848 (3)

Prerequisites recommended: Chicana and Chicano Studies 111B and upper division standing.

US-Mexican history or Mexican women from PreColumbian Mexican era to annexation of Mexico's northern territories by US. Theoretical and methodological issues appraised as are gender-based norms, class and racial distinctions, and significance of female historical figures to Mexican identity.

CCS 350A-350B. Chicana and Chicano History (3-3) [GE] I, II

Prerequisite: Completion of the General Education requirement in Foundations II.C., Humanities required for nonmajors.

Semester I: Review of indigenous origins; Hispanic institutions and northward expansion; the Mexican Republic; attention to women's socio-economic status and significance. Semester II: US encroachment and the US/Mexican War; Chicana and Chicano contributions; the multilingual and multicultural Southwest.

CCS 355. The United States-Mexico International Border (3) [GE] I

Prerequisites: Upper division standing; and completion of the General Education requirement in Foundations II.B., Social and Behavioral Sciences required for nonmajors.

History, culture, economics, and politics of US/Mexico border region. Theories and policy issues surrounding development of region; local regional problems and major agencies, institutions, organizations addressing these problems.

CCS 375. US/Mexico Border History (3) [GE]

Prerequisite: Completion of the General Education requirement in Foundations II.C., Humanities required for nonmajors. Recommended: Chicana and Chicano Studies 110.

Historical problems and movements in the US/Mexico border region, in particular those impacting Spanish-speaking populations on both sides of the border. Contemporary border issues from a historical perspective.

CCS 376. Chicana and Chicano Culture and Thought (3) [GE]

Prerequisite: Completion of the General Education requirement in Foundations II.C., Humanities required for nonmajors.

Intellectual history of the Chicana and Chicano as a synthesis of different cultural traditions and perspectives. Philosophical concepts from pre-Cortesian times to the present.

CCS 380. US/Mexico Borderlands Folklore (3) [GE] I, II

Prerequisite: Completion of the General Education requirement in Foundations II.C., Humanities required for nonmajors. Recommended: Chicana and Chicano Studies 110.

Border folklore, its complexities and dynamics via myths, rituals, legends, sayings, corridos (ballads), and literature of Chicanos and Mexicanos in the US/Mexico border region.

CCS 396W. Chicano Prose: Creative Writing (3)

Prerequisite: Satisfies Graduation Writing Assessment Requirement for students who have completed 60 units; completed Writing Proficiency Assessment with a score of 8 or higher (or earned a C or higher in RWS 280, 281, or LING 281 if score on WPA was 7 or lower); and completed General Education requirements in Composition and Critical Thinking. **Proof of completion of prerequisites required:** Test scores or verification of exemption; copy of transcript.

A writing workshop. Mutual criticism. Exploration of new form and content in Mexican American prose. Maximum credit six units.

CCS 400. Mexican Images in Film (3) [GE]

Prerequisites: Upper division standing and completion of the General Education requirement in Foundations II.C., Humanities required for nonmajors.

Comparative study of images presented by Hollywood, Mexican, and Chicano cinemas. Critical analysis and discussion of projected values. Comparison of themes in film and text.

CCS 410. Capstone: Critical Discourse in Chicana and Chicano Studies (3)

Prerequisites: Senior standing. Open only to Chicana and Chicano Studies majors.

Ethical and substantive issues and themes pertinent to borderland communities in US/Mexico region.

CCS 480. Chicanas and Chicanos and the Schools (3)

Prerequisite recommended: Chicana and Chicano Studies 110.

The Chicana and Chicano child's experience in the school system from preschool through high school with emphasis on social, intellectual and emotional growth and development.

CCS 496. Selected Topics in Chicana and Chicano Studies (1-3)

Selected topics in Chicana and Chicano studies. May be repeated with new content. See Class Schedule for specific content. Limit of nine units of any combination of 296, 496, 596 courses applicable to a bachelor's degree. Maximum credit six units.

CCS 497. Senior Thesis (3)

Prerequisites: Senior standing. Open only to Chicana and Chicano Studies majors and consent of department.

Faculty supervised independent study culminating in a research paper or project on history, ethos, and social perspectives of Chicana and Chicano studies and indicative of scholarly interest in continued learning.

CCS 498. Internship in US-Mexico Border (3)

Nine to twelve hours per week plus four class meetings.

Prerequisites: Upper division standing, Chicana and Chicano Studies 355, and consent of instructor.

Internship in public or private sector institution, agency, or organization engaged in US-Mexico binational relations or border-related issues. Meets requirements for United States-Mexico Border Studies certificate program.

CCS 499. Special Study (1-3)

Prerequisite: Consent of instructor.

Individual study. Maximum credit six units.

UPPER DIVISION COURSES
(Also Acceptable for Advanced Degrees)

CCS 554. United States-Mexico Transborder Populations and Social Change (3)

(Same course as Sociology 554.)

Prerequisite: Sociology 101. Recommended: Chicana and Chicano Studies 355 and/or Sociology 350.

Sociology of the population at the US-Mexico border region. Demographic dynamics and social change in border communities. International migration and transmigration. Transborder families and transnational families. Gender systems and women's reproductive health in border communities.

CCS 595. US/Mexico Border Field Experience (3)

Prerequisites: Six upper division units in Chicana and Chicano studies or graduate standing. Working knowledge of Spanish required.

Field Work in US-Mexico border area. Visits to border institutions in Tijuana and San Diego. Dynamics of postmodernity and globalization. Multidisciplinary and critical study of US-Mexico border through research and experience. Classes meet in US and Mexico.

CCS 596. Topics in Chicana and Chicano Studies (1-3)

Prerequisite: Consent of instructor.

Advanced topics in Chicana and Chicano studies. See Class Schedule for specific content. May be repeated with new content. Limit of nine units of any combination of 296, 496, 596 courses applicable to a bachelor's degree.

GRADUATE COURSES
Refer to the *Graduate Bulletin*.

Child and Family Development (CFD)

In the College of Education

LOWER DIVISION COURSES

CFD 135. Principles of Family Development (3) [GE] I, II

Intimacy, compatibility, conflict, and communication in relationship formation and adjustment.

CFD 170. Child and Adolescent Development from a Cultural Perspective (3) [GE]

(Same course as Teacher Education 170.)

Theories of human development using a cultural/ecological framework applied to case studies and direct observations. Open only to liberal studies majors. Not open to students with credit in Child and Family Development 270, Psychology 230, or Teacher Education 170.

CFD 270. Human Development Across the Lifespan (3) I, II

Prerequisites: Psychology 101; concurrent registration in Child and Family Development 270L for one unit. **Proof of completion of prerequisite required:** Copy of transcript.

Development from conception to old age; emphasis on biological, cognitive, and socio-emotional development. Not open to students with credit in Child and Family Development 170, Psychology 230, or Teacher Education 170.

CFD 270L. Principles of Child Development Laboratory (1-3) I, II

Three hours of laboratory for each unit.

Prerequisites: Psychology 101; credit or concurrent registration in Child and Family Development 270. **Proof of completion of prerequisite required:** Copy of transcript.

Multiple methods of observing and recording individual and group behavior of children. Observations required. May be repeated with consent of instructor. Maximum credit three units.

CFD 272. Child, Family, Community (3)

Prerequisites: Child and Family Development 135, 270, 270L (one unit); Sociology 101. **Proof of completion of prerequisites required:** Copy of transcript.

Individual and family needs and the social institutions and agencies attempting to meet these needs. Social issues, service programs, program analyses, and program effectiveness emphasized.

CFD 275. Developmentally Appropriate Practices (3)

Two lectures and two hours of activity.

Prerequisites: Child and Family Development 270, 270L (one unit).

Proof of completion of prerequisites required: Copy of transcript

Design, implementation, and evaluation of developmentally appropriate practices for children and families.

CFD 296. Experimental Topics (1-4)

Selected topics. May be repeated with new content. See Class Schedule for specific content. Limit of nine units of any combination of 296, 496, 596 courses applicable to a bachelor's degree.

**UPPER DIVISION COURSES
(Intended for Undergraduates)**

CFD 335. Interaction in Families (3) I, II

Prerequisite: Completion of all lower division preparation for the major courses with a grade of C (2.0) or better. **Proof of completion of prerequisites required:** Copy of transcript.

Family interaction patterns throughout the life cycle in a multicultural society. Emphasis on theories, research findings, and family practices.

CFD 370. Research, Assessment, and Evaluation of Children and Families (3) I, II

Prerequisite: Completion of all lower division preparation for the major courses with a grade of C (2.0) or better. **Proof of completion of prerequisites required:** Copy of transcript.

Methods for measuring child, caregiver, and family behavior. Evaluation of reliability and validity. Includes research design, sampling techniques, data collection strategies, and values/ethics.

CFD 375A. Human Development: Infant/Toddler (2) I, II

Prerequisites: Credit or concurrent registration in Child and Family Development 378A or 378B or 378D. Completion of all lower division preparation for the major courses with a grade of C (2.0) or better. **Proof of completion of prerequisites required:** Copy of transcript.

Physiological, psychological, cognitive, and socio-emotional development of the human organism in cultural contexts from conception to three years of age. (Formerly numbered Child and Family Development 570.)

CFD 375B. Human Development: Early/Middle Childhood (2) I, II

Prerequisites: Credit or concurrent registration in Child and Family Development 378B or 378C or 378D. Completion of all lower division preparation for the major courses with a grade of C (2.0) or better. **Proof of completion of prerequisites required:** Copy of transcript.

Physiological, psychological, cognitive, and socio-emotional development of the human organism in cultural contexts from age 3 to age 12. Not open to students with credit in Child and Family Development 371 and 375.

CFD 375C. Human Development: Adolescence/Adulthood (2) I, II

Prerequisite: Credit or concurrent registration in Child and Family Development 378C or 378D. Completion of all lower division preparation for the major courses with a grade of C (2.0) or better. **Proof of completion of prerequisites required:** Copy of transcript.

Physiological, psychological, cognitive, and socio-emotional development of the human organism in cultural contexts from age 12 to old age. Not open to students with credit in Child and Family Development 371 and 375.

CFD 377. Adult Supervision in Child and Family Development Programs (3)

Prerequisites: Child and Family Development 375A, 375B; and two units selected from Child and Family Development 378A, 378B, or 378D. **Proof of completion of prerequisites required:** Copy of transcript.

Development of leadership, communication, conflict resolution, and supervision of professionals in child and family development programs.

CFD 378A. Laboratory Experiences: Infants/Toddlers (1-3) Cr/NC

Three hours of laboratory for each unit of credit.

Prerequisites: Concurrent registration in Child and Family Development 375A. Completion of all lower division preparation for the major courses with a grade of C (2.0) or better. **Proof of completion of prerequisites required:** Copy of transcript.

Directed experiences in mainstream settings for infants and toddlers. Designing and implementing developmentally appropriate activities. Maximum credit three units with consent of instructor. (Formerly numbered Child and Family Development 376A.)

CFD 378B. Laboratory Experiences: Preschool/Kindergarten (1-3) Cr/NC

Three hours of laboratory for each unit of credit.

Prerequisites: Concurrent registration in Child and Family Development 375B. Completion of all lower division preparation for the major courses with a grade of C (2.0) or better. **Proof of completion of prerequisites required:** Copy of transcript.

Directed experiences in mainstream settings for children ages 3 to 6, preschool, and kindergarten children. Designing and implementing developmentally appropriate activities. Maximum credit three units with consent of instructor. Not to exceed three units of credit in any combination with Child and Family Development 376A completed prior to fall 2006.

CFD 378C. Laboratory Experiences: Age 6 Through Adolescence (1-3) Cr/NC

Three hours of laboratory for each unit of credit.

Prerequisites: Concurrent registration in Child and Family Development 375B or 375C. Completion of all lower division preparation for the major courses with a grade of C (2.0) or better. **Proof of completion of prerequisites required:** Copy of transcript.

Directed experiences in mainstream settings for children age 6 through adolescence. Designing and implementing developmentally appropriate activities. Maximum credit three units with consent of instructor. (Formerly numbered Child and Family Development 376B.)

CFD 378D. Laboratory Experiences with Children and Families (1-3) Cr/NC

Three hours of laboratory for each unit of credit.

Prerequisites: Concurrent registration in Child and Family Development 375A, 375B, or 375C. Completion of all lower division preparation for the major courses with a grade of C (2.0) or better. **Proof of completion of prerequisites required:** Copy of transcript.

Directed experiences in intergenerational programs. Designing and implementing developmentally appropriate interactions for children and their families/caregivers. Maximum credit three units with consent of instructor. (Formerly numbered Child and Family Development 376C.)

CFD 380. Early Literacy Development and School Readiness (3)

Prerequisites: Child and Family Development 375A and 375B; and Child and Family Development 378A or 378B or 378D. Completion of all lower division preparation for the major courses with a grade of C (2.0) or better. **Proof of completion of prerequisites required:** Copy of transcript.

Early development of language, baby signs, literacy, and school readiness. Focus on brain, cognition, and socio-emotional development. Applications of developmentally appropriate practice to enhance literacy and school readiness.