• Engineering: Computer Science; ECS 30, 60, 124, 174
• Engineering: Electrical and Computer; EEC 10, 150A
• Engineering: Materials Science and Engineering; EMS 147, 288, 290
• English; ENL 154
• Environmental Science and Policy; ESP 151, 166, 166N, 168A, 396
• Epidemiology; EPI 202, 203, 204, 231
• Exercise Biology; EXB 126
• Fine Arts & Humanities; FAH 98, 198
• Food Science and Technology; FST 3V, 50, 101A, 104L, 107, 109, 110, 110L, 115, 117, 119, 123, 159, 230
• Genetics (A Graduate Group); GGG 296
• Geology; GEL 91, 110, 185A
• Hebrew; HEB 21, 22, 23, 98, 99
• Hindi; HIN 21, 22, 23, 98, 99, 396
• History; HIS 107, 109A-B, 115D, 171B, 187
• Hydrology; HYD 201A-B
• Integrated Pest Management; IPM 201, 201A-B, 209, 298, 299
• Italian; ITA 31, 32, 120A
• Japanese; JPN 106, 114A, 297
• Landscape Architecture; LDA 180A-P, 181A-Q
• Linguistics; UN 253
• Maternal and Child Nutrition; MCN 263, 264B
• Mathematics; MAT 25
• Medicine: Anesthesiology and Pain Medicine; ANE 464
• Medicine: Biological Chemistry; BCM 230
• Medicine: Human Physiology; HPH 115
• Medicine: Internal Medicine; IMD 90
• Medicine: Public Health Sciences; SPH 102, 105, 233, 235
• Medieval Studies; MST 98F, 198F, 199FA-FB
• Molecular and Cellular Biology; MCB 182
• Music; MUS 107B, 112A-C, 140
• Neurobiology, Physiology, and Behavior; NPB 101D, 111C, 112, 121L, 125, 160L, 163, 164, 211, 287A
• Neuroscience; NSC 211, 287A
• Nursing, School of; NRS 222B, 223
• Nutrition; NUT 263, 264B
• Persian; PER 98, 198, 396
• Philosophy; PHI 21, 22, 145
• Physics; PHY 10CY
• Plant Sciences; PLS 100A-C, 110, 110C, 131, 170A-B
• Psychology; PSC 41S, 104, 126, 180D, 205A, 211, 390
• Sociology; SOC 178
• Spanish; SPA 98F, 198F, 199FA-FB
• Statistics; STA 32, 100, 103, 141
• Technocultural Studies; TCS 100
• Veterinary Medicine: Population Health and Reproduction; PHR 242
• Veterinary Medicine: Preventive Veterinary Medicine; MPM 208
• Wildlife, Fish, and Conservation Biology; WFC 51, 160

Policies and Requirements Addendum—Version History

Version 1.0: 6/15/2016
• The Minor

Version 1.1: 9/19/2016
• Undergraduate Education
• Communication
• Community and Regional Development
• Computer Science
• English
• Managerial Economics
• Mathematics
• Native American Studies
• Physics
• Political Science
• Sustainable Agriculture and Food Systems
• Wildlife, Fish, and Conservation Biology
Table of Contents

The 2016-2018 UC Davis General Catalog Supplement contains updated information regarding requirements and courses for the 2016-2018 academic years. Use this document in conjunction with the 2016-2018 UC Davis General Catalog. If a department is not listed in this document, there are no changes to that department's programs.
Introduction

The 2016-2018 General Catalog Course Supplement and Policies & Requirements Addendum addresses important changes to the UC Davis 2016-2018 General Catalog. Changes are contained in two sections; the Course Supplement and Policies & Requirements Addendum.

Course Supplement

Changes, cancellations, or the addition of new courses, are contained in the Course Supplement, below.

Policies and Requirements Addendum

Revised or the addition of new undergraduate/graduate/professional degree programs and requirements, and revised or the addition of new General Catalog policies or procedures are contained in the Policies & Requirements Addendum.

Course Supplement

African American and African Studies

New and changed courses in African American and African (AAS)

Upper Division

107B. African Descent Communities and Culture in North America (4)

100B. Intermediate Microeconomics: Imperfect Competition, Markets and Welfare Economics (4)
Lecture—3 hours; discussion—1 hour. Prerequisite: course 100A C- or better. Pass One open to Managerial Economics Majors (AMGE) and Agricultural and Resource Economics (GARE) Graduate Majors. Price determination, employment of resources under conditions of monopoly, oligopoly, and monopolistic competition. GE credit: SocSci | QL, SS. —F, W, W, Su. (F, W, W, W, White)

Agricultural and Resource Economics

New and changed courses in Agricultural and Resource Economics (ARE)

Upper Division

100A. Intermediate Microeconomics: Theory of Production and Consumption (4)
Lecture—3 hours; discussion—1 hour. Prerequisite: Economics 1A C- or better, Economics 1B C- or better; Mathematics 1A C- or better, Mathematics 16A C- or better, Mathematics 16B C- or better, Mathematics 11C C- or better or Mathmatics 17A C- or better, Mathematics 17B C- or better or Mathematics 21A C- or better, Mathematics 21B C- or better. Pass One open to Managerial Economics Majors (AMGE), Animal Science and Management (AANM), and Textiles and Clothing (ATXC) Majors, and Agricultural and Resource Economics (GARE), International Agricultural Development (GIAD), Viticulture and Enology (GVEN) and Transportation Technology and Policy (GTPP) Graduate Majors. Theory of individual consumer and market demand; theory of production and supply of agricultural products, with particular reference to the individual firm; price determination, and employment of resources under pure competition. Not open for credit to students who have completed Economics 100. GE credit: SocSci | QL, SS. —F, W, W, Su. (F, W, W, Su.)

106. Econometric Theory and Applications (4)
Lecture—3 hours; discussion—1 hour. Prerequisite: course 100A C- or better; Statistics 103 C- or better. Pass One open to Managerial Economics Majors (AMGE) and Agricultural and Resource Economics (GARE) Graduate Majors. Statistical methods for analyzing data to solve problems in managerial economics. Topics include the linear regression model, methods to resolve data problems, and the economic interpretation of results. Not open for credit to students who have enrolled in or completed Economics 140. GE credit: SocSci | QL, SS. —F, W, W, Su. (F, W, W, Su.)

112. Fundamentals of Organization Management (4)

121. Economics of Agricultural Sustainability (4)
Lecture—3 hours; discussion—1 hour. Prerequisite: Economics 1A; Mathematics 12 or equivalent of Mathematics 12A. Pass One open to Majors in the College of Agricultural and Environmental Sciences and Graduate Majors. Application of economic concepts to agro-environmental issues relevant to agricultural sustainability. Topics include market efficiency, production externalities, government policies, agricultural trade, product differentiation, all linked to sustainability issues. Case studies include biofuels, genetically modified foods and geographically differentiated products. GE credit: SocSci | SS.

136. Managerial Marketing (4)
Lecture—4 hours. Prerequisite: course 100A; Statistics 103. Pass One open to Managerial Economics Majors (AMGE), Animal Science and Management (AANM) Majors and Agricultural and Resource Economics (GARE) Graduate Majors. Application of economic theory and statistics in the study of marketing, marketing measurement and forecasting, market planning, market segmentation, determination of optimal product market mix, sales and cost analysis, conduct of marketing research, marketing models and systems. GE credit: SocSci | SS. —F, S, Su. (F, S, Su.)

143. Investments (4)

144. Real Estate Economics (3)
Lecture—3 hours. Prerequisite: course 100A. Pass One open to Managerial Economics (AMGE) Majors and Agricultural and Resource Economics (GARE) Graduate Majors. The economic theory, analysis, and institutions of real estate markets and related financial markets. Case studies drawn from the raw land, single family, multifamily, industrial and office real estate markets. GE credit: SocSci | SS. —S. (S.)

155. Operations Research and Management Science (4)
Lecture—3 hours; discussion—1 hour. Prerequisite: course 100A C- or better; Statistics 103 C- or better. Pass One open to Managerial Economics (AMGE) and Animal Science and Management (AANM) Majors and Agricultural and Resource Economics (GARE) Graduate Majors. Introduction to quantitative methods used to analyze business and economic processes: decision analysis for management, mathematically optimized decision making, data analysis, the use of information in decision making, the use of computer models, the use of simulation, project evaluation, input-output planning, and other topics in operations research. GE credit: SocSci | SS. —S. (S.)
American Studies

New and changed courses in American Studies (AMS)

Upper Division

120. American Folklore and Folklife (4)
(cancelled course—eff. winter 17)

160. Undergraduate Seminar in American Studies (4)
Seminar—3 hours, term paper. Pass. One restricted to American Studies majors, limited enrollment.

Intensive reading, discussion, research, and writing by small groups in selected topics of American Studies scholarship, emphasis on theory and its application to American material. May be repeated for credit up to one time when content differs. —W. S. (W, S.)

[change in existing course—eff. winter 17]

Animal Behavior (A Graduate Group)

New and changed courses in Animal Behavior (ANB)

Graduate

203. Advanced Animal Welfare (3)
[new course—eff. spring 17]

Animal Genetics

New and changed courses in Animal Genetics (ANG)

Upper Division

111. Molecular Biology Laboratory Techniques (4)
Lecture—2 hours; laboratory—6 hours. Prerequisite: Biological Sciences 2C; Biological Sciences 101; Biological Sciences 102 or Animal Biology 102; Biological Sciences 103 or Animal Biology 103.

Introduction to the concepts and techniques used in molecular biology, the role of this technology in both basic and applied animal research, and participation in laboratories using some of the most common techniques in molecular biology. GE credit: SciEng | SE, VL, W, WE—F. (F.) Kueltz, Murray

[change in existing course—eff. winter 17]

Animal Science

New and changed courses in Animal Science (ANS)

Upper Division

129. Environmental Stewardship in Animal Production Systems (3)
Lecture—3 hours. Prerequisite: course 2, Biological Sciences 2A, 2B, 2C; Chemistry 8A and 8B or 118A and 118B.

Management principles of environmental stewardship for grazing lands, animal feeding, operations, and aquaculture operations; existing regulations, sample analyses, interpretation and utilization of data, evaluation of alternative practices, and policy development. Offered in alternate years. GE credit: SciEng | SE, VL—W. (W.) Meyer

[change in existing course—eff. winter 17]

Techniques and Practices of Fish Culture (3)
Lecture—1 hour; laboratory—6 hours. Prerequisite: general biology and chemistry; course 2. Restricted to upper division standing. Daily care and maintenance of fish in residential aquariums, research and commercial facilities. Biological and environmental factors important to sound management of fish. Laboratories focus on fish culture including growth trials and biochemical assays. Not open for credit to students who have previously completed course 136A or 137. GE credit: SciEng | W, QL, SL, VL, W, WE—F. (F.) Hung

[change in existing course—eff. winter 17]
139. Experimental Animal Physiology (3) Lecture—1 hour; laboratory—3 hours; fieldwork—3 hours. Prerequisite: Animal Biology 102, Biological Sciences 101, or consent of instructor. Restricted to seniors in the Animal Science and Animal Science and Management majors. Combination of theory and hands-on experiences in animal physiology using various experimental techniques. Practical laboratory skill development from cellular level to whole animal, in areas such as genetics, endocrinology, histology and physiological function. GE credit: SciEng | SE, WE.—W. (W.) Toddham (change in existing course—eff. spring 16)

147. Dairy Processing and Marketing (3) Lecture—2 hours; laboratory—3 hours. Prerequisite: course 2 or consent of instructor. Restricted to upper division standing. Examination of distribution systems, processing practices, product quality, impact of government policy (domestic and foreign), marketing alternatives, and product development. GE credit: SciEng | SE. (change in existing course—eff. winter 17)

Anthropology

New and changed courses in Anthropology (ANT)

Lower Division

1Y. Human Evolutionary Biology (Hybrid Version) (4) Web virtual lecture—1.5 hours; lecture/discussion—1.5 hours; discussion/laboratory—1 hour. Evolutionary theory and mechanisms of evolution; basic population and quantitative genetics; primateology; biological and cultural diversity within Homo sapiens; paleoanthropology. Students may not take both course 1 and course 1Y for credit. GE credit: SciEng, Div | SS, WE.—W. (W.) Weaver (change in existing course—eff. winter 17)

2. Cultural Anthropology (5) Lecture—3 hours; discussion—1 hour; term paper. Introduction to cultural diversity in its many forms and methods used by anthropologists to account for it. Relational dynamic of culture, history, and power in constituting social facts and “realities.” Critical thinking of contemporary concerns. GE credit: SocSci, Div | Writ | ACGH, DD, SS, WC, WE.—F, W, S. (F, W, S.) (change in existing course—eff. winter 17)

Upper Division

125A. Structuralism and Symbolism (4) Lecture—3 hours; discussion—1 hour. Prerequisite: course 2 recommended. Survey of anthropological approaches to understanding the logic of structuralism and symbolism in cultural analysis. Focus on how structural and symbolic interpretations relate to cultural and linguistic universals and to the philosophical basis of relativism in the social sciences. (Former course 125.) Offered in alternate years. GE credit: SocSci, Div | SS, WC, WE. GE credit: SocSci, Div | SS, WC, WE. (change in existing course—eff. winter 17)

133. Anthropology of Ocean Worlds (4) Lecture—3 hours; discussion—1 hour. Prerequisite: course 2 recommended. Exploration of various oceanic cultures and context of development with local sea. Piracy, smuggling, exchange, maritime legal regimes, offshore policing, media infrastructures, and ocean ecologies. GE credit: SS, WC, WE.—Kahn (change in existing course—eff. winter 17)

135. Media Anthropology (4) Lecture—3 hours; discussion—1 hour. Prerequisite: upper division standing. Examining human practices through their inscription in old and new media; evaluating the emergent fields of "cyber" and "digital" anthropology; and problematizing terms and concepts routinely deployed in studies of media worlds—platform, social media, hologram, algorithm, remediation, curation, animation. GE credit: AH or SS, Vl, WC.—S. (S.) Elbak (change in existing course—eff. winter 17)

144. Contemporary Societies and Cultures of Latin America (4) Lecture—3 hours; discussion—1 hour. Prerequisite: course 2 recommended. Introduction to contemporary social structure of Latin America. Origins, maintenance and changes in inequality; economic responses to poverty, sociocultural responses to discrimination, and political responses to powerlessness. GE credit: SocSci, Div | Writ | SS, WC, WE.—de la Cadena (change in existing course—eff. winter 17)

147. Modern South Asia Cinema (4) Lecture/discussion—4 hours; film-viewing—3 hours. Prerequisite: upper division standing or consent of instructor. South Asian cinema of last 100 years in the context of cultural, social, and political changes. South Asian history, Independence, Partition, urban life, class, migration, postcolonial identity, diaspora, gender, sexuality, religion, sport, performance, etc. (Same course as Middle East/South Asia Studies 1318 and Cinema & Technocultural Studies 146B) Offered in alternate years. GE credit: SocSci | AH, SS, Vl, WC, WE. (change in existing course—eff. winter 17)

181L. Field Course in Archeological Methods (4) Fieldwork—18 hours; lecture/discussion—2 hours. Prerequisite: course 181; or consent of instructor. On-site course using archaeological methods and techniques held at a field location in the western United States, generally California or Nevada. Incorporates basic methods of archaeological survey, mapping, and excavation. GE credit: SS.—S. (Su.) (new course—eff. spring 17)

191. Topics in Anthropology (4) Lecture/discussion—3 hours, term paper. Prerequisite: upper division standing. Intensive treatment of a special anthropological topic or problem. May be repeated for credit. (change in existing course—eff. fall 17)

Arabic

New and changed courses in Arabic (ARB)

Lower Division

21. Intermediate Arabic 21 (4) Lecture/discussion—4 hours. Prerequisite: course 3; or consent of instructor. Builds on courses 1, 2, and 3. Interactive and integrated presentation of listening, speaking, reading, and writing, including idiomatic expression. Focus on standard Arabic with limited use of Egyptian and/or other colloquial dialect. GE credit: ArtHum | AH, OL, WC.—F. (F.) Hassouna (change in existing course—eff. spring 17)

21A. Accelerated Intensive Intermediate Arabic 15 (4) Lecture/discussion—15 hours. Prerequisite: course 3 or with consent of instructor. Special 12-week accelerated, intensive summer session course that combines the works of courses ARB 21, 22, and 23. Modern Standard Arabic through development of all language skills in a cultural context with emphasis on communicative proficiency. Not open for credit to students who have completed course 21, 22 or 23. Offered irregularly. GE credit: ArtHum | AH, WC.—Su. (Su.) (new course—eff. summer 17)

21C. Colloquial Egyptian Arabic (4) Lecture/discussion—3 hours; lecture/laboratory—3 hours. Prerequisite: course 3; or consent of instructor. Continuation of the Colloquial Egyptian Arabic covered in the first year of Arabic; courses 1, 2, and 3. May be repeated for credit up to one time if instruction material changes. GE credit: ArtHum | AH.—F, Su. (F, Su.) Hassouna, Radwan, Sharlet (change in existing course—eff. spring 17)

21L. Colloquial Levantine Arabic (4) Lecture/discussion—4 hours. Prerequisite: course 3; or consent of instructor. Continuation of course 21. Interactive and integrated presentation of listening, speaking, reading, and writing, including idiomatic expression. Focus on standard Arabic with limited use of Egyptian and/or other colloquial dialect. GE credit: ArtHum | AH, OL, WC.—F. (F.) Al-Shatatrat, Sharlet (change in existing course—eff. fall 17)

22. Intermediate Arabic 22 (4) Lecture/discussion—4 hours. Prerequisite: course 21, or consent of instructor. Continuation of course 21. Interactive and integrated presentation of listening, speaking, reading, and writing, including idiomatic expression. Focus on standard Arabic with limited use of Egyptian and/or other colloquial dialect. GE credit: ArtHum | AH, OL, WC.—W. (W.) Hassouna (change in existing course—eff. spring 17)

22C. Colloquial Egyptian Arabic (4) Lecture/discussion—3 hours; lecture/laboratory—1 hour. Prerequisite: course 21C; or consent of instructor. Continuation of the Colloquial Egyptian Arabic covered in first year of Arabic; courses 1, 2, and 3 and the first quarter of Colloquial Arabic course 21C. May be repeated for credit up to one time if instruction material changes. GE credit: ArtHum | AH, OL, WC.—W. Su. (W, Su.) Hassouna, Radwan, Sharlet (change in existing course—eff. spring 17)

23C. Colloquial Egyptian Arabic (4) Lecture/discussion—3 hours; lecture/laboratory—1 hour. Prerequisite: course 21C; or consent of instructor. Continuation of Colloquial Egyptian Arabic covered in course 22C. May be repeated for credit up to one time if instruction material changes. GE credit: ArtHum | AH, OL, WC.—W. Su. (W, Su.) Hassouna, Radwan, Sharlet (change in existing course—eff. spring 17)

98. Directed Group Study (1-5) Prerequisite: consent of instructor. Directed group study. May be repeated for credit. (P/NP grading only.) (new course—eff. winter 17)

99. Special Study for Undergraduates (1-5) Prerequisite: consent of instructor. Special study. May be repeated for credit. (P/NP grading only.) (new course—eff. winter 17)
Art History

New and changed courses in Art History (AHI)

Upper Division

122. Sex and Space (4)
Lecture/discussion—4 hours. Relationship between space and sexuality. Sexual metaphors in art and architecture, gender identity formation via images and space. Diverse intersections of sexuality and art history. GE credit: AH, DD, VL, WE.—F, F. (F. Grigor (new course—eff. fall 16)

148. Theory and Criticism: Painting & Sculpture (4)
Lecture—3 hours; term paper. Prerequisite: Art Studio 5 or 7 recommended. Study of forms and symbols in historic and contemporary masterpieces. (Same course as Art Studio 148.) Offered in alternate years. GE credit: ArtHum, Wrt | AH, VL, WE.—Pardee (change in existing course—eff. winter 17)

163D. Art from China 1900 to the Present (4)
Lecture/discussion—4 hours. Forms of modern and avant-garde expression from China’s industrialization to the 21st century. Interactions of art and politics, individual and state, art for the free market versus art for the state, expressions of modernity; China on the world stage. Offered in alternate years. GE credit: ArtHum, Div, Wrt | AH, VL, WC, WE.—Burnett (change in existing course—eff. spring 17)

175. Architecture and Urbanism in Mediterranean Antiquity (4)
Lecture—3 hours; extensive writing. Architecture and urban development in the ancient Near East, Greece, and Rome. Special emphasis on the social structure of the ancient city as expressed in its architecture, and on the interaction between local traditions and the impact of Greco-Roman urbanism. (Same course as Classics 175.) Offered in alternate years. GE credit: ArtHum, Div, Wrt | AH, VL, WC, WE.—Rolle (change in existing course—eff. spring 17)

187. Contemporary Architecture (4)
Lecture—3 hours; term paper. Introduction to world architecture and urban design since circa 1966. Relation of influential styles, buildings, and architects to postmodern debates and to cultural, economic, technological and environmental change. Offered in alternate years. GE credit: ArtHum, Div, Wrt | AH, VL, WE. (change in existing course—eff. spring 17)

Art Studio

New and changed courses in Art Studio (ART)

Lower Division

10. Fine Art Appreciation (4)
Lecture—3 hours; discussion—1 hour. Survey of contemporary artists since 1970. Topics explore contemporary thought within the visual arts using the forms and strategies of painting, sculpture, installation, performance, photography, and video in collaborative, ephe meral and multimedia approaches. Intended for Art and non-Art majors. GE credit: ArtHum | AH, VL. (change in existing course—eff. winter 17)

Upper Division

143. Advanced Ceramic Sculpture: Studio Projects (4)
Studio—12 hours. Prerequisite: course 12A or course 142B or course 142C. Pass One restricted to Art Studio majors. Experimentation with all techniques learned in prerequisite ceramics classes. Course will include class projects in consultation with faculty. May be repeated for credit up to two times; consent of instructor required for students taking the course a third time. GE credit: ArtHum | AH, VL, Wrt | Rosen (change in existing course—eff. spring 17)

Professional

401. Museum Training: Curatorial Principles (4)
Seminar—3 hours; papers. Approved for graduate degree credit. Study of private and public collections. Museum personali ties. Appraisal of works of art; ethics of appraisal. Acquisition and sales: methods and catalogues. Registration. Technical problems of the museum. Connoisseurship. Colleteral reading. Visits to museums. Offered in alternate years. (change in existing course—eff. fall 17)

Asian American Studies

New and changed courses in Asian American Studies (ASA)

Lower Division

2. Contemporary Issues of Asian Americans (4)
Lecture—3 hours; discussion—1 hour. Introduction to Asian American Studies through the critical analysis of the impact of race, racism, ethnicity, imperialism, militarism, and immigration since post-World War II on Asian Americans. Topics may include sexuality, criminality, class, hate crimes, and inter-ethnic relations. GE credit: ArtHum or SocSci, Div, Wrt | ACHG, AH or SS, DD, VL, WC, WE.—F, W, S. (change in existing course—eff. spring 17)

Upper Division

189I. Topics in Asian American Studies: Politics and Social Movements (4)
Lecture—4 hours. Intensive treatment of a topic in Asian American Studies: politics and social movements. May be repeated for credit. Offered irregularly. GE credit: ArtHum or SocSci | ACHG, AH or SS, DD, DI, OL, WE. (change in existing course—eff. spring 17)

Avian Science

New and changed courses in Avian Science (AVS)

Lower Division

13. Birds, Humans and the Environment (3)
Lecture—2 hours; discussion—1 hour. Restricted to students with lower division standing. Interrelationships of the worlds of birds and humans. Lectures, discussions, field trips and projects focus on ecology, avian evolution, physiology, reproduction, flight, behavior, folklore, identification, ecotoxicology and conservation. Current environmental issues are emphasized. Half-day field trip. GE credit: SciEng, Wrt | SE, SL. (change in existing course—eff. winter 17)

Biophysics

New and changed courses in Biophysics (BPH)

Graduate

241. Membrane Biology (3)
Lecture—3 hours. Prerequisite: Biological Sciences 102, 103, 104 or consent of instructor. Advanced topics on membrane biochemistry and biophysics. Relationship of the unique properties of biomembranes to their roles in cell biology and physiology.—S. (S.) Crowe, Longo, Voss (change in existing course—eff. winter 17)

255. Nanoscale Imaging for Molecular Medicine (3)
Lecture/discussion—3 hours. Prerequisite: Biomedical Engineering 202 highly recommended; graduate standing. Current and emerging technologies to visualize biological structures and processes at size scales = 100 nanometers—and their application towards the advancement of molecular medicine. Technologies include superresolution optical microscopy, electron microscopy and tomography. Emphasis on quantitative imaging. Same course as Biomedical Engineering 255.—S. (S.) Cheng, Chung (change in existing course—eff. spring 17)

271. Optical Methods in Biophysics (4)
Lecture—3 hours; discussion/laboratory—1 hour. Prerequisite: Biological Sciences 102; Applied Science Engineering 108B, Chemistry 110A; or equivalents. Principal optical techniques used to study biological structures and their related functions. Specific optical techniques useful in the studies of protein-nucleic acid, protein-membrane and protein-protein interactions. Biomedical applications of optical techniques. (change in existing course—eff. spring 17)

288. Living Matter: Physical Biology of the Cell (3)
Lecture—3 hours. Open to any student possessing general background in any disciplines of physical or biological sciences and engineering. Introduction to the origin, maintenance, and regulation of the dynamic architecture of the cell, including cellular modes of organization, dynamics and energy dissipation, molecular transport, motility, regulation, and...
Biotechnology

New and changed courses in Biotechnology (BIT)

Lower Division

91. Undergraduate Seminars in Biotechnology (1)
Seminar—1 hour. Undergraduate oriented seminar series focused on biotechnology research and product development. Speakers from campus and the private sector discuss ongoing research, product development and biotechnology careers. [P/NP grading only].—W. (W.) Yoder
(new course—eff. winter 17)

98. Directed Group Study (1-5)
Prerequisite: consent of instructor. Directed group study. May be repeated for credit. GE credit: SE.—F, W, S, Su. [F, W, S, Su.]
(new course—eff. fall 16)

Upper Division

150. Applied Bioinformatics (4)
Lecture—2 hours; laboratory/discussion—2 hours. Prerequisite: Biological Sciences 101; Computer Science Engineering 10 or Computer Science Engineering 15 or Plant Science 21; Plant Science 120 or Statistics 13 or Statistics 100; or consent of instructor. Limited enrollment. Concepts and programs needed to apply bioinformatics in biotechnology research. Sequence of analysis and annotation and use of plant and animal databases for students in biological and agricultural sciences. Two units of credit for students who have completed Computer Science Engineering 124. GE credit: SciEng |SE, VL.—Runście
(change in existing course—eff. winter 17)

198. Directed Group Study (1-5)
Prerequisite: consent of instructor. Directed group study. May be repeated for credit. Offered in alternate years. GE credit: SE.—F, W, S, Su. [F, W, S, Su.]
(new course—eff. fall 16)

Biotechnology; Design Emphasis

New and changed courses in Biotechnology; Design Emphasis (DEB)

Graduate

282. Biotechnology Internship (7-12)
Internship—21-36 hours. Prerequisite: graduate standing and consent of instructor. Open only to students participating in the Designated Emphasis in Biotechnology program. Research at a biotechnology company or interdisciplinary cross-college lab for a minimum of 3 months as part of the Designated Emphasis in Biotechnology Program. [F, W, S, Su. [F, W, S, Su.;] Dandekar, Kjetstrom
(new course—eff. winter 17)

Business Analytics

New and changed courses in Business Analytics (BAX)

Professional

401. Introduction to Business Analytics (2)
Lecture—2 hours. Introduction to the process of analyzing raw data to gain profitable business insight. Applications selected across organizational functions include prediction, process improvement, and general operational decision-making.
(new course—eff. fall 17)

402. Organizational Issues in Implementing Analytics (2)
Lecture—2 hours. Review the evolution of analytics in business, how to assemble and manage analytics teams, and the decision lifecycle. Emphasis on structuring communications to improve buy-in from peers and non-quantitatively-inclined colleagues.
(new course—eff. winter 18)

403. Organizational Effectiveness Workshop (2)
Lecture—2 hours. Examine leadership, communications, and project management within the business, legal and societal contexts in which analytics is applied. Emphasis on privacy, data security, responsibility, and ethics.—F, F.
(new course—eff. fall 17)

411. Problem Structuring (2)
Lecture—2 hours. Synthesize data-rich business challenges using analytical frameworks and techniques for modeling business problems. Emphasis on modeling uncertainty, optimizing multiple criteria, and building consensus.—F, F.
(new course—eff. fall 17)

421. Data Management (2)
Lecture—2 hours. Introduction to the extraction, assembly, storage and organization of data in IT systems.—F.
(new course—eff. fall 17)

422. Big Data (2)
Lecture—2 hours. Introduction to business applications involving standard, streaming, and network data. Emphasis on scalable technologies for processing and analyzing big data for diverse applications.—F.
(new course—eff. fall 17)

423. Data Design and Representation (2)
Lecture—2 hours. Students learn computational reasoning about data representations by mapping conceptual data models to relational structures and analyzing database architectures and design tradeoffs.—F.
(new course—eff. fall 17)

431. Data Visualization (2)
Lecture—2 hours. Extract insights using visualization tools in R, Python, ManyEyes, HTML/CSS, etc. Standard (histograms, boxplots, and dashboards) and specialized (3D, animation, word clouds) formats are covered.—F.
(new course—eff. fall 17)

441. Statistical Exploration and Reasoning (2)
Lecture—2 hours. Introduction to statistical reasoning and inference extraction from large data-sets. Students learn to obtain preliminary insights and form initial hypotheses through exploratory data analysis (EDA).—F.
(new course—eff. fall 17)

442. Advanced Statistics (3)
Lecture—3 hours. Continue exploring statistical reasoning and decision-making. Topics include Bayesian models, nonparametric models, Monte Carlo Markov Chain, time series, model specification, model selection, and dimension reduction.—F.
(new course—eff. fall 17)

443. Analytic Decision Making (3)
Lecture—3 hours. Using spreadsheets and specialized modeling tools, explore structured problem solutions through meta-heuristics, Monte Carlo simulation, and mathematical optimization.—F.
(new course—eff. fall 17)

452. Machine Learning (3)
Lecture—3 hours. Construct algorithms for learning from data and analyze the process for deriving business intelligence. 32 hours of supervised and unsupervised learning, neural networks, etc.—F.
(new course—eff. fall 17)

453. Application Domains (3)
Lecture—3 hours. Students explore contemporary and emerging domains for high-yield applications of analytics. Topics: social network analytics; search analytics; health care analytics; internet of things; supply chain/operations analytics; and marketing analytics.—F.
(new course—eff. winter 17)

461. Practicum Initiation (2)
Lecture—2 hours. Students form teams, scope their project in light of team capability and business opportunity, create a preliminary structure and solution approach for the core problem, and assess data quality and project risks.—F.
(new course—eff. fall 17)

462. Practicum Elaboration (2)
Lecture—2 hours. Building on problems chosen in course 461, teams refine the business opportunity and draw insights from exploratory data analysis.—F.
(new course—eff. fall 17)

463. Practicum Analysis (2)
Lecture—2 hours. Implement selected analytic approaches through iteratively refining assumptions and analysis, synchronizing client requirements with model results, and creating minimum viable prototypes. Offered irregularly.—F.
(new course—eff. fall 17)

464. Practicum Implementation (4)
Lecture—2 hours; project—2 hours; term paper—2 hours; discussion—1 hour. Project teams complete analysis, plan deployment and obtain client buy-in. The course culminates in a project presentation, preferably including representatives from the client organization.—F.
(new course—eff. fall 17)

Cell Biology and Human Anatomy

New and changed courses in Cell Biology and Human Anatomy (CHA)

Upper Division

102. Human Microscopic Anatomy: Structure and Function of Human Tissues and Organ Systems (4.5)
Lecture—3 hours; discussion/laboratory—4 hours. Prerequisite: Biological Sciences 104. Limited enrollment. Course complements Gross Anatomy by extending the study of structure to the microscopic level. Shows how cells are assembled into tissues,
and tissues into organs, with an emphasis on demonstrating how microstructural and functional organization principles explain function. GE credit: SE.—W. (W.) Beck, FitzGerald, Simo

(new course—eff. winter 17)

Graduate

202. Microscopic Anatomy for Researchers (3)
Lecture—2 hours; discussion/lab—3 hours. Open to graduate students in the biomedical sciences (consent of instructor required). The growing importance of the use of gene knock-out studies and imaging technology requires significant understanding of basic anatomy. Designed to familiarize students in diverse fields with anatomical, cellular and tissue organization of typical animal models.—W. (W.) Beck

(change in existing course—eff. spring 17)

Professional

493. Clinically-Oriented Anatomy Special Study Module (6)
cancelled course—eff. fall 17

Chemistry

New and changed courses in Chemistry (CHE)

Lower Division

2A. General Chemistry (3)
Lecture—3 hours; laboratory/discussion—4 hours. Prerequisite: high school chemistry and physics, and concurrent enrollment in mathematics at or above the level of Mathematics 12 strongly recommended; any one of the following: (A) SAT Mathematics score = 600+; (B) ACT Mathematics score = 27+; (C) AP Chemistry exam score of ≥ 3 = 3+; (D) SAT Chemistry subject test score = 700+; (E) UC Davis Chemistry Placement Examination score = 24+ on first attempt; in lieu of A-E, either completion of ALEKS online Preparatory Chemistry course with 100% Pie Mastery or completion of Workbook 41C with a grade of C or better (Workload 41C offered in fall quarter only to students who do not meet A-E). Periodic table, stoichiometry, chemical equations, physical properties and kinetic theory of gases, atomic and molecular structure and chemical bond and valence. Laboratory experiments in stoichiometric relations, properties and collection of gases, atomic spectroscopy, and introduction to quantitative analysis. Not open for credit to students who have taken course 2AH. GE credit: SciEng [QL, SE, SL.—F, W. (W.)]

(change in existing course—eff. fall 16)

Upper Division

103A. Chemistry for Life Sciences: Determining Organic Structures and Properties (5)
Lecture—3 hours; discussion—1 hour; laboratory—1 hour. Prerequisite: course 2C or course 2CH; Mathematics 16C or Mathematics 17C or Mathematics 21C; Physics 7C or Physics 9C or Physics 9HC. Core concepts necessary for majors in the life science area. Introduction to development of classical and statistical thermodynamics including phase equilibrium processes and solutions of both non-electrolytes and electrolytes. The thermodynamic basis of electrochemistry and chemical bonding. GE credit: SciEng [SE.—F, W. (W.)]

(new course—eff. fall 16)

107A. Physical Chemistry for the Life Sciences (5)
Lecture—3 hours. Prerequisite: course 2C or course 2CH; Mathematics 16C or Mathematics 17C or Mathematics 21C; Physics 7C or Physics 9C or Physics 9HC. Core concepts necessary for majors in the life science area. Introduction to development of classical and statistical thermodynamics including phase equilibrium processes and solutions of both non-electrolytes and electrolytes. The thermodynamic basis of electrochemistry and chemical bonding. GE credit: SciEng [SE.—F, W. (W.)]

(change in existing course—eff. spring 17)

110A. Physical Chemistry: Introduction to Quantum Mechanics (4)
Lecture—3 hours; discussion—1 hour. Prerequisite: Physics 7C or Physics 9C or Physics 9HC; course 2C or course 2CH; Mathematics 16C or Mathematics 17C or Mathematics 21C; completion of Mathematics 21D, 22A, and 22AL, and Physics 9C or Physics 9HC, strongly recommended. Introduction to the postulates and general principles of quantum mechanics. Approximations based on variational method and time independent perturbation theory. Application to harmonic oscillator, rigid rotor, one-electron and many-electron systems, and homonuclear and heteronuclear diatomic molecules. GE credit: SciEng [QL, SE.—F, S. (S.)]

(change in existing course—eff. spring 17)

118A. Organic Chemistry for Health and Life Sciences (4)
Lecture—3 hours; laboratory/discussion—1.5 hours. Prerequisite: courses 2C or better or course 2CH; Mathematics 16C or Mathematics 17C or Mathematics 21C; completion of Mathematics 21D, 22A, and 22AL, and Physics 9C or Physics 9HC, strongly recommended. Introduction to the postulates and general principles of quantum mechanics. Approximations based on variational method and time independent perturbation theory. Application to harmonic oscillator, rigid rotor, one-electron and many-electron systems, and homonuclear and heteronuclear diatomic molecules. GE credit: SciEng [QL, SE.—F, S. (S.)]

(change in existing course—eff. spring 17)

118B. Organic Chemistry for Health and Life Sciences (4)
Lecture—3 hours; laboratory—3 hours. Prerequisite: courses 2C or better or course 2CH; Mathematics 16C or Mathematics 17C or Mathematics 21C; completion of Mathematics 21D, 22A, and 22AL, and Physics 9C or Physics 9HC, strongly recommended. Introduction to the postulates and general principles of quantum mechanics. Approximations based on variational method and time independent perturbation theory. Application to harmonic oscillator, rigid rotor, one-electron and many-electron systems, and homonuclear and heteronuclear diatomic molecules. GE credit: SciEng [QL, SE.—F, W. (W.)]

(change in existing course—eff. spring 17)

118C. Organic Chemistry for Health and Life Sciences (4)
Lecture—3 hours; laboratory—3 hours. Prerequisite: courses 118A or 128A. Continuation of course 118B with emphasis on stereochemical and spectroscopic considerations of non-aromatic hydrocarbons, haloalkanes, alcohols and ethers. Only 2 units credit for students who have completed courses 8A or 8B and 118A or 118B. GE credit: SciEng [SE SL.—F, W. (W.)]

(change in existing course—eff. spring 17)

118D. Organic Chemistry for Health and Life Sciences (4)
Lecture—3 hours; laboratory—3 hours. Prerequisite: courses 118A or 128A. Continuation of course 118B with emphasis on stereochemical and spectroscopic considerations of non-aromatic hydrocarbons, haloalkanes, alcohols and ethers. Only 2 units credit for students who have completed courses 8A or 8B and 118A or 118B. GE credit: SciEng [SE SL.—F, W. (W.)]

(change in existing course—eff. spring 17)

120A. Organic Chemistry (3)
Lecture—3 hours. Prerequisite: course 128A or consent of instructor. Continuation of course 128A with emphasis on the chemistry of hydrocarbons, ethers, their sulfur analogs, and carbonyl compounds. Introduction to the application of spectroscopic methods to organic chemistry. Introduction to synthesis of moderately complex organic molecules. Full credit to students who completed course 118B. GE credit: SciEng [SE.—F, S. (S.)]

(change in existing course—eff. winter 17)

128C. Organic Chemistry (3)
Lecture—3 hours. Prerequisite: course 128A. Continuation of course 128B with emphasis on enolate condensations and reactions, nitriles, anhydrides, amides, and sugars; selected biologically important compounds. Full credit to students who completed course 118B; not open for credit to students who have completed course 118C. GE credit: SciEng [SE.—F, S. (S.)]

(change in existing course—eff. winter 17)

129A. Organic Chemistry Laboratory (2)
Laboratory—1 hour; lecture—3 hours. Prerequisite: course 128A or consent of instructor. Continuation of course 128A with emphasis on stereochemical and spectroscopic considerations of non-aromatic hydrocarbons, haloalkanes, alcohols and ethers. Only 2 units credit for students who have completed courses 8A or 8B and 118A or 118B. GE credit: SciEng [SE SL.—F, W. (W.)]

(change in existing course—eff. winter 17)

129B. Organic Chemistry Laboratory (2)
Laboratory—6 hours. Prerequisite: courses 129A; CHE 128B can be concurrently. Continuation of course 129A with emphasis on case studies of various drugs and the use of computational methods in drug design.—S. (S.)

(change in existing course—eff. spring 17)

130C. Case Studies in Pharmaceutical Chemistry (1)
Seminar—2 hours; independent study. Prerequisite: courses 130A (can be concurrent) 130B (can be concurrent). Seminar. Exploration of medicinal and pharmaceutical chemistry topics through seminars presented by professional chemists (and allied professionals). Designed to highlight career opportunities for students with a degree in pharmaceutical chemistry. P/NP grading only.—S. (S.)

(change in existing course—eff. spring 17)
Chinese

New and changed courses in Chinese (CHN)

Upper Division

107. Traditional Chinese Fiction (in English) (4)
Lecture—3 hours; discussion—1 hour. English-language course studying the dawn of Chinese fiction and its development down to modern times. Combines survey history with close reading of representative works such as The Story of the Stone and famous Ming-Qing short stories. GE credit: GE credit: ArtHum, Div, Writ | AH, WC.—Il. (II) Halperin, He
(change in existing course—eff. spring 16)

108. Poetry of China and Japan (in English) (4)
Lecture—3 hours; discussion—1 hour. A comparative approach to Chinese and Japanese poetry, examining poetic practice in the two cultures; includes a general outline of the two traditions, plus study of poetic forms, techniques, and distinct treatments of universal themes: love, nature, war, etc. Offered in alternate years. [Same course as Japanese 108.] GE credit: ArtHum, Div, Writ | AH, WC.—Yeh
(change in existing course—eff. fall 17)

110. Great Writers of China: Texts and Context (in English) (4)
Lecture—3 hours; discussion—1 hour. Examination of major theoretical concepts and interpretive methods in the study of literature by using examples from the Chinese tradition; discussions of classical and modern works with an emphasis on the relations between literature, author, society, and culture. GE credit: ArtHum, Div, Writ | AH, WC.—Yeh
(change in existing course—eff. spring 17)

111. Modern Chinese: Reading and Discussion (12)
Lecture—3 hours; discussion—1 hour. Prerequisite: course 6 C- or better or course 3BL C- or better or course 4A C- or better; or placement exam or consent of instructor. Building on Chinese 6/3BL, further development of communication skills in Modern Standard Mandarin-speaking environments. Reading of dialogues/articles pertaining to contemporary China. GE credit: ArtHum | AH, OL, WC.—Y. (F) Tran
(change in existing course—eff. spring 17)

Graduate

297. Directed Independent Study (4)
Term paper; independent study—8 hours; conference—1 hour. Prerequisite: consent of instructor. Restricted to graduate students. Directed independent study on a topic culminating in a term paper. Independent studies may only be arranged with consent of the instructor and when graduate seminars are unavailable. May be repeated for credit up to five times. —F, W, S. F, W, S, Jen Chen, Chu, Halperin, He, Yeh
(new course—eff. winter 17)

Cinema & Digital Media

New and changed courses in Cinema & Digital Media (CDM)

Upper Division

105. Feminist Media Production (6)
Lecture/discussion—3 hours; laboratory—3 hours; fieldwork—6 hours. Prerequisite: Cinema & Technocultural Studies 20 or equivalent; one course in Women and Gender Studies, or consent of instructor. Media production as a mode of cultural criticism, furthering feminist and social justice goals. Fundamentals of camera, editing and distribution via a social engagement model. Study and hands-on response to key historical and contemporary feminist and social justice media discourses. (Same course as Women's Studies 165.) Offered in alternate years. GE credit: ArtHum, SocSci, Div | AH, SS, ACGH, DD, DL, VL—W. (W) Wyman
(new course—eff. fall 16)

163. Art & Cinema: Between the White Cube and the Black Box (4)
Lecture—3 hours; film viewing—3 hours. Current debates between cinema studies and contemporary art. Issues covered include, experimental modes of filming, mounting, installing, screening, and displaying images between the White Cube (gallery/museum) and the Black Box (cinema). Offered in alternate years. GE credit: AH, OL, VL, WE.—W. (W) di Montezemolo
(new course—eff. winter 17)

Cinema & Technocultural Studies

New and changed courses in Cinema & Technocultural Studies (CTS)

Upper Division

146b. Modern South Asia Cinema (4)
Lecture/discussion—3 hours; film viewing—3 hours. Prerequisite: upper-division standing or consent of instructor. South Asian cinema of last 100 years in the context of cultural, social, and political changes. South Asian history; Independence, Partition, urban life, class, migration, postcolonial identity, diaspora, gender, sexuality, religion, sport, performance, etc. (Same course as Middle East/South Asia Studies 131B and Anthropology 147) Offered in alternate years. GE credit: SocSci | AH, SS, VL, WC, WE.
(new course—eff. winter 17)

Classics

New and changed courses in Classics (CLA)

Lower Division

10Y. Greek, Roman, and Near Eastern Mythology—Hybrid (3)
Lecture—2 hours; web virtual lecture—1 hour. Examination of major myths of Greece, Rome, and the Ancient Near East; their place in the religion, literature and art of the societies that produced them; their subsequent development, influence and interpretation. GE credit: ArtHum | AH, VL, WC.—F, W, S, F, W, S. J Brelin, Rundin, Seal, Stem, Uhlig
(new course—eff. winter 16)

140. Life and Economy in the Ancient Mediterranean World (4)
Lecture/discussion—3 hours; term paper. Characterization of ancient Mediterranean economies, with emphasis on Greece and Rome. Utilization of an archaeological, art historical, and literary evidence. Craft production, labor specialization, trade networks, ancient technology, urban growth, agricultural productivity, coinage systems, and household economies. Offered in alternate years. GE credit: AH, VL, WC, WE.—Stem
(new course—eff. fall 16)

Upper Division

170. Cultural Interactions in the Ancient Mediterranean World (4)
Lecture/discussion—3 hours; term paper. Exploration of the role of colonial encounters in the spread of ideas throughout the ancient Mediterranean from an archaeological and artistic perspective. Emphasis on material and literary expressions of culture, trade routes, and theories pertaining to culture contact. Offered in alternate years. GE credit: AH, VL, WC, WE.—Stem
(new course—eff. fall 16)

175. Architecture and Urbanism in Mediterranean Antiquity (4)
Lecture—3 hours; extensive writing. Architecture and urban development in the ancient Near East, Greece, and Rome. Special emphasis on the structural evolution of the ancient city as expressed in its architecture, and on the interaction between local traditions and the impact of Greco-Roman urbanism. (Same course as Art History 175.) GE credit: ArtHum, Div, Writ | AH, VL, WC, WE.—Roller
(change in existing course—eff. spring 17)

Clinical Research

New and changed courses in Clinical Research (CLH)

Graduate

205. Introduction to Medical Statistics (4)
(canceled course—eff. winter 17)

214A. Biodesign I (2)
Lecture—2 hours. Prerequisite: consent of instructor. Prior approval by instructor required; student must commit to taking both courses; Biodesign I and Bio design II. Focuses on the principles of needs identification and invention of biomedical technologies. Two part course provides a basic understanding of the elements of the innovation process and how to translate these principles into biomedical device design. —F. (F) Tran
(new course—eff. fall 16)

214B. Biodesign II (2)
Lecture—2 hours. Prerequisite: course 214A; consent of instructor. Prior approval by instructor required; student must commit to taking both courses; Biodesign I and Biodesign II. Focuses on the implementation of biomedical technologies and translational process. Two part course provides a basic understanding of the elements of the innovation process and how to translate these principles into biomedical device design. —W. (W) Tran
(new course—eff. winter 17)

244. Introduction to Medical Statistics (4)
Lecture—4 hours. Introduction to statistical methods and software in clinical, laboratory and population medicine. Graphical and tabular presentation of

Fall 2011 and on Revised General Education (GE): AH—Arts and Humanities; SS—Science and Engineering; SO—Social Sciences; ACGH=American Cultures; DD=Domestic Diversity; OL=Oral Skills; SL=Quantitative; SL=Scientific; VL=Visual; WC=World Cultures; WE=Writing Experience

Pre-Fall 2011 General Education (GE): ArtHum—Arts and Humanities; Science and Engineering; SocSci—Social Sciences; Div=Domestic Diversity; Writ=Writing Experience

Quarter Offered: F—Fall, W—Winter, S—Spring, Su—Summer; 2017-2018 offering in parentheses

Courses & Programs are subject to change without notice.
data, probability, binomial, Poisson, normal, t, F, and Chi-square distributions, elementary nonparametric methods, simple linear regression and correlation, life tables. Only one unit of credit for students who have completed Statistics 100 or Preventive Veterinary Medicine 402. [Same course as Public Health Sciences 244.]—F (F. Beckett) (new course—eff. winter 17)

**Cognitive Science**

**New and changed courses in Cognitive Science (CGS)**

**Upper Division**

199. Special Study for Advanced Undergraduates (1-5)
Prerequisite: consent of instructor. Special study for advanced undergraduates. May be repeated for credit (P/NP grading only).—F, W, S. (F, W, S.)
(new course—eff. winter 17)

**College of Letters & Science**

**New and changed courses in College of Letters & Science (LTS)**

**Lower Division**

98. Directed Group Study (1-4)
Prerequisite: consent of instructor. Directed group study. May be repeated for credit. (P/NP grading only.) Offered irregularly. (new course—eff. winter 17)

**Upper Division**

198. Directed Group Study (1-4)
Prerequisite: consent of instructor. Directed group study. May be repeated for credit. (P/NP grading only.) Offered irregularly. (new course—eff. winter 17)

**Communication**

**New and changed courses in Communication (CMN)**

**Lower Division**

1. Introduction to Public Speaking (4)
Lecture—2 hours; discussion—2 hours. Practice in the preparation and delivery of speeches based on principles and strategies of informing and persuading audiences drawn from the social sciences and humanities. GE credit: Wrt|AH, OL, SS, WE—F, W, S, Su. (F, W, S, Su.)
Shub (change in existing course—eff. winter 17)

10Y. Introduction to Communication (4)
Web virtual lecture—3 hours; web electronic discussion—1 hour. Basic principles of communication and communication processes; models of communication; foundations of empirical research in communication; contexts of communication and communication research including interpersonal, intercultural, news, entertainment, mediated, and others. Not open for credit to students who have taken course 10Y. GE credit: SS—F, W, S, Su. (F, W, S, Su.)
Ruiz, Taylor (new course—eff. fall 16)

10Y. Introduction to Communication (4)
Web virtual lecture—3 hours; discussion—1 hour. Basic principles of communication and communication processes; models of communication; foundations of empirical research in communication; contexts of communication and communication research including interpersonal, intercultural, news, entertainment, mediated, and others. Not open for credit to students who have taken course 10Y. GE credit: SS—F, W, S, Su. (F, W, S, Su.)
Ruiz, Taylor (new course—eff. fall 16)

**Upper Division**

110. Communication Networks (4)
Lecture/discussion—3 hours; discussion/laboratory—1 hour. Theoretical approaches to communication networks, practical applications of network studies, and network analysis tools. Relationship, political, social, social support, organizational, social media, and disease transmission networks are examined. Impact of emerging technologies on network creation, maintenance, and expansion. GE credit: SocSci SS—F, F. (F, F.) Barnett, Shen (change in existing course—eff. fall 17)

124. Family Communication (4)
Lecture/discussion—4 hours. Theories and research on family communication. Communication in courtship, marriage, and relational dissolution. Processes and outcomes of parent-child, sibling, family roles, and inter-generational communication. Interaction patterns associated with marital/family satisfaction, maintenance, divorce, and dysfunction. Cultural influences on family communication. GE credit: SS—S (S.)
(new course—eff. fall 17)

132. Social Media for Public Relations (4)
Lecture/discussion—4 hours. Prerequisite: course 131. Uses of social media technologies in contemporary public relations practice. Social and behavioral theories of social media processes and effects. Strategies and tools for authoring content that builds relationships and creates conversations with key publics. GE credit: SS—Heather (new course—eff. fall 16)

140. Introduction to Mass Communication (4)

142. Newsmaking (4)
Lecture/discussion—4 hours. Prerequisite: course 140; course 102. Pass One open to Communication majors only. (Recent) The making of news. How journalists construct news and how consumers and news consumers use it. Effects of news, technology’s challenges to journalism, and the relationship of news to other institutions. GE credit: SocSci|ACGH SS—W, W, S, Su. Cho, Theobald (change in existing course—eff. spring 17)

144. Media Entertainment (4)
Lecture/discussion—3 hours; term paper. Pass One open to Communication majors only. Effects and appeal of media entertainment, emphasizing emotional reactions. Topics include key concepts of entertainment research such as mood management, and the respective features and emotional/social-psychological effects of genres such as comedy, mystery, thriller, sports, music, horror, and erotica. GE credit: SocSci SS, WE—S. (S.) Taylor (change in existing course—eff. spring 17)

147. Children, Adolescents, and the Media (4)
Lecture/discussion—4 hours. Pass One open to Communication majors only on Pass 1. Research on the adaptive and maladaptive effects of media (e.g., television, movies, video games, social media) on the social, emotional, cognitive, and physical development of youth, considering the protective role of parents, teachers, ethics, and policy. GE credit: SocSci SS—F, W, W, W. (F, W, W.) Cingel (new course—eff. fall 16)

148. Contemporary Trends In Media (4)

150V. Computational Social Science (4)

172. Computer-Mediated Communication (4)
Lecture—3 hours; discussion—1 hour. Pass One open to Communication majors only. Theories and research findings on how people use technologies for interpersonal and relational purposes, including impression formation, self-presentation, deception, anonymity, friendship maintenance, online dating, and emotional expression. GE credit: SocSci SS—S. (S.) Pelta (change in existing course—eff. fall 16)

192. Internship in Communication (1-12)
Internship—3.36 hours. Prerequisite: communication majors who have completed 20 units of upper division communication courses; consent of instructor. Open to Communication majors only. Supervised work experience requiring the application of communication principles and strategies or the evaluation of communication practices in a professional setting. Relevant experiences include public relations, advertising, sales, human resources, health promotion, political campaigns, multimedia, and broadcasting. May be repeated up to 12 units of credit. (P/NP grading only)—F, W, S, Su. (F, W, S, Su.)
(new course—eff. fall 16)

**Graduate**

233. Persuasive Technologies for Health (4)
Lecture/discussion—3 hours; term paper. Theorizing, designing and evaluating technological approaches to health communication interventions. Uses of social media, mobile communication apps, wearable devices, computer-generated tailored messages, educational games, and computational approaches in health promotion and healthcare delivery. (Same course as Public Health Sciences 233.) Offered in alternate years.—S. Zhang (change in existing course—eff. fall 17)

235. Health Communication Campaigns (4)
Lecture/discussion—3 hours; term paper. Prerequisite: consent of instructor. Restricted to graduate students. Principles of health communication campaign planning, implementation and evaluation. Strategies for changing health behaviors, shaping policy,
Fall 2011 and on Revised General Education (GE): AH—Arts and Humanities; SS—Science and Engineering; SS—Social Sciences; ACGH—American Cultures; DD—Domestic Diversity; OL—Oral Skills; QL—Quantitative; SL—Scientific; VL—Visual; WC—World Cultures; WE—Writing Experience
Pre-Fall 2011 General Education (GE): ArtHum—Arts and Humanities; Scaling—Science and Engineering; SocSci—Social Sciences; DivDom—Domestic Diversity; WritWriting Experience
Quarter Offered: F—Fall, W—Winter, S—Summer, 2017-2018 offering in parentheses
Courses & Programs are subject to change without notice.

251. Digital Technology and Social Change (4)
Seminar—9 hours; term paper. Conceptual, theoretical, and international consideration of how digital communication technologies transform social organization and development. Topics include social media, big data, political revolutions, e-democracy, digital divide, e-education, e-health, entrepreneurship, public policies, poverty reduction, technological innovations, microfinance, and entertainment. Not open to students who have taken course 251Y. Offered in alternate years. – S. S. Hilbert (change in existing course—eff. spring 17)

251Y. Digital Technology and Social Change (4)
Web virtual lecture—2 hours; discussion—2 hours. Discussion will remain as a virtual lecture. Web virtual courses transform our lives through social media, mobility, big data, global connectivity, and artificial intelligence; changing business, health, democracy, globalization, families, dating, and entertainment. Not open to students who have taken course 251Y. Offered in alternate years. – S. S. Hilbert (new course—eff. spring 17)

253. Children, Adolescents, and the Media (4)
Lecture/discussion—3 hours; term paper. Theory and research on the uses and effects of traditional and new media on children and adolescents, emphasizing social, emotional, cognitive, and physical development. Methodological approaches and ethical issues in studies of underage populations. Parent and family mediation of effects. Offered in alternate years. – S. S. Cingel (change in existing course—eff. winter 17)

260. Political Communication (4)
Lecture/discussion—3 hours; term paper. Theories and research on the connections between media, political actors, and citizens in the digital age. Critical framework for understanding the nature of mediated politics by assessing inter-relationships between production of news, political elites' campaign strategies, and behaviors of citizens. Offered in alternate years. – S. S. Cho (change in existing course—eff. winter 17)

299R. Thesis/Dissertation Research and Writing (1-12)
Independent study; 3-36 hours. Prerequisite: consent of instructor; graduate standing in Communication. Students in the Department of Communication graduate programs conduct dissertation research and writing under the supervision of a faculty member. May be repeated for credit up to twenty one times. Across campus, students use the course 299 numbers to reach the 12-unit requirement for full time student status. In saying that students may repeat this course 21 times, we assumed that students would complete their doctoral programs within seven years [five is the norm]. The value 21 was based on the calculation 3 quarters = 7 years. (S/U grading only) (change in existing course—eff. winter 17)

299R. Thesis/Dissertation Research and Writing (1-12)
Independent study; 3-36 hours. Prerequisite: consent of instructor; graduate standing in Communication. Students in the Department of Communication graduate programs conduct dissertation research and writing under the supervision of a faculty member. May be repeated for credit up to twenty one times. Across campus, students use the course 299 numbers to reach the 12-unit requirement for full time student status. In saying that students may repeat this course 21 times, we assumed that students would complete their doctoral programs within seven years [five is the norm]. The value 21 was based on the calculation 3 quarters = 7 years. (S/U grading only) (change in existing course—eff. winter 17)

Community and Regional Development

New and changed courses in Community and Regional Development (CRD)

Upper Division

151. Community Field Research: Theory and Analysis (4)
Lecture—4 hours; extensive writing; project. Prerequisite: course 1; Statistics 13 or Statistics 13Y or Sociology 468; any upper division Community and Regional Development course is recommended. Emphasis on the design and analysis of community research considering the relationship between theory and practice. Study of community research methods, including structural analysis, elite interviewing, and ethnographic approaches. Course requires design and completion of field research project. GE credit: SocSci, Div, Writ, ACGH, DD, OL, SS, VL, WE. – S. S. Tarallo (change in existing course—eff. fall 17)

Graduate

242. Community Development Organizations (4)
Seminar—4 hours. Prerequisite: course 240. Class size limited to 15 students. Theory and praxis of organizations with social change agendas at the community level. Emphasis on non-profit organizations and philanthropic foundations. – S. S. (change in existing course—eff. spring 17)

242S. Community Development Organizations (International) (4)
Fieldwork—10 hours; workshop—5 hours. Prerequisite: course 240. Class size limited to 10 students. Theory and praxis of organizations with social change agendas at the community level. Emphasis on local governance, non-profit organizations and philanthropic foundations at an international level. – Su. (S.) (change in existing course—eff. spring 17)

248. Social Policy, Welfare Theories and Communities (4)
Seminar—4 hours. Prerequisite: graduate standing. Theories and comparative histories of modern welfare states and social policy in relation to legal/normative, organizational, and administrative aspects. Analysis of specific social issues within the U.S./California context. Notes: for credit to students having completed Community & Regional Development 248A and 248B. (Same course as Geography 248.) Offered in alternate years. – S. S. (change in existing course—eff. spring 17)

248A. Social Policy, Welfare Theories and Communities I (2)
Seminar—2 hours. Prerequisite: graduate standing. Theories and comparative histories of modern welfare states. Theories of welfare and social policy in relation to normative, organizational, and administrative aspects of welfare and social policy. Offered in alternate years. (change in existing course—eff. spring 17)

248B. Social Policy, Welfare Theories and Communities II (2)
Seminar—2 hours. Prerequisite: graduate standing. Concurrent enrollment in course 248A. Analysis of a specific set of social issues within the U.S./California context. Issues may include poverty, hunger, housing, health, family, disability, economic opportunity, affirmative action orientations, gender, old age, or special social groups. Offered in alternate years. (change in existing course—eff. spring 17)

250. Professional Skills for Community Development (4)
Lecture/discussion—2 hours; project—2 hours; fieldwork; extensive writing or discussion. Prerequisite: course 240. Priority enrollment for Masters and PhD. students in Community and Regional Development. Help students develop the practical skills needed to work professionally in organizations that are involved in community development. Provides an overview of community development planning, project management, and consultation skills. – W. (W) London (change in existing course—eff. spring 17)

290. Seminar (1)
Seminar—1 hour. Analysis of research in applied behavioral sciences. (S/U grading only)– F, W, S, F, W, S. (change in existing course—eff. spring 17)

Professional

440. Professional Skills for Community Development (4)
(cancelled course—eff. winter 17)

Comparative Literature

New and changed courses in Comparative Literature (COM)

Upper Division

100. World Cinema (4)
Lecture/discussion—3 hours; film viewing—3 hours. Prerequisite: completion of entry level writing requirement, upper division standing, or consent of instructor. Comparative, cross-cultural study of a topic, theme, or movement in world cinema beyond the boundary of a single national tradition. Topics may include “postcolonial cinemas in East Europe and Asia,” “cinema and globalization,” and “popular Asian cinemas.” May be repeated for credit up to three times the topic differs. GE credit: ArtHum, Div, Writ, AH, VL, WC, WE. – Lu (change in existing course—eff. spring 17)

110. Hong Kong Cinema (4)
Lecture/discussion—3 hours; film viewing—3 hours. Prerequisite: completion of entry level writing requirement, upper division standing, or consent of instructor. Hong Kong cinema, its history, industry, styles, genres, directors, and stars. Special attention to its polyglot, multicultural, transnational, colonial, and postcolonial environment. GE credit: ArtHum, Div, Writ, AH, VL, WC, WE. – Lu (change in existing course—eff. spring 17)

Cultural Studies

New and changed courses in Cultural Studies (CST)

Upper Division

124E. Costume Design for Film (4)
Lecture/discussion—4 hours. Prerequisite: Dramatic Art 24; or consent of instructor. Pass One restricted to Theatre and Dance majors. Theory and practice of the art and business of film costume design. Script analysis, costume research, developing design concepts, budgeting, and current production practices and methods. Execution of designs for period and contemporary films. Viewing of current films. (Same course as Dramatic Art 124E.) GE credit: ArtHum | AH, OL, VL. – W. (W) Morgan (change in existing course—eff. spring 17)
Design

New and changed courses in Design (DES)

Upper Division

107. Advanced Structural Design for Fashion (4)
Lecture—4 hours; laboratory—2 hours. Prerequisite: course 1; course 14 or course 21; course 15; course 16; course 77; or consent of instructor. Priority given to Design majors. Advanced study and practice of designing clothing for the human body through pattern development and structural joining. Emphasis on draping techniques and advanced conceptualization for fashion design. Not open for credit to students who have taken course 77B. GE credit: ArtHum | AH, VL. —S. (S.) Koo (change in existing course—eff. winter 17)

128. BioDesign Theory and Practice (4)
Lecture—discussion—3 hours; term paper. Pass One restricted to Design and Art History majors. Recent biological theories and their influence upon design theory and practice; includes bio-based materials in contemporary design. GE credit: VL. —Cogdell (change in existing course—eff. winter 17)

156. Graphitecture: Architecture in the Age of New Media (4)
Studio—6 hours. Prerequisite: course 1, course 14, course 15, course 16. Priority to Design majors. New media and its impact on environmental design; analysis of contemporary projects at the intersection of architecture and new media; time-based strategies of representation; digital narrative. GE credit: ArtHum | AH, VL. —S. (S.) Snyder [new course—eff. fall 16]

161. Textile Surface Design: Screen and Digital Printing (4)
Studio—12 hours. Prerequisite: course 1; course 14 or course 21; course 15; course 16. Pass One restricted to Design majors. Design of textiles and screen printing on fabrics; soft product development; integration of hand-produced and digitally generated imagery on cloth. GE credit: ArtHum | AH, VL. —S. (S.) Avila [change in existing course—eff. winter 17]

198F. Student-Taught Course (1-4)
Student-facilitated [taught] course intended for upper division students. Offered irregularly. (P/NP grading only) [new course—eff. fall 16]

199F. Student Facilitated Course Development (1-4)
Prerequisite: consent of instructor. Planning and development for student led course 198F under the supervision of a faculty member. Offered in alternate years. (P/NP grading only) [new course—eff. fall 16]

Graduate

299. Individual Focused Study (1-12)
Prerequisite: graduate standing in Design or consent of instructor. Advanced study in studio practice on independent projects with faculty consultation. May be repeated for credit. (S/U grading only) —F. W. S. (F. W. S.) [change in existing course—eff. winter 17]

Dramatic Art

New and changed courses in Dramatic Art (DRA)

Lower Division

21A. Fundamentals of Acting (4)
Lecture—2 hours; laboratory—4 hours. Open to students planning to major in Theatre and Dance. Physical and psychological resources of the actor: Experience in individual and group contact and communication, theatre games, advanced improvisation, sound and movement dynamics. Viewing of theatre productions. GE credit: OL, VL. —Leavy, Merlín (change in existing course—eff. fall 16)

40A. Beginning Modern Dance (2)
Laboratory/discussion—4 hours. Fundamentals of modern dance focusing primarily on the development of technique and problem solving. Basic anatomy, dance terminology, and a general overview of modern dance history. May be repeated for credit up to two times. Non-dance majors can only repeat the course once. GE credit: AH, VL. (change in existing course—eff. spring 17)

40B. Intermediate Modern Dance (2)
Laboratory/discussion—4 hours. Prerequisite: course 3A40C or consent of instructor. Modern dance techniques. Basic anatomy, dance terminology and a general overview of modern dance history. May be repeated one time for credit. For Dance majors, further repeats negotiated with faculty adviser in dance. GE credit: ArtHum | AH, VL. [change in existing course—eff. fall 16]

41A. Beginning Jazz Dance (2)
Laboratory/discussion—4 hours. Fundamentals of jazz dance; includes warm-ups, dance techniques and combinations. Basic anatomy, dance terminology and an overview of jazz dance history. May be repeated for credit up to one time. GE credit: ArtHum | AH, VL. (change in existing course—eff. spring 17)

Upper Division

240E. Costume Design for Film (4)
Lecture/discussion—4 hours. Prerequisite: course 24; or consent of instructor. Pass One restricted to Theatre and Dance majors. Theory and practice of the art and business of film costume design. Script analysis, costume research, developing design concepts, budgeting, and current production practices and methods. Execution of designs for period and contemporary films. Viewing of current films. GE credit: ArtHum | AH, OL, VL. —Morgan [change in existing course—eff. spring 17]

24A. Professional Track Modern Dance I (4)
Lecture/lab—lecture—6 hours. Prerequisite: consent of instructor. Professionally oriented performance training. Rigorous, consistent training regimen based on traditional modern dance technique. Breath and voice, skeletal and muscular placement, moving from the spine, contraction technique, movement intention. May be repeated two times for credit. GE credit: VL. —Grenke (change in existing course—eff. fall 16)

24B. Professional Track Modern Dance II (4)
Lecture/lab—lecture—6 hours. Prerequisite: courses 24A; consent of instructor. Body and space relations in solos, duets and group work; stylistic variations of Graham technique; works of Paul Taylor. May be repeated one time for credit. GE credit: VL. —Grenke (change in existing course—eff. fall 16)

146C. Professional Track Modern Dance III (4)
Lecture/lab—lecture—6 hours. Prerequisite: course 146A; course 146B; consent of instructor. Continuation of course 146B. Time as a theatrical device, suspension of movement and non-movement, phrasing, musicality. May be repeated one time for credit. GE credit: VL. —Grenke (change in existing course—eff. winter 17)

156C. Modern Aesthetic Movements in Performance (4)
Laboratory/discussion—3 hours; discussion—1 hour. May be repeated for credit. GE credit: VL. —Morgan (change in existing course—eff. spring 17)

170. Media Theatre (4)
Lecture—1 hour; rehearsal—2 hours; performance instruction—1 hour. New media and application of theatre devising and performance. Emphasis on collaborative process in relationship to integration of emerging technologies and formation of new theatrical works. Development of collaborative performance through lecture, demonstration, improvisation and experimentation. May be repeated one time for credit. GE credit: ArtHum | AH, VL. (change in existing course—eff. spring 17)

Graduate

256. Visual Language for Performance (4)
Lecture—3 hours; laboratory—3 hours. Prerequisite: consent of instructor. Restricted to graduate students. Exploration of different approaches and methods to the visual elements of performance. Focus on design and style for different media and genres, storytelling through visual elements. GE credit: ArtHum, Div, Wrt | AH, WE. (change in existing course—eff. spring 17)

257. Interdisciplinary Seminar in Theatre, Dance and Performance (1)
Seminar—1.5 hours; project—1.5 hours. Prerequisite: consent of instructor. Restricted to students enrolled in the MFA in Dramatic Art; students taking the PhD in Performance Studies or the DE in Studies in Performance and Practice may apply to enroll. Interdisciplinary seminar for first and second year MFA students in Theatre and Dance. Topics range from current practice in dance, theatre, film and performance, to leading edge developments by outstanding practitioners in the field. May be repeated for credit up to two times. GE credit: ArtHum, Div, Wrt | AH, WE. (change in existing course—eff. spring 17)

Ecology

New and changed courses in Ecology (ECL)

Graduate

200AN. Principles and Applications of Ecology (5)
Lecture—4 hours; discussion—1 hour. Prerequisite: First course in Ecology (e.g., Environmental Science and Policy 100). Statistics 102, Mathematics 16A, 16B or consent of instructor. Pass One open to graduate majors. Course covers principles of community structure and functioning, species diversity patterns,
ecosystem ecology and biogeochemistry, landscape ecology, biogeography and phylogenetics. —F (F) Harrison
(new course—eff. fall 16)

200BN. Principles and Applications of Ecology (5)
Lecture—4 hours; discussion—1 hour. Prerequisite: First course in Ecology (e.g., Environmental Science and Policy 100); Statistics 102, Mathematics 16A, 16B or consent of Instructor. Pass one open to graduate majors. Provides a broad background in the principles and applications of ecology, and serves as a foundation for advanced ecology courses. Topics include ecosystem, behavioral, ecological, population ecology, genetics and evolution. Emphasis on historical developments, current understanding, and real world applications. —W (W)
(new course—eff. winter 17)

204. Population and Community Ecology (4)
cancelled course—eff. fall 16

213. Population, Environment, and Social Structure (4)
cancelled course—eff. fall 16

215. Social Ecological Systems (3)
Lecture/discussion—3 hours. Prerequisite: completion of core courses for specific graduate programs, for example courses 200A/B. Overview of social-ecological systems that links environmental policy and decision-making to ecological processes. Delves deeper into different social science topics related to this broader idea. Applying of course readings to case studies chosen by students and a final paper. —W (W) Lubell (new course—eff. fall 16)

Lecture—2 hours; discussion—0.5 hours; laboratory—0.5 hours. Prerequisite: undergraduate genetics and ecology/conservation biology courses recommended. Restricted to graduate students, 2nd or 3rd year veterinary students; advanced undergraduate students with consent of instructor. Introduction to the field of applied ecological genetics to include applications in conservation ecology, population genetics, population biology, wildlife health and disease ecology. —change in existing course—eff. spring 17

Economics

New and changed courses in Economics (ECN)

Upper Division

100A. Intermediate Micro Theory: Consumer and Producer Theory (4)
Lecture—3 hours; discussion—1 hour. Prerequisite: course 1A C- or better; course 1B C- or better; Mathematics 16A C- or better or Mathematics 16B C- or better or Mathematics 21A C or better; Mathematics 16B C- or better or Mathematics 17B C- or better or Mathematics 21B C- or better. Consumer and producer theory. Equilibrium and welfare analysis. Topics include competitive markets, consumer and producer surplus at an intermediate level. Not open for credit to students who have taken Agricultural and Resource Economics 100A or course 110B. —F (F)
(new course—eff. fall 17)

100B. Intermediate Micro Theory: Imperfect Competition and Market Failure (4)
Lecture—3 hours; discussion—1 hour. Prerequisite: course 100A. Imperfect competition and market failure. Topics include exchange, monopoly, game theory, uncertainty, asymmetric information, and public goods. Not open for credit to students that have taken Agricultural and Resource Economics 100B. —new course—eff. fall 17

115BY. Economic Development (4)
Lecture—1.5 hours; web virtual lecture—1.5 hours; term paper. Prerequisite: courses 1A, 1B. Major macroeconomic issues of developing countries. Issues include problems in generating capital, conduct of monetary and fiscal policies, foreign aid and investment. Important issues of policy concerning international borrowing and external debt of developing countries. GE credit: SS. —new course—eff. fall 16

125. Energy Economics (4)
Lecture—3 hours; discussion—1 hour. Prerequisite: course 100A and Agricultural and Resource Economics 100A, Agricultural and Resource Economics 100B, or consent of Instructor. Ass one open to Economics and Graduate School of Management majors. Application of theoretical and empirical models to examine efficiency in energy production and use. Energy and environmental policy, market structure and power, global climate change, optimal regulation, and real-world applications; e.g., California electricity crisis. —change in existing course—eff. spring 17

140. Econometrics (4)
Lecture—3 hours; discussion—1 hour. Prerequisite: course 100A or (Resource Economics 100A, Resource Economics 100B); course 101; STA 013; Mathematics 16A or Mathematics 21A or Mathematics 16B or Mathematics 17B or Mathematics 21B. Problems of observation, estimation and hypotheses testing in economics through the study of the theory and applications of linear regression models. Critical evaluation of selected examples of empirical research and exercises in applied economics. Only 2 units of credit allowed to students who have completed two of the following courses: Economics 102, Agricultural and Resource Economics 106 or Statistics 108; not open for credit to students who have completed Agricultural and Resource Economics 106. —change in existing course—eff. spring 17

Graduate

233. Poverty and Public Policy (4)
Lecture/discussion—4 hours. Interdisciplinary course covering qualitative and quantitative U.S. based poverty research. Topics include measurement, statistics, theories and evidence on the causes and consequences of poverty, and the history and efficacy of major anti-poverty programs. —new course—eff. fall 16

235D. Macroeconomics (4)
Lecture—3 hours; discussion—1 hour. Selected topics in Macroeconomics. May be repeated for credit. Offered irregularly. —new course—eff. winter 17

Education

New and changed courses in Education (EDU)

Professional

310. Teaching as Reflective Practice (1)
Lecture/discussion—1 hour. Prerequisite: consent of instructor. Acceptance in Teacher Credential Program. Presentation of issues related to classroom instruction and professional practice, reflections on classroom instruction and other documentation related to student teaching experience. May be repeated up to 6 times. —F, W, S. (F, W, S) (new course—eff. fall 16)

320. Creating Classroom Communities (1)
Lecture/discussion—2 hours; fieldwork—30 hours. Acceptance in Teacher Credential Program. Observation of classrooms at beginning of academic year for first-hand experience with teachers’ approaches to creating communities and setting routines. Candidates are placed with students they will teach during student teaching. Candidates may take on teaching tasks as appropriate. —Su. (Su.) (new course—eff. fall 16)

Education Abroad Program

New and changed courses in Education Abroad Program (EAP)

Upper Division

192. Internship in Education Abroad (1-12)
Internship—3-36 hours. Prerequisite: participation in a study abroad program. Internship with Education Abroad program, potentially either at university or abroad. May be repeated for up to 12 units of credit. (P/NP grading only)—F, W, S. (F, W, S, Su.) (change in existing course—eff. winter 17)

Engineering

New and changed courses in Engineering (ENG)

Lower Division

3. Introduction to Engineering Design (4)
Lecture—2 hours; studio—2 hours; project—4 hours. Prerequisite: Must have satisfied the Entry Level Writing Requirement (ELWR). Pass One restricted to lower division College of Engineering students; Pass Two restricted to lower division students. Introduction to the engineering design process that incorporates the development of oral and written communication skills integral to the design process. Conducted in workshop format with hands-on engagement in the design process. GE credit: SE, SS, OL—F, W, S. (F, W, S, Su.) VanderGheynst (new course—eff. winter 17)

17. Circuits I (4)
Lecture—3 hours; discussion—1 hour. Prerequisite: Mathematics 22A, Mathematics 22B can be taken concurrently; Physics 9C or 9HD can be better recommended for each course. Basic electric circuit analysis techniques, including electrical quantities and elements, resistive circuits, transient and steady-state responses of RLC circuits, sinusoidal excitation and phasors, and complex frequency and network functions. GE credit: SciEng |SE, VL—F, S. (F, S) (change in existing course—eff. winter 17)

35. Statics (4)
Lecture—3 hours; discussion—1 hour. Prerequisite: Physics 9A C- or better; Mathematics 21D C- or better (can be concurrent). Force systems and equilibrium conditions with emphasis on engineering problems. GE credit: SciEng |SE—F, W, S. (F, W, S) (change in existing course—eff. winter 17)
Upper Division

102. Dynamics (4)
Lecture—4 hours; discussion—1 hour. Prerequisite: course 35 C- or better; Mathematics 228 C- or better. Open to College of Engineering students only. Kinematics and kinetics of particles, systems of particles, and of rigid bodies; application of these topics are applied to engineering problems. Only two units of credit allowed to students who have previously taken course 36. GE credit: SciEng | QL, SE, VL—F, W.S. (F, W, S) Cheng, Eke, Hess, Joshi (change in existing course—eff. winter 17)

105. Thermodynamics (4)
Lecture—4 hours; discussion—1 hour. Prerequisite: Mathematics 228 C- or better; Physics 98 C- or better. Open to College of Engineering students only. Fundamentals of thermodynamics: heat energy and work, properties of pure substances, First and Second Law for closed and open systems, reversibility, entropy, thermodynamic temperature scales. Applications of thermodynamics to engineering systems. GE credit: SciEng | QL, SE, VL—F, W.S. (F, W, S) Aldredge, D’Souza, Erickson (change in existing course—eff. winter 17)

111. Electric Machinery Fundamentals (4)
Lecture—3 hours; laboratory—3 hours. Prerequisite: course 17 C- or better. Principles of AC and DC electric motors and generators, their control systems and power sources. Selection of electric power equipment components based on their construction features and performance characteristics. Offered in alternate years. GE credit: SciEng | QL, SE, SL, VL—Delwiche (change in existing course—eff. winter 17)

Engineering: Aerospace Science and Engineering

New and changed courses in Aerospace Science and Engineering (EAE)

10. From the Wright Brothers to Drones and Quadcopters (2)
Lecture—2 hours. History of aircraft and its influence on society. Topics covered will include Unmanned Aerial Vehicles, safety considerations, economics and privacy issues. Aerodynamics, stability and control will also be introduced. GE credit: SciEng or SocSci | SE or SS—Su. (Su.) (change in existing course—eff. fall 16)

Engineering: Applied Science—Davis

New and changed courses in Engineering: Applied Science—Davis (EAD)

Graduate

285D. Physics and Technology of Microwave Vacuum Electron Beam Devices IV (4) (cancelled course—eff. fall 16)

Engineering: Biological Systems

New and changed courses in Engineering: Biological Systems (EBS)

Graduate

268. Polysaccharides Surface Interactions (3)
Lecture—3 hours. Prerequisite: graduate students in science or engineering. Study of fundamental surface science theories applied to physical and chemical interactions of carbohydrates and polysaccharides. (Same course as Engineering: Chemical 268.) Offered in alternate years. —F, (F) Jash (change in existing course—eff. winter 17)

Engineering: Biomedical

New and changed courses in Biomedical Engineering (BIM)

Upper Division

102. Cellular Dynamics (4)
Lecture/discussion—4 hours. Prerequisite: Biological Sciences 2A; Chemistry 8B or Chemistry 118B. Open to College of Engineering students only. Fundamental cell biology for bioengineers. Emphasis on physical concepts underlying cellular processes including protein trafficking, cell motility, cell division and cell adhesion. Current topics including cell biology of cancer and stem cells will be discussed. Only two units of credit allowed to students who have completed Biological Sciences 104. GE credit: SciEng | QL, SE, VL—F, (F) Yamada (change in existing course—eff. spring 17)

110A. Biomedical Engineering Senior Design Experience (3)
Lecture/discussion—1 hour, project—6 hours. Prerequisite: course 111 (can be concurrent); course 111 can be concurrent. Restricted to senior Biomedical Engineering majors or by consent of instructor. Application of bioengineering theory and experimental analysis to a design culminating in the design of a unique solution to a problem. Design may be geared towards current applications in biotechnology or medical technology. Continues in course 110B. (Deferred grading only; pending completion of sequence.) GE credit: SciEng | QL, SE, SL, VL—W, (W) Passerini (change in existing course—eff. spring 17)

140L. Protein Engineering Laboratory (2)
Discussion—1 hour; lecture—3 hours. Prerequisite: course 140 can be concurrent; concurrent enrollment in course 140 required. Optional hands-on laboratory for BIM 140. Students use the engineering design process to design, build, and test a solution to a practical problem in the field of protein engineering. Problems change each offering. Offered in alternate years. GE credit: SE—S. Facciotti (new course—eff. spring 17)

143L. Synthetic Biology Laboratory (2)
Discussion—1 hour; lecture—3 hours. Prerequisite: course 143 can be concurrent; concurrent enrollment in course 143 required. Optional hands-on laboratory for BIM 143. Students solve a practical problem in the field of synthetic biology by designing, building, and testing an appropriate solution or product. Problems change each offering. Offered in alternate years. GE credit: SE—S. Facciotti (new course—eff. spring 17)

215. Biomedical Fluid Mechanics and Transport Phenomena (4) (cancelled course—eff. fall 16)

221. Drug Delivery Systems (4)
Lecture/discussion—4 hours. Prerequisite: course 204 recommended but not required. Fundamental engineering and biotechnology principles critical for the formulation and delivery of therapeutic agents, including peptide/protein drugs and small molecules. —S. (S) Silva (new course—eff. winter 17)

254. Statistical Methods in Genomics (4)
Lecture—4 hours. Statistical approaches to problems in computational molecular biology and genomics; formulation of questions via probabilistic modeling, statistical inference methods for parameter estimation, and interpretation of results to address biologically relevant questions; application to high-impact problems in functional genomics and molecular biology. —F, (F) Aviran (new course—eff. winter 17)

227. Research Techniques in Biomechanics (4) (cancelled course—eff. fall 16)

231. Musculo-Skeletal System Biomechanics (4) (cancelled course—eff. fall 16)

255. Nanoscale Imaging for Molecular Medicine (3)
Lecture/discussion—3 hours. Prerequisite: course 202 highly recommended; graduate standing. Current and emerging technologies to visualize biologi-
258. Advanced Biophotonics and Bioimaging (4)
Lecture—4 hours. Prerequisite: course 284 or equivalent; graduate standing; open to students by consent. This course introduces fundamental concepts in the study of living systems using optical techniques. Topics include superresolution optical microscopy, electron microscopy, and tomography. Emphasis on quantitative imaging. Same course as Biophysics 255.—S. (S.) Cheng, Chuanghui

(new course—eff. spring 17)

262. Cell and Molecular Biophysics for Bioengineers (4)
Lecture—4 hours. Prerequisite: course 284 or equivalent; graduate standing; undergraduate students by consent. This course introduces fundamental concepts in the study of living systems using optical techniques. Topics include superresolution optical microscopy, electron microscopy, and tomography. Emphasis on quantitative imaging. Same course as Biophysics 255.—S. (S.) Cheng, Chuanghui

(new course—eff. winter 17)

268. Living Matter: Physical Biology of the Cell (3)
Lecture—3 hours. Open to any student possessing general background in any disciplines of physical or biological sciences and engineering. Introduction to the origin, maintenance, and regulation of the dynamic architecture of the cell, including cellular membranes, functions and rules. Applications drawn from material balances, statistics, numerical methods, bio-informatics, microscopy, and computational analysis. GE credit: SciEng SE, QL, S.—F. (F.) Tan

(new course—eff. fall 16)

286. Bioimaging (4)
Lecture—3 hours. Open to any student possessing general background in any disciplines of physical or biological sciences and engineering. Introduction to the origin, maintenance, and regulation of the dynamic architecture of the cell, including cellular membranes, functions and rules. Applications drawn from material balances, statistics, numerical methods, bio-informatics, microscopy, and computational analysis. GE credit: SciEng SE, QL, S.—F. (F.) Tan

(new course—eff. fall 17)

450. Design of Coffee—An Introduction to Chemical Engineering (3)
Lecture—1 hour; laboratory—2 hours; project—1 hour. Non-technical introduction to how chemical engineers think, illustrated by elucidation of the process of roasting and brewing coffee. Qualitative overview of the basic principles of engineering analysis and design. Corresponding experiments testing design choices on the sensory qualities of coffee. Not open to credit to students who have completed Chemical and Materials Science Engineering 1, Chemical and Materials Science Engineering 5, or course 5. GE credit: SciEng SE, SL, VL, F, W, S.—F, W, S. (S.) Cheng, Chuanghui

(new course—eff. spring 17)

5. Introduction to Analysis and Design in Chemical Engineering (3)
Lecture—2 hours; laboratory—2 hours. Prerequisite: Mathematics 21A; Mathematics 21B [can be concurrent]. Quantitative introduction to the engineering principles of analysis and design. Applications of differential and integral calculus. Laboratory experiments using coffee to illustrate chemical engineering concepts and to conduct an engineering design competition. Only two units of credit to students who have completed Chemical and Materials Science Engineering 1 or course 1; not open for credit to students who have completed Chemical and Materials Science Engineering 5; GE credit: SciEng SE, QL, W—F, W, S. (F.) Parikh

(new course—eff. winter 17)

60. Engineering Problem Solving Using MATLAB (4)

(new course—eff. fall 17)

90X. Honors Discussion Section (1)
Discussion—1 hour. Open only to students in the Chemical Engineering or Biochemical Engineering Honors Programs. Examination of special topics covered in the selected upper-division courses through additional readings, discussions, collaborative work, or special activities which may include projects, laboratory experience or computer simulations. May be repeated for credit. Offered in alternate years.—F, W, S. (F, W, S.)

(new course—eff. fall 17)

Graduate

261. Molecular Modelling of Soft and Biological Matter (4)
Lecture/discussion—4 hours. Prerequisite: Materials Science and Engineering 247 or Chemical Engineering 252, or equivalent course in advanced thermodynamics/statistical mechanics. Modern molecular simulation techniques with a focus on soft matter like polymers, biologically relevant systems, and glasses. Offered irregularly.—F, W, S. (F, W, S.)

(new course—eff. winter 17)

268. Polysaccharides Surface Interactions (3)
Lecture—3 hours. Prerequisite: graduate students in science or engineering. Study of fundamental surface science theories as applied to physical and chemical interactions of carbohydrates and polysaccharides. Same course as Engineering: Biological Systems 268. Offered in alternate years.—F, W, S. (F, W, S.)

(new course—eff. winter 17)

269. Cell and Molecular Biophysics for Bioengineers (4)
Lecture—4 hours. Prerequisite: Biomedical Engineering 284 or equivalent; graduate standing; undergraduate students by consent of instructor. Introduction to fundamental concepts governing the structure, function, and assembly of biomacromolecules. Emphasis is on a quantitative understanding of the nano-to-microscale interactions between and within individual molecules, as well as of their assemblies, in particular membranes. Same course as Biomedical Engineering 162.—F. (F.) Heinrich

(new course—eff. winter 17)
Engineering: Chemical and Materials Science

New and changed courses in Engineering: Chemical and Materials Science (ECM)

Lower Division

1. Design of Coffee—An Introduction to Chemical Engineering (3)
   (canceled course—eff. fall 16)

5. Analysis in Biochemical, Chemical, and Materials Engineering (3)
   (canceled course—eff. fall 16)

6. Computational Methods for Bio/Chemical/Materials Engineers (4)
   (canceled course—eff. fall 16)

90X. Honors Discussion Section (1)
   (canceled course—eff. fall 2017)

94H. Honors Seminar (1)
   (canceled course—eff. winter 17)

Upper Division

189A. Special Topics in ECM; Fluid Mechanics (1-5)
   (canceled course—eff. fall 16)

189B. Special Topics in ECM; Nonlinear Analysis and Numerical Methods (1-5)
   (canceled course—eff. fall 16)

189C. Special Topics in ECM; Process Control (1-5)
   (canceled course—eff. fall 16)

189D. Special Topics in ECM; Chemistry of Catalytic Processes (1-5)
   (canceled course—eff. fall 16)

189E. Special Topics in ECM; Biotechnology (1-5)
   (canceled course—eff. fall 16)

189F. Special Topics in ECM; Interfacial Engineering (1-5)
   (canceled course—eff. fall 16)

189G. Special Topics in ECM; Thermodynamics (1-5)
   (canceled course—eff. fall 16)

189H. Special Topics in ECM; Membrane Separations (1-5)
   (canceled course—eff. fall 16)

189I. Special Topics in ECM; Novel Experimental Methods (1-5)
   (canceled course—eff. fall 16)

189J. Special Topics in ECM; Transport Phenomena (1-5)
   (canceled course—eff. fall 16)

189K. Special Topics in ECM; Biomolecular Engineering (1-5)
   (canceled course—eff. fall 16)

189L. Special Topics in ECM; Electronic Materials (1-5)
   (canceled course—eff. fall 16)

189M. Special Topics in ECM; Ceramics and Minerals (1-5)
   (canceled course—eff. fall 16)

Engineering: Civil and Environmental

New and changed courses in Engineering: Civil and Environmental (ECI)

Upper Division

143. Green Engineering Design and Sustainability (4)
   Lecture—3 hours; discussion—1 hour. Prerequisite: upper division standing. Restricted to upper division standing. Pass One restricted to Civil Engineering majors. Application of concepts, goals and metrics of sustainability, green engineering and industrial ecology to engineering design. Other course topics include life-cycle assessments, analysis of environmental management systems, and economics of pollution prevention and sustainability. GE credit: SciEng; OL; SE, Sl, WE. —W—(W.) Bronner (change in existing course—eff. spring 17)

147A. Environmental Engineering Senior Design Experience I (4)
   Lecture—4 hours. Prerequisite: courses 148A, 148B, 149. Restricted to senior level standing. Culminating design experience for environmental engineering majors. Students work in teams to address environmental engineering challenge on campus or nearby.

147B. Environmental Engineering Senior Design Experience II (4)
   Lecture—4 hours. Prerequisite: courses 147A. Restricted to senior level standing. Culminating design experience for environmental engineering majors. Students work in teams to address environmental engineering challenge on campus or nearby. Consideration of environmental, social and economic aspects. Guest lectures from practitioners on background information. Continuation of course 147A. GE credit: SE, OL, WE. —W—(W.) Bronner (new course—eff. spring 18)

Graduate

246. Pilot Plant Laboratory (4)
   (canceled course—eff. fall 16)

Engineering: Computer Science

New and changed courses in Engineering: Computer Science (ECS)

Lower Division

20. Discrete Mathematics for Computer Science (4)
   (new course—eff. fall 16)

246. Pilot Plant Laboratory (4)
   (canceled course—eff. fall 16)

246. Pilot Plant Laboratory (4)
   (canceled course—eff. fall 16)

Engineering: Civil and Environmental

New and changed courses in Engineering: Civil and Environmental (ECI)

Upper Division

143. Green Engineering Design and Sustainability (4)
   Lecture—3 hours; discussion—1 hour. Prerequisite: upper division standing. Restricted to upper division standing. Pass One restricted to Civil Engineering majors. Application of concepts, goals and metrics of sustainability, green engineering and industrial ecology to engineering design. Other course topics include life-cycle assessments, analysis of environmental management systems, and economics of pollution prevention and sustainability. GE credit: SciEng; OL; SE, Sl, WE. —W—(W.) Bronner (change in existing course—eff. spring 17)

147A. Environmental Engineering Senior Design Experience I (4)
   Lecture—4 hours. Prerequisite: courses 148A, 148B, 149. Restricted to senior level standing. Culminating design experience for environmental engineering majors. Students work in teams to address environmental engineering challenge on campus or nearby.

Consideration of environmental, social and economic aspects. Guest lectures from practitioners on background information. Continuation of course 147A. GE credit: SE, OL, WE. —W—(W.) Bronner (new course—eff. winter 18)

147B. Environmental Engineering Senior Design Experience II (4)
   Lecture—4 hours. Prerequisite: courses 147A. Restricted to senior level standing. Culminating design experience for environmental engineering majors. Students work in teams to address environmental engineering challenge on campus or nearby. Consideration of environmental, social and economic aspects. Guest lectures from practitioners on background information. Continuation of course 147A. GE credit: SE, OL, WE. —W—(W.) Bronner (new course—eff. winter 18)

Graduate

246. Pilot Plant Laboratory (4)
   (canceled course—eff. fall 16)
50. Computer Organization and Machine-Dependent Programming (4)
Lecture—3 hours; discussion—1 hour. Prerequisite: course 40 C- or better. Pass One open to Computer Science, Computer Science Engineering, Computer Engineering, and Cognitive Science Majors only. Comparative study of different hardware architectures via programming in the assembly language of various machines. Role of system software in producing an abstract machine. Introduction to I/O devices and programming. Only one unit of credit allowed for students who have taken Electrical and Computer Engineering 70. GE credit: Scileng | SE, VL, F, W, S, F, JS, Davis
(change in existing course—eff. winter 17)

60. Data Structures and Programming (4)
Lecture—3 hours; discussion—1 hour. Prerequisite: courses 40 C- or better. Pass One open to Computer Science, Computer Science Engineering, Computer Engineering, and Cognitive Science Majors only. Design and structures for a variety of applications. Trees, heaps, searching, sorting, hashing, graphs. Extensive programming. GE credit: Scileng | QL, SE, F, W, S, F, S, Davis
(change in existing course—eff. spring 17)

140A. Programming Languages (4)
Lecture—3 hours; discussion—1 hour. Prerequisite: course 10 or course 30 or Engineering 6, Statistics 12 or Statistics 13 or Statistics 32 or Statistics 100 or Statistics 131A or Mathematics 135A; Biological Sciences 2A or Molecular and Cellular Biology 10 or Biomedical Engineering 103. Pass One open to Computer Science, Computer Science Engineering, and Biotechnology Majors only. Fundamental biological, mathematical, and algorithmic models underlying biological systems biology: sequence analysis, database search, genome annotation, clustering and classification, functional gene networks, regulatory network inference, phylogenetic trees, applications of common bioinformatics tools in molecular biology and genetics. GE credit: Scileng | SE, F, F, Tagkopoulos
(change in existing course—eff. spring 17)

140B. Advanced Programming Languages (4)
Lecture—3 hours; discussion—1 hour. Prerequisite: course 160. Students in Mechanical and Aerospace Engineering 253. Lecture—4 hours. Prerequisite: course 100; Engineering 6 (can be concurrent) or Mathematics 22AL or biotechnology majors only. Introduction to digital design. Interfacing of devices for I/O, memory and memory management. Input/output programming, hardware interfaces and calls to operating system services. Hardware support for operating systems software. Only one unit of credit allowed for students who have taken Electrical and Computer Engineering 170. GE credit: Scileng | SE, F, W, S, F, JS, Davis
(change in existing course—eff. winter 17)

161. Modern Programming Tools (4)
Lecture—3 hours; laboratory—2 hours. Prerequisite: course 40; or course 10; Pass One open to Computer Science and Computer Science Engineering Majors only. Concepts and practice of collaborative software development using modern software tools. GE credit: SE, JS, Davis
(new course—eff. fall 17)

162. Web Programming (4)
Lecture—1 hour; laboratory—3 hours. Prerequisite: course 30 or equivalent programming experience in C and the Unix environment. Pass One open to Computer Science and Computer Science Engineering Majors only. Course teaches the basics of building websites, including both server-side and client-side software development. GE credit: SE, VL, Amenta
(new course—eff. fall 17)

174. Computer Vision (4)
Lecture—3 hours; discussion—1 hour. Prerequisite: course 60, Statistics 32 or Electrical and Computer Engineering 161 or Computer Science Engineering 132; Mathematics 22A or Mathematics 67. Pass One open to Computer Science and Computer Science Engineering Majors only. Computer vision is the study of enabling machines to “see” the visual world (e.g., understand images and videos). Explores several fundamental topics in the area, including feature detection, grouping and segmentation, and recognition. GE credit: Scileng | SE, S, S, Lee
(change in existing course—eff. spring 17)

193A. Senior Design Project (3)
Lecture/discussion—3 hours. Prerequisite: course 160 (can be concurrent); senior standing in Computer Science or Computer Science Engineering or consent of instructor. Pass One open to Computer Science Engineering Majors only; Pass Two open to Computer Science and Computer Science Engineering Majors only. Responding to real-life client design challenges, students teams plan, implement, and evaluate large-scale projects involving computer and computational systems. The project is supervised by a faculty member. Students must take course 193A and 193B to receive credit. (Deferred grading only, pending completion of senior experience) GE credit: Scileng | SE, W, W, Liu
(change in existing course—eff. winter 17)

193B. Senior Design Project (3)
Lecture/discussion—3 hours. Prerequisite: course 193A IP or better. Pass One open to Computer Science Engineering Majors only; Pass Two open to Computer Science and Computer Science Engineering Majors only. Responding to real-life client design challenges, students teams plan, implement, and evaluate large-scale projects involving computer and computational systems. The project is supervised by a faculty member. Students must take course 193A and 193B to receive credit. (Deferred grading only, pending completion of senior experience) GE credit: Scileng | SE, S, S, Liu
(change in existing course—eff. winter 17)

193C. Civil and Environmental Engineering Senior Design (4)
Lecture—2 hours; laboratory—3 hours. Prerequisite: course 140 C- or better; course 148A C- or better; course 148B C- or better; course 171L C- or better; course 171L C- or better; or course 135 C- or better; or course 161 C- or better; or course 161 C- or better; or course 141L C- or better; or consent of instructor. Open to seniors in Civil Engineering and Environmental Engineering only; students must be in their final year of study. Culuminating design exercise for civil engineering and environmental engineering Majors. Students teams work closely with faculty, city officials or consulting clients to propose, implement and validate a unique solution to a real-world problem. GE credit: Scileng | SE, W, W
(new course—eff. winter 17)

193D. Communication Systems (4)
Lecture—4 hours. Prerequisite: course 100; Engineering 6 (can be concurrent) or Mathematics 22AL (can be concurrent). Characterization and analysis of continuous-time linear systems. Fourier series and transforms with applications. Introduction to communication systems. Transfer functions and block diagrams. Elements of feedback systems. Stability of linear systems. GE credit: Scileng | QL, SE, W, S, S
(change in existing course—eff. fall 13)

165. Statistical and Digital Communication (4)
Lecture—3 hours; laboratory—3 hours. Prerequisite: course 160; course 161. Introduction to random process models of modulated signals and noise, and analysis of receiver performance. Analog and digitally modulated signals. Signal-to-noise ratio, probability of error, matched filters. Intersymbol interference, pulse shaping and equalization. Carrier and clock synchronization. GE credit: Scileng | SE, W
(new course—eff. fall 17)

Graduate

253. Network Theory and Applications (4)
Lecture/discussion—4 hours. Prerequisite: Mathematics 22A; Mathematics 132; Statistics 13 or 120; experience with computer software, or consent of instructor. Pass One and Pass Two open to Graduate Students in Mechanical and Aerospace Engineering and Computer Science only. Develops the mathematical theory underlying growth, structure and function of networks with applications to physical, social, biological and engineered systems. Topics include network growth, resilience, epidemiology, phase transitions, software and algorithms, routing and search control, cascading failures. (Same course as Mechanical & Aeronautical Engineering 253.) Offered in alternating years. (S) D’Souza
(change in existing course—eff. winter 17)

Fall 2011 and on Revised General Education (GE): AH—Arts and Humanities; SE—Science and Engineering; SS—Social Sciences; ACGH—American Cultures; DD—Domestic Diversity; OR—Oral Skills; QL—Quantitative; SL—Scientific; VL—Visual; WC—World Cultures; WE—Writing Experience
Pre-Fall 2011 General Education (GE): ArtHum—Arts and Humanities; Scileng—Science and Engineering; SocSci—Social Sciences; Div—Domestic Diversity; Writ—Writing Experience
Quarter Offered: Fall—Winter, Spring—Summer; 2017-2018 offering in parentheses
Courses & Programs are subject to change without notice.

New and changed courses in Engineering: Electrical and Computer (EEC)

Lower Division

10. Introduction to Digital and Analog Systems (4)
Lecture—2 hours; laboratory—3 hours; project. Prerequisite: Computer Science Engineering 30; Physics 9C (can be concurrent) or Physics 9HD (can be concurrent); and consent of instructor. Open to Electrical and Computer Engineering sophomores. Interactive and practical introduction to fundamental concepts of electrical and computer engineering by implementing electronic systems, which can be digitally controlled and interrogated, with a programmable microcontroller with the ability to program the electrical connections between analog and digital components. GE credit: Scileng | SE, W, S, F
(change in existing course—eff. winter 17)

150A. Introduction to Signals and Systems I (4)
Lecture—4 hours. Prerequisite: course 100; Engineering 6 (can be concurrent) or Mathematics 22AL (can be concurrent). Characterization and analysis of continuous-time linear systems. Fourier series and transforms with applications. Introduction to communication systems. Transfer functions and block diagrams. Elements of feedback systems. Stability of linear systems. GE credit: Scileng | QL, SE, W, S, S
(change in existing course—eff. fall 13)

165. Statistical and Digital Communication (4)
Lecture—3 hours; laboratory—3 hours. Prerequisite: course 160; course 161. Introduction to random process models of modulated signals and noise, and analysis of receiver performance. Analog and digitally modulated signals. Signal-to-noise ratio, probability of error, matched filters. Intersymbol interference, pulse shaping and equalization. Carrier and clock synchronization. GE credit: Scileng | SE, W
(new course—eff. winter 17)

193A. Civil and Environmental Engineering Senior Design (4)
Lecture—2 hours; laboratory—6 hours. Prerequisite: course 140 C- or better, course 148A C- or better, course 148B C- or better, course 171L C- or better, course 171L C- or better, or course 135 C- or better; or course 161 C- or better; or course 161 C- or better; or course 141L C- or better; or consent of instructor. Open to seniors in Civil Engineering and Environmental Engineering only; students must be in their final year of study. Culuminating design exercise for civil engineering and environmental engineering Majors. Students teams work closely with faculty, city officials or consulting clients to propose, implement and validate a unique solution to a real-world problem. GE credit: Scileng | SE, W
(new course—eff. winter 17)
world problem. (Deferred grading only, pending completion of sequence.) GE credit: OL, SE, WE. (W.) Bronner, Niemeier (new course—eff. fall 17)

193B. Civil and Environmental Engineering Senior Design (4) Lecture—1 hours; laboratory—9 hours. Prerequisite: course 193A. Open to seniors in Civil Engineering and Environmental Engineering only. Colminating design experience for civil engineering and environmental engineering majors. Student teams work closely with faculty, city officials or consulting clients to propose, implement and validate a unique solution to a real-world problem. (Deferred grading only, pending completion of sequence.) GE credit: OL, SE, VI, WE. —S. (S.) Bronner, Niemeier (new course—eff. fall 17)

195A. Autonomous Vehicle Design Project (3) Workshop—1 hour; laboratory—6 hours. Prerequisite: Computer Science and Engineering 30; course 180A; and either 110B, 157A (may be taken concurrently), 180B, or Computer Science and Engineering 60. Pass One restricted to major. Design and construct an autonomous race car. Work in groups to design, build and test speed control circuits, track sensing circuits, and a steering control loop. (Deferred grading only pending completion of sequence.) GE credit: SciEng | SE. —F. (F.) (change in existing course—eff. fall 16)

Graduate

258. Transportation Planning in Developing Countries (3) (cancelled course—eff. fall 16)

Engineering: Materials Science and Engineering

New and changed courses in Materials Science and Engineering (EMS)

Upper Division

162. Structure and Characterization of Engineering Materials (4) Lecture—3 hours; laboratory—2 hours. Prerequisite: C- or better in each of the following: Engineering 45, Mathematics 22A C- or better, Physics 98 C- or better. Description of the structure of engineering materials on the atomic scale by exploring the fundamentals of crystallography. The importance of this structure to materials’ properties. Description of experimental determination utilizing x-ray diffraction techniques. GE credit: SciEng | QL, SE. —W. (W.) (change in existing course—eff. fall 13)

147. Principles of Polymer Materials Science (3) Lecture—3 hours. Prerequisite: Chemistry 2A; Chemistry 2B; Chemistry 8A and Chemistry 8B or Engineering 45; introductory physics. Basic principles of polymer science presented including polymer structure and synthesis; polymerization mechanisms; polymer classes, properties, and reactions; polymer morphology, rheology, and characterization; polymer processing. (Same course as Fiber and Polymer Science 100.) GE credit: SciEng | QL, SE. —S. (S.) Pan (change in existing course—eff. winter 17)

Graduate

288. Living Matter: Physical Biology of the Cell (3) Lecture—2 hours. Open to any student possessing general background in any disciplines of physical or biological sciences and engineering. Introduction to the origin, maintenance, and regulation of the dynamic architecture of the cell, including cellular modes of organization, dynamics and energy dissipation, molecular transport, motility, regulation, and adaptability. Same course as Biomedical Engineering 288 and Biophysics 288. —W. (W.) Panik (change in existing course—eff. fall 16)

290. Materials Science and Engineering Seminar (1) Seminar—1 hour. Prerequisite: graduate standing or consent of instructor. Selected topics of current interest in Materials Science and Engineering. The subjects covered will vary from year to year and will be announced at the beginning of each quarter. May be repeated for credit. (S/U grading only.)—F, W, S. (F, W, S) (change in existing course—eff. winter 18)

298. Transportation Planning in Developing Countries Seminar (2) Seminar—1 hour. Prerequisite: |SE. —S. (S.) Bronner, Niemeier (new course—eff. fall 17)

261. Gas Dynamics (4) (cancelled course—eff. fall 16)

264. Computational Aerodynamics (4) (cancelled course—eff. fall 16)

266. Advanced Wind-Tunnel Testing (4) (cancelled course—eff. fall 16)

Engineering: Mechanical

New and changed courses in Engineering: Mechanical (AME)

Upper Division

165. Heat Transfer (4) Lecture—3 hours; discussion—1 hour. Prerequisite: course 5 C- or better or Engineering 6 or Computer Science Engineering 30; Engineering 103 C- or better; Engineering 105 C- or better. Restricted to Mechanical Engineering, Aerospace Science and Engineering, Mechanical Engineering/Materials Science and Engineering. Conduction, convection, and radiation heat transfer. Computational modeling of heat transfer in engineering. Applications to engineering equipment with the use of digital computers. GE credit: SciEng | SE. —F, S, Su. (F, S, Su.) R. Davis, Narayanan, Shaw (change in existing course—eff. winter 17)

Engineering: Mechanical and Aerospace

New and changed courses in Engineering: Mechanical and Aerospace (MAE)

Graduate

208. Measurement Methods in Fluid Mechanics and Combustion (4) (cancelled course—eff. fall 16)

215. Biomedical Fluid Mechanics and Transport Phenomena (4) (cancelled course—eff. fall 16)

227. Research Techniques in Biomechanics (4) (cancelled course—eff. fall 16)

231. Musculo-Skeletal System Biomechanics (4) (cancelled course—eff. fall 16)

236. Aerodynamics in Nature and Technology (4) (cancelled course—eff. fall 16)

253. Network Theory and Applications (4) Lecture/discussion—4 hours. Prerequisite: Mathematics 22A; Mathematics 22B; Statistics 13 or Statistics 120; experience with computer software, or consent of instructor. Develops the mathematical theory underlying growth, structure and function of networks to applications to physical, social, biological and engineered systems. Topics include network growth, resilience, epidemiology, phase transition, software and algorithms, routing and search control, cascading failures. (Same course as Computer Science Engineering 253.) Offered in alternate years. —F. D’Souza (change in existing course—eff. winter 17)

261. Gas Dynamics (4) (cancelled course—eff. fall 16)

264. Computational Aerodynamics (4) (cancelled course—eff. fall 16)

266. Advanced Wind-Tunnel Testing (4) (cancelled course—eff. fall 16)

Engineering: Mechanical

English

New and changed courses in English (ENL)

Lower Division

4. Critical Inquiry and Literature: Freshman Seminar (4) Seminar—4 hours. Prerequisite: consent of instructor; completion of Entry Level Writing requirement. Enrollment limited to freshmen. Critical inquiry into significant literary texts. Emphasis on close reading, classroom dialogue, and the writing of several papers or a longer seminar paper. GE credit: ArtHum, Wnt | AH, WE. —S. (S.) (change in existing course—eff. winter 17)

Upper Division

100F. Creative Writing: Fiction (4) Discussion—4 hours. Prerequisite: course 5F or course 5P; course 5NF; consent of instructor. Priority given to English (Creative Writing) majors. Writing of fiction. May be repeated for credit. —F, W, S. (F, W, S) (change in existing course—eff. winter 17)

100NF. Creative Writing: Non-Fiction (4) Discussion—4 hours. Prerequisite: course 5F or course 5P or course 5NF; consent of instructor. Priority given to English (Creative Writing) majors. Writing of non-fiction. May be repeated for credit. (change in existing course—eff. winter 17)

100P. Creative Writing: Poetry (4) Discussion—4 hours. Prerequisite: course 5F or course 5P; course 5NF; consent of instructor. Priority given to English (Creative Writing) majors. Writing of poetry. May be repeated for credit. (change in existing course—eff. winter 17)

149. The Graphic Novel (4) Lecture/discussion—3 hours; term paper. Prerequisite: course 3 or University Writing Program 1; or equivalent courses. Thematically, historically, and formally focused study of the graphic novel genre. Contents may include any regional, national, or transnational group of graphic novels. Offered irregularly. GE credit: ArtHum, Wnt | AH, VI, WE. —W. (new course—eff. fall 16)
Environmental Science and Policy

New and changed courses in Environmental Science and Policy (ESP)

Upper Division

151. Limnology (4)
Lecture—3 hours; discussion—1 hour; special project. Prerequisite: Biological Sciences 2A, Biological Sciences 2B, Biological Sciences 2C and course 100 or Evolution and Ecology 101 recommended. Biology and productivity of inland waters with emphasis on the physical and chemical environment. Offered irregularly. GE credit: SciEng | SE. [change in existing course—eff. winter 17]

166. Ocean and Coastal Policy (3)
Lecture—3 hours; prerequisite: course 1, or consent of instructor. Limited enrollment. Overview of U.S. and international ocean and coastal policy, including energy, coastal land-use and water quality, protected areas and species. Offered in alternate years. GE credit: SocSci | SS—W. [W] Sancirico (new course—eff. fall 17)

166N. Ocean and Coastal Policy (3)
(cancelled course—eff. winter 17)

168A. Methods of Environmental Policy Evaluation (3)
Lecture—3 hours; discussion—1 hour; term paper. Prerequisite: Statistics 13; course 1; Economics 1A; Economics 100 recommended. Evaluation of alternatives for solution of complex environmental problems; impact analysis, benefit-cost analysis, distributional analysis, decision making under uncertainty, and multi-objective evaluation. GE credit: SocSci | SS—F. [F] Ogden (change in existing course—eff. spring 17)

175. Natural Resource Economics (4)
Lecture—3 hours; discussion—1 hour; laboratory—3 hours. Prerequisite: Plant Sciences 2 or Biological Sciences 2C. Principles and techniques for the production of ornamental greenhouse and nursery crops. Hands-on experience producing greenhouse crops. Optional weekend field trip. GE credit: SciEng | SE. [W]. [W] Lieth (change in existing course—eff. winter 17)

133. Woody Plants in the Landscape: Growth, Ecology and Management (4)
Lecture—3 hours; laboratory—2 hours; discussion—1 1/2 hours. Prerequisite: Plant Sciences 2 or Biological Sciences 2C. Principles and techniques of managing trees and shrubs in the urban landscape and other managed environments. Topics include woody plant form, growth response and adaptation, tree management in relation to soil, moisture, climate, plant problems. GE credit: SciEng | SE. [W]. [W] Berry (change in existing course—eff. winter 17)

160. Restoration Ecology (3)
Lecture—3 hours. Prerequisite: Plant Biology 117 or Evolution & Ecology 117 or Plant Biology 47; or equivalent course in ecology/plant ecology. Conceptual bases of restoration ecology; tools used by restoration ecologists to solve practical problems; scope and success of actual restoration projects. GE credit: SciEng | SE. [W]. [W] Evine (change in existing course—eff. winter 17)

Epidemiology

New and changed courses in Epidemiology (EPI)

Graduate

202. Quantitative Epidemiology I: Probability (5)
Lecture—4 hours; laboratory—2 hours. Prerequisite: Mathematics 16A-16B or Mathematics 17A-B or Mathematics 21A-B; Statistics 102; Statistics 108; or Population Health and Reproduction 402 and 403 or equivalent of any listed course; concurrent or previous enrollment in a basic epidemiology course (e.g., course 205). Foundations in probability for epidemiologists. Emphasis on properties of and relationships between distributions and application of probability concepts to epidemiology. Includes a mathematical skills laboratory to assist in solution of epidemiologic problems. (change in existing course—eff. winter 17)

203. Quantitative Epidemiology II: Statistical Inference (4)
Lecture—4 hours; laboratory/discussion—1 hour. Prerequisite: course 202 or Statistics 130A or Statistics 131A or Statistics 133; course 205; a basic course in Epidemiology (Epidemiology 205 or equivalent). Provides the mathematical statistics foundation for statistical models, methods, and data analysis. (change in existing course—eff. winter 17)

204. Quantitative Epidemiology III: Statistical Models (4)
Lecture—3 hours; laboratory/discussion—1 hour. Prerequisite: course 203 or STA 130B or STA 131B or STA 133; course 205; STA 108 recommended; a basic course in Epidemiology (course 205 or equivalent); consent of instructor. Introduces statistical models, methods, and data analysis in the areas of generalized linear model and survival analysis methodology. (change in existing course—eff. winter 17)

205A. Principles of Epidemiology (4)
(cancelled course—eff. winter 17)

224. Health and Ecological Risk Analysis (4)
Lecture—2 hours; laboratory—4 hours. Methodological approach to risk analysis for human and animal-related health and ecological issues. Basic principles of risk analysis, including perception, communication, assessment and management. Emphasis on the assessment of risk. [S. (S.)] (change in existing course—eff. winter 17)

231. Infectious Disease Epidemiology (3)
Lecture—2 hours; discussion—1 hour. Prerequisite: introductory epidemiology course (e.g., course 205). Infectious disease epidemiology and prevention, with emphasis on human and animal diseases of global health importance. Major global health epidemics and challenges of infectious diseases, by mode of transmission.—W. [W] DaRiemer (change in existing course—eff. spring 17)

232. Advanced Data Analysis with SAS (3)
Lecture—3 hours. Prerequisite: course 202; course 203; course 204; or the equivalent, or consent of instructor. Provide an overview of common advanced statistical methods as well as a treatment of how to use SAS to implement them. Learn the ideas of reproducible research and reporting of statistical analyses.—W. [W] Josif (new course—eff. winter 17)

280. Introduction to SAS Programming (3)
Lecture—2 hours; discussion/laboratory—1 hour. Prerequisite: introductory statistics course (e.g., Preventive Veterinary Medicine 402, Statistics 102).
Conduction, convection, and radiation heat transfer. Computational modeling of heat transfer in engineering. Applications to engineering equipment with the use of digital computers. (Same course as Public Health Sciences 280.)—Qi
(new course—eff. fall 16)

Evolution and Ecology

New and changed courses in Evolution and Ecology (EVE)

Lower Division
17. Dining with Darwin: Evolutionary Insights Into Your Diet (3)
Lecture—3 hours. Crave salty, fatty, sugary foods? Want to know why? Evolution of cravings, metabolism and dentition, and of cooking our food. Relate Paleo, South Beach, and vegan diets to ancestral and global diets and current metabolism. For majors and nonmajors. GE credit: SE, SS, WC.—S. (S.)
(new course—eff. winter 17)

Exercise Biology

New and changed courses in Exercise Biology (EXB)

Upper Division
126. Tissue Mechanics (3)
(cancelled course—eff. fall 17)

Exercise Science

New and changed courses in Exercise Science (EXS)

Graduate
227. Research Techniques in Biomechanics (4)
(cancelled course—eff. fall 16)

Fine Arts & Humanities

New and changed courses in Fine Arts & Humanities (FAH)

Lower Division
98. Directed Group Study (1-4)
Prerequisite: consent of instructor. Directed group study. May be repeated for credit. (P/NP grading only.) Offered irregularly.
(new course—eff. winter 17)

Upper Division
198. Directed Group Study (1-4)
Prerequisite: consent of instructor. Directed group study. May be repeated for credit. (P/NP grading only.) Offered irregularly.
(new course—eff. winter 17)

Food Science and Technology

New and changed courses in Food Science and Technology (FST)

Lower Division
3V. Introduction to Brewing and Beer (3)
Web virtual lecture—1 hour; web electronic discussion—1 hour; project—1.5 hours. Basic description of brewing and associated processes, from raw materials to final product; history of brewing and brewing science; types of beer worldwide; world beer markets; basics of beer quality, including wholesomeness; role of scientist in brewing. Not open for credit to students who have taken course 3. GE credit: SciEng | QL, SE, SL.—S. (S.) Bamforth
(new course—eff. spring 17)

50. Introduction to Food Preservation (3)
Lecture—2 hours; laboratory—2 hours. Prerequisite: Chemistry 2A; Biological Sciences 2A; Statistics 13 (can be concurrent). Restricted to Food Science Majors. Introduction to modes of fresh food preservation including use of chemicals and microbes, heat and energy, control of water and atmosphere, and by indirect approaches such as packaging, hygiene, thermal and radiation treatment. GE credit: SciEng | QL, SE.—F. (F.) DeMoura Bell
(change in existing course—eff. spring 17)

Upper Division
101A. Food Chemistry Laboratory (3)
Discussion—1 hour; laboratory—3 hours. Concurrent enrollment in course 100A required. Study of basic chemical and physical properties that influence the reactivity and functional properties of components in food systems. GE credit: SciEng | QL, SE, VL, WE.—F. (F.) Slupsky
(change in existing course—eff. spring 17)

102A. Malting and Brewing Science (4)
Lecture—4 hours. Prerequisite: Biological Sciences 102, 103; senior standing recommended. The technology of the malting, brewing and fermentation processes is integrated with the chemistry, biochemistry and microbiology that determine industrial practices and product quality. Not open for credit to students who have taken course 102. GE credit: SciEng | SE, F.—F. (F.) Bamforth
(new course—eff. fall 97)

104L. Food Microbiology Laboratory (4)
Lecture—1 hour; discussion—1 hour; laboratory—6 hours. Prerequisite: Biological Sciences 2A; Biological Sciences 103; course 104. Cultural and morphological characteristics of microorganisms involved in food spoilage, in foodborne disease, and food fermentation. Analysis of microbiological quality of foods. GE credit: SciEng | QL, SE, VL, WE.—S. (S.) Young
(change in existing course—eff. spring 17)

107. Food Sensory Science (4)
Lecture—3 hours; laboratory—3 hours. Prerequisite: course 117 (can be concurrent); Statistics 13. Critical examination of techniques and theories of sensory measurement of food; measures of consumer perception and acceptance. An introduction to the sensory and cognitive systems associated with the perception of food. Not open for credit to students who have completed course 107A. GE credit: SciEng | QL, SE, VL, WE.—F. (F.) O’Mahony
(change in existing course—eff. spring 17)

109. Principles of Quality Assurance in Food Processing (3)
Lecture—2 hours; discussion—1 hour. Prerequisite: Statistics 13. Quality assurance measurement techniques applied to selected food processed products emphasizing. Rationale for establishing valid quality assurance programs including selection of samples at critical points. Statistical problems in quality assurance programs used by the food industry. GE credit: SciEng | QL, SE, SL, VL.—S. (S.) O’ Mahony
(change in existing course—eff. spring 17)

110. Food Processing (4)
Lecture—3 hours; discussion—1 hour. Prerequisite: Physics 7A, 7B, 7C; Mathematics 16A, 16B, 16C; or equivalent to Physics 7 series or Mathematics 16 series. Application of the conservation of mass and energy to food processing. Elements of engineering thermodynamics, fluid mechanics, heat and mass transfer, quantitative analysis through problem solving and simulation. Not open for credit to students enrolled in College of Engineering. GE credit: SciEng | QL, SE, VL.—F. (F.) Simmons
(change in existing course—eff. spring 17)

110L. Food Processing Laboratory (2)
Laboratory—3 hours; discussion—1 hour. Prerequisite: 110. Open to Food Science Majors only. Laboratory exercises to gain experience with common food processing operations at the bench and pilot plant scales. GE credit: SciEng | QL, SE, VL.—F. (F.) Bormhorst
(change in existing course—eff. spring 17)

115. Fermented Foods (4)
Lecture—3 hours; term project/discussion—3 hours. Prerequisite: Biological Sciences 103; Microbiology 102; or consent of instructor. Pass One restricted to upper division or graduate level Food Science and Viticulture and Enology majors. Physiology, biochemistry, and genetics of microorganisms important in food fermentations. How microorganisms are used in fermentations and how raw materials are converted into finished fermented foods and beverages.—S. (S.) Mills
(new course—eff. spring 17)

117. Design and Analysis for Sensory Food Science (4)
Lecture—4 hours; demonstrations and a field trip. Prerequisite: Biological Sciences 2A; Biological Sciences 102; consent of instructor. Composition, structure and properties of milk and products derived from milk. Relates chemical, microbiological, and technological principles to commercial practices in processing of milk and its products. GE credit: SciEng | QL, SE, VL.—S. (S.) Rosenberg
(change in existing course—eff. spring 17)

119. Chemistry and Technology of Milk and Dairy Products (4)
Lecture—4 hours; demonstrations and a field trip. Prerequisite: Biological Sciences 2A; Biological Sciences 102; consent of instructor. Composition, structure and properties of milk and products derived from milk. Relates chemical, microbiological, and technological principles to commercial practices in processing of milk and its products. GE credit: SciEng | QL, SE, VL.—S. (S.) Rosenberg
(change in existing course—eff. spring 17)

123. Introduction to Enzymology (3)
Lecture—3 hours. Prerequisite: course 123L (can be concurrent); Biological Sciences 102, Biological Sciences 103. Principles of physical, chemical and catalytic properties of enzymes and their importance. Purification, characterization, and quantitative evaluation of reaction conditions on activity are stressed. Specificity and mechanism of action illustrated by use of selected enzymes. (Former course Biochemistry 123.) GE credit: SciEng | QL, SE, VL.—S. (S.) J. Smith
(change in existing course—eff. spring 17)

159. New Food Product Ideas (3)
Lecture—3 hours. Prerequisite: course 50; Biological Sciences 2A; Physics 7A, 7B, 7C; Chemistry 2A, 2B, 2C. Create, refine, test and present viable ideas for new food products. Activities include trend monitoring, research trips and Biophysics 123.) GE credit: SciEng | QL, SE, VL.—S. (S.) O’ Mahony
(change in existing course—eff. spring 17)
271. Applied Multivariate Modeling in Agricultural and Environmental Sciences (4)
[cancelled course—eff. fall 16]

Geology

New and changed courses in Geology (GEL)

Lower Division

2. Earth System Science (3)
Lecture—3 hours. Solid and fluid earth and its place in the solar system. How the solid earth interacts with the atmosphere, hydrosphere, biosphere, and extra-terrestrial environment. Only 2 units credit for students who have taken course 50; only 2 units credit for students who have taken course 1. GE credit: SciEng | SE, SL. — W. (W.) Montañez
[change in existing course—eff. winter 17]

Upper Division

110. Summer Field Geology (8)
Fieldwork. Prerequisite: course 60; course 103; course 109; course 105 recommended. Advanced application of geologic and geophysical field methods to the study of rocks. Includes development and interpretation of geologic maps and cross sections; gravity, magnetic, electrical resistivity and seismic surveys; and field analysis of plutonic and volcanic rock suites. Eight hours/day, six days/week for six weeks. GE credit: SciEng | Writ | SE, VL, WE. — Su. (Su.) Oksin, Cowgill
[change in existing course—eff. spring 17]

115. Earth Science, History, and People (4)
Lecture—3 hours; discussion—1 hour. Prerequisite: course 1 or course 50. Study of interplay between the Earth and its human inhabitants through history, including consideration of acute events such as earthquakes and eruptions as well as the geology of resources, topography, and water. GE credit: SciEng or SocSci | Writ | OL, SE, WE. — S. (S.) Verosub
[change in existing course—eff. spring 17]

185A. Conceptual Integrated Science for Non-Science Majors: The Physical World (2)
[new course—eff. winter 17]

185B. Conceptual Integrated Science for Non-Science Majors: Earth System Science (2)
Lecture—1 hour; discussion/laboratory—3 hours. Conceptual, inquiry-based integrated science course. Topics in the Next Generation Science Standards. Elementary school level teaching practice. Earth, space and environmental science, and science inquiry. GE credit: SE, SL, — S. (S.) Pinter
[new course—eff. fall 16]

186. Conceptual Integrated Science for Non-Science Majors: Earth System Science (2)
Lecture/discussion—1 hour. STEM Learning Assistant Seminar. Theoretical and practical issues of effective teaching in discussion/labs: student-centered, active, cooperative learning environments, responsive teaching, and differentiated classroom instruction. GE credit: SS, — F, W, S; (F, W, S.) Stevenson
[new course—eff. fall 16]

Global Disease Biology

New and changed courses in Global Disease Biology (GDB)

Lower Division

90. Introduction to Global Disease Biology (1)
Seminar—1 hour. Introduction to the Global Disease Biology major, research and internship opportunities, and potential career paths in human, animal, and plant health. Communication, ethics and the nature of science. (P/NP grading only.) — F. (F.) Rizzo
[new course—eff. fall 14]

Hebrew

New and changed courses in Hebrew (HEB)

11. Introduction to Biblical Hebrew (3)
[new course—eff. winter 17]

12. Introduction to Biblical Hebrew (3)
[new course—eff. spring 17]

21. Intermediate Modern Hebrew I (4)
Lecture/discussion—4 hours. Prerequisite: course 3; consent of instructor. Development and refinement of grammar, composition, and language skills required for reading literary texts and conversing about contemporary topics at an advanced level. History of the Hebrew language. Not open to students who have taken course 100 or 100A. GE credit: ArtHum | AH, OL, W. — F. (F.) Franco
[change in existing course—eff. fall 17]

22. Intermediate Modern Hebrew II (4)
Lecture/discussion—4 hours. Prerequisite: course 21; consent of instructor. Development and refinement of grammar, composition, and language skills required for reading literary texts and conversing about contemporary topics at an advanced level. History of the Hebrew language. Not open to students who have taken course 101 or 100B. GE credit: ArtHum | AH, OL, W. — W. (W.) Franco
[change in existing course—eff. fall 17]

23. Intermediate Modern Hebrew III (5)
Lecture/discussion—5 hours. Prerequisite: course 22; consent of instructor. Continued development of grammar, composition, language skills required for reading literary texts and conversing about contemporary topics at an advanced level. History of the Hebrew language. Further development of writing and translating skills. Not open to students who have taken course 100C or course 102. GE credit: ArtHum | AH, OL, W. — S. (S.)
[change in existing course—eff. spring 17]

Genetics

(A Graduate Group)

New and changed courses in Genetics (A Graduate Group) (GGG)

Graduate

225. Gene and Cellular Therapies (3)
Lecture/discussion—3 hours. Gene therapy from basic concepts to clinical applications. Topics include the human genome and genetic variation, genetic diseases, methods to manipulate gene expression, viral and non-viral delivery vectors, history and progress of gene therapy, case studies, and ethical issues. (Same course as Pharmacology & Toxicology 225.) — S. (S.) Anderson
[change in existing course—eff. winter 17]

296. Scientific Professionalism and Integrity (2)
Lecture—1 hour; seminar—3 hours. Prerequisite: graduate standing or consent of instructor. Review of basic skills required of contemporary scientists. Topics include scientific conduct, manuscript preparation, grant writing, seminar presentations, and time management. Emphasis on responsibilities of scientists to factually and thoughtfully communicate results. (P/NP grading only.) — F. (F.) Yoder
[change in existing course—eff. spring 17]

Geography

(A Graduate Group)

New and changed courses in Geography (GEO)

Graduate

252. Landscape and Power (4)
[cancelled course—eff. fall 16]

270. Experimental Design and Analysis (5)
[cancelled course—eff. fall 16]
98. Directed Group Study (1-5)
Prerequisite: consent of instructor. Directed group study. May be repeated for credit. (P/NP grading only.)
(new course—eff. winter 17)

99. Special Study for Undergraduates (1-5)
Prerequisite: consent of instructor. Special study. May be repeated for credit. (P/NP grading only.)
(new course—eff. winter 17)

Hindi

New and changed courses in Hindi (HIN)

Lower Division

Lecture/discussion—4 hours. Prerequisite: course 3.
level course for students who have completed Elementary Hindi/Urdu or the equivalent. Students will continue to practice their skills in listening, speaking, reading and writing in Hindi and Urdu. GE credit: ArthHum | AH, OL, WC. — F. (F.) Chauhan
(change in existing course—eff. fall 17)

22. Intermediate Hindi/Urdu II (4)
Lecture/discussion—4 hours. Prerequisite: course 21.
Intermediate level course where students will continue to practice their skills in listening, speaking, reading and writing in Hindi and Urdu. GE credit: ArthHum | AH, OL, WC. — W. (W.) Chauhan
(change in existing course—eff. fall 17)

23. Intermediate Hindi/Urdu III (4)
Lecture/discussion—4 hours. Prerequisite: course 22.
Intermediate level course where students will continue to practice their skills in listening, speaking, reading and writing in Hindi and Urdu. GE credit: ArthHum | AH, OL, WC. — S. (S.) Chauhan
(change in existing course—eff. fall 17)

98. Directed Group Study (1-5)
Prerequisite: consent of instructor. Directed group study. May be repeated for credit. (P/NP grading only.)
(new course—eff. winter 17)

99. Special Study for Undergraduates (1-5)
Prerequisite: consent of instructor. Special study. May be repeated for credit. (P/NP grading only.)
(new course—eff. winter 17)

Professional

396. Teaching Assistant Training Practicum (1-4)
Prerequisite: consent of instructor. Restricted to graduate students. Teaching practicum. May be repeated for credit up to eighteen times. (S/U grading only.) — F, W, S; (F, W, S)
(new course—eff. winter 17)

History

New and changed courses in History (HIS)

Lower Division

3. Cities: A Survey of World Cultures (4)
Lecture—3 hours; lecture/discussion—1 hour. Survey of urban world cultures, focusing on up to ten cities selected by the instructor. Offered irregularly. GE credit: ArthHum or SocSci, Div | AH or SS, WC.
(change in existing course—eff. winter 17)

Upper Division

107. Medicine's Histories: Human and Veterinary Medicine from the Ancient World to One Health (4)
Lecture/discussion—3 hours; project—3 hours. Global, comparative study of the related histories of human and veterinary medicine from the ancient world to today's interdisciplinary One Health. Emphasis on reintegration of human and veterinary medicine to meet the biggest health challenges today. GE credit: AH, SS.
(new course—eff. spring 17)

109. Environmental Change, Disease and Public Health (4)
Lecture/discussion—3 hours; project. Analysis of environmental changes from prehistory to the present and their influence on disease distribution, virulence and public health. Focus on critical study of many human-driven environmental changes and the accelerated transformation/spread of pathogens under globalization. Not open for credit to students who have taken course 109B. (Same course as Science and Society 109.) GE credit: SciEng or SocSci, Div | SE or SS, SL, WC. — F. (F.) Davis
(new course—eff. fall 16)

109A. Global Environmental History (4)
(cancelled course—eff. winter 17)

109B. Environmental Change, Disease and Public Health (4)
(cancelled course—eff. winter 18)

115D. Postcolonial Africa (4)
Lecture—3 hours; term paper. Prerequisite: course 115A recommended. Survey of social, political, cultural and economic change in African societies since the ending of European colonial rule in the twentieth century. Themes include development, health and medicine, war and conflict, urbanization, global and inter-continental migration, and family and gender. GE credit: ArthHum or SocSci, Div | Wrt | AH or SS, WC, WE.
(change in existing course—eff. spring 17)

171B. Civil War Era (4)
Lecture—3 hours; term paper. Examination of the political and social history of the United States from the Compromise of 1850 to the end of the Civil War in 1865. Causes of the war itself and the problems of reconstruction after the war. Offered in alternate years. GE credit: ArthHum or SocSci, Div | Wrt | ACHG, AH or SS, DD, WE.
(change in existing course—eff. spring 17)

187. History of US Foreign Relations in the Twentieth Century (4)
Lecture—3 hours; extensive writing—3 hours. Rise of the US to superpower standing during the twentieth century, from colonialism to the war on terror, including political, diplomatic, cultural, and economic activities of both US government and private American agencies beyond US borders. Offered in alternate years. GE credit: SS, WE.
(new course—eff. fall 17)

Human Rights

New and changed courses in Human Rights (HMR)

Upper Division

190. Seminar (4)
Seminar—4 hours; term paper. Emphasis on current scholarly debate about the methods for analyzing and comparing diverse human rights issues with the intention of integrating disciplined study of the field.
(new course—eff. fall 16)

Hydrology

New and changed courses in Hydrology (HYD)

Upper Division

143. Ecohdrology (4)
Lecture/discussion—3 hours; course 10 or course 141 or Environmental Science and Policy 1 or Environmental Science and Management 108 or Environmental Science and Management 120 or Geology 1 or Geology 50 or Soil Science 100; or consent of instructor. Movement and storage of water in individual ecosystems and the integrated functioning of water and biota at the watershed scale. Offered in alternate years. GE credit: SciEng | QL, SE, SL. — W. (W.) Pasternack
(change in existing course—eff. winter 17)

145. Water Science and Design (4)
Lecture—3 hours; laboratory—3 hours. Prerequisite: Hydrology 141, Mathematics 16C, 17C or 21C.
Introduction to watershed engineering, storm water management, design of hydraulic systems. Topics include hydraulic risk analysis, flood routing, design storms, open channel flow, pipes, culverts, spillways, and detention basins. Class project and field trips will apply theory to real-life problems. Offered in alternate years. GE credit: SciEng | QL, SE, SL. — W. (W.) Dahlke
(new course—eff. fall 16)

Graduate

201A. Hydrologic Sciences Core Survey (3)
Lecture/discussion—2 hours; project—3 hours. Considers the primary sub-disciplines while reviewing the fundamental scientific concepts/processes of the hydrologic sciences research community, and includes a basic writing component. — Grimmer, Harter
(new course—eff. fall 17)

201B. Hydrologic Sciences Core Seminar (1)
Seminar—3 hours. Explores students to the research underway in the Hydrologic Sciences Graduate Group as well as provide them the opportunity to present and refine their research through interaction with other students in the Graduate Group. (P/NP grading only.) — Harter
(new course—eff. winter 18)

Horticulture

New and changed courses in Horticulture (HRT)

Graduate

203. Research Perspectives in Horticulture (3)
Lecture—1 hour; lecture/discussion—2 hours. Prerequisite: graduate standing. Following lectures/discussions of scientific methodology, students develop research proposals aided by classroom discussions and individual interactions with instructors. Lectures and critiques of “classical papers” provide a sense of the evolution of the current concepts in perennial plant biology. — W. (W.) Melotto, Zwieniecki
(change in existing course—eff. winter 17)
Integrated Pest Management

New and changed courses in Integrated Pest Management (IPM)

Graduate

201. Concepts and Systems of Plant Protection and Pest Management (4)
[cancelled course—eff. winter 17]

202A. Diagnosis of Plant Pest Problems and the Control of Causal Agents (4)
[cancelled course—eff. winter 17]

202B. Diagnosis of Plant Pest Problems and the Control of Causal Agents (4)
[cancelled course—eff. winter 17]

290. Seminar (1-2)
[cancelled course—eff. winter 17]

298. Group Study (1-2)
[cancelled course—eff. winter 18]

299. Research (1-12)
[cancelled course—eff. winter 18]

International Agricultural Development

New and changed courses in International Agricultural Development (IAD)

Graduate

201. The Economics of Small Farms and Farming Systems (4)
Lecture—3 hours; discussion—1 hour. Prerequisite: Agricultural Resource Economics 100A or Economics 100; or the equivalent. Economic perspectives on small farm development. Establishes a basis for predicting farmers' responses to changes in the economic environment, and for proposing government policies to increase small farm production and improve farmer and national welfare. —W. (W.) Vosti
[change in existing course—eff. winter 17]

202N. Analysis and Determinants of Farming Systems (4)
Lecture—3 hours; discussion—1 hour. Prerequisite: Plant Sciences 110C or Plant Sciences 111; or the equivalent. Unifying concepts of cropping systems in temperature and tropical climatic zones; agroecosystems stability, diversity and sustainability; management strategies, resource use efficiency and their interactions; role of animals, their impact on energy use efficiency, nutrient cycling, and providing food and power. Not open for credit to students who have completed former course 200. —S. (S.) Bunn, Van Kessel
[change in existing course—eff. winter 17]

203N. Project Planning and Evaluation (4)
Discussion—1 hour; workshop—3 hours. Prerequisite: course 200N; or consent of instructor. Interdisciplinary setting for application of student skills and specialization to a "real world" development project. Focus on team-building and effective interdisciplinary problem-solving methods, with the objective of producing a project document and presentation within a specified deadline. Not open for credit to students who have completed former course 203. —S. (S.)
[change in existing course—eff. winter 17]

Italian

New and changed courses in Italian (ITA)

Lower Division

8A. Italian Conversation (3)
Discussion—3 hours. Prerequisite: course 3 or the equivalent. Italian conversation with peers in a classroom setting. GE credit: OL, WC. —F. S. (F, S.)
[change in existing course—eff. winter 17]

8AS. Italian Conversation (3)
Discussion—3 hours. Prerequisite: course 3 or the equivalent. Italian conversation in local context outside United States. GE credit: OL, WC.
[change in existing course—eff. winter 17]

8B. Italian Conversation (3)
Discussion—3 hours. Prerequisite: course BA. Italian conversation with peers in a classroom setting. Offered irregularly. GE credit: WC.
[change in existing course—eff. winter 17]

8B5. Italian Conversation (3)
Discussion—3 hours. Prerequisite: course BA. Italian conversation in local context outside United States. Offered irregularly. GE credit: OL, WC. —F. (F.) Heyer-Caput
[change in existing course—eff. winter 17]

31. Beginning Italian for Spanish Speakers (5)
Lecture/discussion—5 hours. Prerequisite: Spanish 3; or two years of high school Spanish or native or heritage speaker of Spanish. Intensive introductory course on Italian language with emphasis on structural similarities between Italian and Spanish. Not open for credit to students who have completed course 1, course 2, course 1A, course 1S, course 2S. GE credit: AH, OL, WC. —F. (F.) Gomez
[new course—fall spring 17]

32. Beginning Italian for Spanish Speakers (5)
Lecture/discussion—5 hours. Prerequisite: course 31 or course 31Y; or consent of instructor. Continuation of course 31. Intensive introductory course to Italian language and grammar with emphasis on oral and written communication. Highlights the structural similarities between Italian and Spanish. Not open for credit to students who have completed course 2, course 3; course 1A, course 1S, course 2S; GE credit: AH, OL, WC. —S. (S.) Gomez
[new course—fall spring 17]

Upper Division

120A. Italian Literature of the Twentieth Century: The Novel (4)
Lecture/discussion—3 hours; term paper. Prerequisite: course 9; consent of instructor. Development of the novel from Svevo to the present. Emphasis on the work of Svevo, Levi, Moravia, Pavese, and Vittorini. GE credit: ArtHum, Writ|AH, OL, WC. —Cannon, Heyer-Caput
[change in existing course—eff. spring 17]

Japanese

New and changed courses in Japanese (JPN)

Lower Division

75. Intensive Intermediate Japanese (20)
Lecture/discussion—20 hours. Prerequisite: course 2 C or better; or the equivalent language proficiency; consent of instructor. Special intensive course that combines the work of courses 3, 4, 5, and 6. Introduction to Japanese grammar and development of all language skills in a cultural context with emphasis on communication. Taught in Japanese. GE credit: ArtHum | AH, OL, WC —S. (S.)
[change in existing course—eff. winter 17]

Upper Division

106. Japanese Culture Through Film (4)
Lecture/discussion—3 hours; film viewing—3 hours. Aspects of Japanese culture such as love, sexuality, war, the military, the family, the position of women, growing up and death as portrayed in Japanese cinema. Lectures, discussion, and readings in English. Films with English subtitles. GE credit: ArtHum, Div, Writ|AH, WL, VC. —Chang, Gundry
[change in existing course—eff. spring 17]

114A. Spoken Japanese (2)
Discussion—2 hours. Prerequisite: consent of instructor. Training in spoken Japanese for students with a basic working knowledge of the language. (F/NP grading only.) GE credit: OL.
[change in existing course—eff. spring 17]

1175. Intensive Modern Japanese: Reading and Discussion (17)
Lecture/discussion—17 hours. Prerequisite: course 5 C or better; or consent of instructor; or the equivalent language proficiency. Introduction to basic Japanese grammar and development of more advanced reading, writing, and conversation skills in a cultural context. Combination of courses 6, 111, 112, and 113 taught intensively in Japan. Not open to students who have taken courses 6, 111, 112, or 113; an exception can be made for students who have taken course 6 or its equivalent, provided that those five units are deducted from the 19 total unit load. GE credit: ArtHum | AH, OL, WC.
[change in existing course—eff. winter 17]

130. Readings in Modern Japanese Literature to 1926 (4)
Lecture/discussion—4 hours. Prerequisite: course 113; or equivalent language proficiency. Restricted to completion of course 113 or equivalent as determined by taking a placement exam or consent of instructor. Short stories and essays by Japanese writers of the Meiji and Taishô eras, from 1868 to 1926. Authors include Natsume Sôseki, ibumi Kyôka, Tanizaki Jun'ichirô and Akutagawa Ryônosuke. Readings and discussion in Japanese with some emphasis on translation into English. GE credit: ArtHum | AH, Writ|AH, WC.
[change in existing course—eff. winter 17]

138. Readings in the Humanities: Japan Today (4)
Lecture/discussion—4 hours. Prerequisite: course 113; or equivalent language proficiency. Restricted to completion of course 113 or equivalent as determined by taking a placement exam or consent of instructor. Topical essays focused on contemporary Japan. Themes center on defining Japan today in terms of its future and past such as through its urban society, trends in architecture, "soft power" industries, and "traditional" elements as mainstays of Japan's cultural currency. GE credit: ArtHum | AH, WC. —Sorensen
[change in existing course—eff. winter 17]
151. Japanese Linguistics (4)
Lecture—3 hours; discussion—1 hour. Prerequisite: courses 3; or equivalent language proficiency. Introduction to Japanese linguistics, featuring key aspects of the Japanese language. Analysis of Japanese from the perspectives of phonology, syntax, discourse analysis, sociolinguistics and psycholinguistics. GE credit: ArtHum, Div, Wrt |AH, WC, WE. — Kayama
(change in existing course—eff. winter 17)

Graduate
297. Directed Independent Study (4)
Conference—1 hour; term paper; independent study—8 hours. Prerequisite: consent of instructor. Directed independent study on a topic culminating in a term paper. Independent Study may only be arranged with consent of the instructor and when graduate seminars are unavailable. May be repeated for credit up to five times when no seminars are available for that topic. — F, W, S. [F, W, S.] Chang, Gundry, Koyama, Sorensen (new course—eff. winter 17)

Landscape Architecture

New and changed courses in Landscape Architecture (LDA)
Upper Division
180A. Special Topics in Landscape Architecture: Postmodern Landscapes (2) (cancelled course—eff. fall 16)
180C. Special Topics in Landscape Architecture: Art of the Environment (2) (cancelled course—eff. fall 16)
180F. Special Topics in Landscape Architecture: Landscape Ecology (2) (cancelled course—eff. fall 16)
180G. Special Topics in Landscape Architecture: Landscape and Regional Land Planning (2) (cancelled course—eff. fall 16)
180I. Special Topics in Landscape Architecture: Regenerative Landscape Systems (2) (cancelled course—eff. fall 16)
180J. Special Topics in Landscape Architecture: Community Participation in Design (2) (cancelled course—eff. fall 16)
180K. Special Topics in Landscape Architecture: Social Factors in Landscape Architecture (2) (cancelled course—eff. fall 16)
180L. Special Topics in Landscape Architecture: Public Open Space (2) (cancelled course—eff. fall 16)
180M. Special Topics in Landscape Architecture: Urban and Community Design (2) (cancelled course—eff. fall 16)
180N. Special Topics in Landscape Architecture: Planting Design (2) (cancelled course—eff. fall 16)
180O. Special Topics in Landscape Architecture: Current Issues in Landscape Architecture (2) (cancelled course—eff. fall 16)
180P. Special Topics in Landscape Architecture: Water in Community Planning and Design (2) (cancelled course—eff. fall 16)
180Q. Historic Preservation (2) (cancelled course—eff. winter 17)
181A. Postmodern Landscapes Design and Planning Studio (3) (cancelled course—eff. fall 16)
181C. Art of the Environment Design and Planning Studio (3) (cancelled course—eff. fall 16)
181F. Landscape Ecology Design and Planning Studio (3) (cancelled course—eff. fall 16)
181G. Special Topics in Landscape Architecture: Landscape and Regional Land Planning Studio (3) (cancelled course—eff. fall 16)
181H. The Bioregional Landscape Design and Planning Studio (3) (cancelled course—eff. fall 16)
181I. Regenerative Landscape Systems Design and Planning Studio (3) (cancelled course—eff. fall 16)
181J. Community Participation in Design: Design and Planning Studio (3) (cancelled course—eff. fall 16)
181K. Social Factors in Landscape Architecture Design and Planning Studio (3) (cancelled course—eff. fall 16)
181L. Public Open Space Design and Planning Studio (3) (cancelled course—eff. fall 16)
181M. Urban and Community Design: Design and Planning Studio (3) (cancelled course—eff. fall 16)
181N. Planting Design and Planning Studio (3) (cancelled course—eff. fall 16)
181O. Current Issues Design and Planning Studio (3) (cancelled course—eff. fall 16)
181P. Special Topics in Landscape Architecture: Water in Community Planning and Design Studio (3) (cancelled course—eff. fall 16)
181Q. Special Topics in Landscape Architecture: Historic Preservation Studio (3) (cancelled course—eff. fall 16)
182. Advanced Landscape Architecture Studio I (6)
Studio—8 hours. Prerequisite: course 171. Restricted to Landscape Architecture majors (ALDA) or consent of instructor. Landscape architecture studio featuring advanced studies and applications of creative work, design, technology and/or theory. One day long field trip required. — F. (F)
(new course—eff. fall 16)
183. Advanced Landscape Architecture Studio II (6)
Studio—8 hours. Prerequisite: course 182. Restricted to Landscape Architecture majors (ALDA) or consent of instructor. Landscape architecture studio featuring advanced studies and applications of creative work, design, technology and/or theory. One day long field trip required. — W. (W)
(new course—eff. fall 16)
184. Capstone Landscape Architecture Studio (6)
Studio—8 hours. Prerequisite: course 183. Restricted to Landscape Architecture majors or consent of instructor. Capstone studio that synthesizes learning objectives within the senior-level Landscape Architecture studio sequence. Students required to apply creative problem solving, design theory, technology, and representation skills towards a design approach that addresses complex, real-world environmental design problems. — S. (S.)
(new course—eff. fall 16)
Graduate
240. Historic, Cultural Landscapes: Concept, Perception, Preservation (4) (cancelled course—eff. fall 16)
250. Life-Place: Bioregional Theory and Principles (4) (cancelled course—eff. fall 16)
260. Landscape and Power (4) (cancelled course—eff. fall 16)

Law

New and changed courses in Law (LAW)
Graduate
200BT. U.S. Legal Methods A (LL.M.) (3)
Lecture/discussion—3 hours. Course is designed to provide background skills necessary to succeed in both law school and legal practice. Students gain an introductory working knowledge of the US legal method which includes learning various forms of legal writing and speaking.
(new course—eff. fall 16)
200CT. U.S. Legal Methods B (LL.M.) (3)
Lecture/discussion—3 hours. Course is designed to provide background skills necessary to succeed in both law school and legal practice. Students gain an introductory working knowledge of the US legal method which includes learning various forms of legal writing and speaking.
(new course—eff. fall 16)
200DT. Advanced Introduction to American Legal Concepts and Methods (LL.M.) (3)
Lecture—3 hours. Course is only offered to LL.M. students. Building on the Introduction to American Law course, this course will provide additional instruction in American law and legal methods. Students will audit selected substantive courses and will produce a series of legal memoranda.
(new course—eff. spring 17)
207. Legal Research and Writing I (2)
Discussion/laboratory—2 hours. Fall semester course taught by Wydick Fellowship Program faculty is an integrated legal research and writing skills course. Basic legal research resources and strategies are introduced and practiced.
(change in existing course—eff. fall 17)
207A. Legal Research (LL.M.) (1)
Discussion—1 hour. Restricted to LL.M. students only. Description of the evolution and use of sources of law and secondary authority.
(new course—eff. fall 17)
208A. Legal Research and Writing II (LL.M.) (LLM) (2)
Discussion—2 hours. Persuasive writing and oral advocacy. LL.M. students complete integrated research and writing assignments, including a com-
209AT. Patent Prosecution and Practice (3)
Discussion—3 hours. Prerequisite: course 274; or consent of instructor. Examines core requirements and strategies for drafting and prosecuting a patent application before the U.S. Patent & Trademark Office. Students will interact with real inventors and US PTO examiners to gain the experience of getting a patent issued.
[change in existing course—eff. spring 17]

209DT. Innovation Law (2)
Seminar—2 hours. Explores range of legal issues that innovation lawyers face, from establishing a startup to high stakes technology mergers & acquisitions, to data protection and privacy, protecting intellectual property through strategic patent litigation.
[new course—eff. spring 17]

210. Reforming the Police and Criminal Justice (2)
Seminar—2 hours. Limited to 25 students. Focus on major current issues: policing ethnic neighborhoods; use of deadly force; modernizing the work of prosecutors and defense counsel.
[change in existing course—eff. fall 16]

210ET. Race, Mass Incarceration and Policing (2)
Seminar—2 hours. Key issues in the historical development and the current state of modern American imprisonment, policing structures, and the criminal justice system in relation to race.
[new course—eff. spring 17]

210FT. Restorative Justice (3)
Seminar—3 hours. Explore both the theory and practice of restorative justice as an alternative approach to the retributive justice model of our current criminal law system and many other institutions.
[new course—eff. spring 17]

219. Evidence (3)
Lecture/discussion—3 hours. Covers rules regarding the admissibility of proof during civil and criminal cases, including rules governing relevance, hearsay, the examination and impeachment of witnesses, expert opinion, and constitutional and statutory privileges.
[change in existing course—eff. spring 17]

221. Trusts, Wills and Estates (3)
Discussion—3 hours. Study of the law of decedent’s estates, wills, and trusts.
[change in existing course—eff. fall 16]

222CT. Anti-Corruption Law in India (2)
Seminar—2 hours. Addresses the impact of large corruption scandals on long term social trust, in light of Indian coal black and 2G spectrum allocation scandals.
[new course—eff. spring 17]

222T. Asian Pacific Americans and Law (3)
Discussion—3 hours. Prerequisite: course 219. Asian American law has shaped Asian Pacific Americans’ legal profession in three key areas.
[change in existing course—eff. spring 17]

226T. Mental Disability Law (3)
Lecture/discussion—3 hours. Students will examine the civil, constitutional, and statutory bases of mental disability law, as well as its history, and explore the role of mental disability in the policing and criminal trial process.
[change in existing course—eff. spring 17]

228. Business Planning and Drafting (2)
Lecture/discussion—2 hours, extensive writing. Prerequisite: course 215; Prerequisite will not be waived, do not register for the course unless you have completed course 215. Limited enrollment. Introduces students to a number of legal and business considerations relevant to forming and operating an emerging growth business (such as technology startup).
[new course—eff. spring 17]

236CT. Securities Enforcement (3)
Lecture—3 hours. Examines civil and criminal enforcement of securities laws by both the Securities and Exchange Commission and Justice Department. Surveys administrative rules and investigative procedures that govern the SEC and the substantive related crimes.
[new course—eff. spring 17]

239. Mediation (3)
Discussion/laboratory—3 hours. Restricted to 24 students. Interactive course focusing on attorney representation of clients in mediation.
[change in existing course—eff. fall 16]

240. Reforming Campaign Finance Law and the Initiative Process (2)
Discussion—2 hours. Limited to 25 students. The recent election exposed many campaign finance and initiative issues. Focuses on reforms as well as the current law.
[change in existing course—eff. spring 17]

241. Voting Rights Seminar (2)
Seminar—2 hours. Seminar investigates the right to vote as a matter of constitutional and statutory law, with emphasis on the voting rights of racial and ethnic minorities.
[new course—eff. spring 17]

241T. Voting Rights Seminar (2)
[cancelled course—eff. spring 17]

243BT. Introduction to Bankruptcy Law (2)
Lecture/discussion—2 hours. Bankruptcy Code and the bankruptcy process. Emphasis on consumer bankruptcy in Chapter 7 and Chapter 13, but many topics, such as the automatic stay and calculation of claims, are common to consumer and business bankruptcy.
[new course—eff. spring 17]

247. Taxation of Partnerships and LLCs (3)
Lecture/discussion—3 hours. Prerequisite: course 220. Study of the federal income tax treatment of partnerships and partners; including entities classified as partnerships.
[change in existing course—eff. spring 17]

248CT. United Nations Human Rights Practicum I (3)
Discussion—3 hours. Students will engage in intensive research and writing in the field of cultural rights, the workings of the United Nations human rights system, and gain experience working with UN documents, individual cases in the field and with the U.S. government.
[change in existing course—eff. fall 16]

248DT. United Nations Human Rights Practicum II (2—3)
Seminar—2-3 hours. Offers students the opportunity to work in support of the United Nations Special Rapporteur in the field of cultural rights at an advanced level. They will gain heightened expertise in cultural rights, and in-depth experience with the UN.
[new course—eff. spring 17]

251. Labor Law (2)
Discussion—2 hours. Survey of the legislative, administrative, and judicial regulation of labor relations under federal law. Historical development of labor law, the scope of national legislation, unions, strikes, picketing, and collective bargaining agreements.
[change in existing course—eff. spring 17]

253T. Policy Advocacy (2)
Seminar—2 hours. In-depth examination of the legislative process both within the California legislature and from the advocates’ perspective. Students trained in key policy advocacy skills by legislative leaders and social justice advocates.
[new course—eff. spring 17]

254A. Law and Rural Livelihoods Seminar (3)
Seminar—2 hours. Provides broad overview of law as it relates and applies to rural people and places.
[change in existing course—eff. spring 17]

255. Pension and Employee Benefits Law (3)
Discussion—3 hours. Prerequisite: course 220. Federal regulation and taxation of private pensions and employee benefits. This course covers the Employee Retirement Income Security Act (ERISA) and Internal Revenue Code issues.
[change in existing course—eff. spring 17]

258. Professional Responsibility (2)
Discussion—2 hours. The ABA’s Model Rules of Professional Conduct and the Code of Judicial Conduct, which are tested on the MPRE, and the California Rules of Professional Conduct, which are tested on the California Bar Examination. Students who take Law 258A Legal Ethics and Corporate Practice are not eligible to enroll in this course.
[change in existing course—eff. spring 17]

258A. Legal Ethics and Corporate Practice (2)
Lecture/discussion—3 hours. Focus on corporate practice to explore the ethical responsibilities of lawyers. Students who take Law 258 Professional Responsibility are not eligible to enroll in this course.
[change in existing course—eff. fall 16]

263. Law and Practice of Voir Dire (2)
Seminar—2 hours. Experiential seminar on selecting a jury.
[new course—eff. spring 17]

263A. Trial Practice (3)
Discussion—2 hours, laboratory—1 hour. Prerequisite: course 219 (can be concurrent). Limited enrollment. Introduction to the preparation and trial of cases, featuring lectures, videotapes, demonstrations, assigned readings and forensic labs. Laboratory held on Tuesday, Wednesday, and Thursday evening.
[change in existing course—eff. fall 16]

263B. Advanced Trial Practice (2)
Discussion—2 hours. Prerequisite: course 219; course 263A. Class limited to 40 students. Trains students on the organization and presentation of a complete trial, including pretrial conferring, jury selection, strategy considerations, evidentiary issues, and effective handling of plaintiff and defense cases through verdict.
[change in existing course—eff. fall 16]
266A. Cyberlaw (3) Lecture/discussion—3 hours. Emerging legal issues crucial to the conduct of business in cyberspace. Discussion of the evolution and current administration of the Internet and the World Wide Web. (new course—eff. spring 17)

269. Basic Finance for Lawyers (3) Discussion—3 hours. Prerequisite: students with a non-law basic finance course will not be admitted. rectangles: 3 to instructors. 3 to instructors. Disci- cippers that are part of the core curriculum in a good business school. Gives background necessary for understanding and advising your clients and for understanding other business-related law school courses. (change in existing course—eff. spring 17)

270. International Business Transactions (3) Lecture/discussion—3 hours. Select legal problems arising from international business transactions. (change in existing course—eff. spring 17)

276. Juvenile Justice Process (2) Lecture/discussion—2 hours. Legal and philosophi- cal bases of a separate juvenile justice process for crimes committed by minors. The role of counsel at each phase of the process is examined. (change in existing course—eff. spring 17)

277. Federal Indian Law (3) Discussion—3 hours. Focuses on legal relations between Native American tribes and the federal and state governments. (change in existing course—eff. fall 16)

283. Remedies (2) Discussion—2 hours. Survey of modern American civil remedies law in both private and public law contexts. Topics include equitable remedies, equitable defenses, contempt power, injunctive relief, restitution, and money damages in torts and contracts. (change in existing course—eff. spring 17)

285C. Food and Agricultural Law (2) Discussion—2 hours. Introduction to agricultural law, focusing on legal principles and issues at the forefront of contemporary debates about agriculture in society. (change in existing course—eff. fall 16)

290CT. Information Privacy Law (2) Seminar—2 hours. Examine several topics that arise in field of information privacy law, with a special emphasis on law enforcement access to this information. (new course—eff. spring 17)

290D. Art Law (2) Discussion—2 hours. Selected issues in Art Law, including meaning of art, how to represent artists, copyright, publicity, first amendment rights, censorship, street art, government regulation, art markets, international protection of art and cultural property; and more. (change in existing course—eff. spring 17)

Professional

411A. Journal of International Law and Policy (1-2) The UC Davis Journal of International Law and Policy publishes semi-annually and strives to contribute per- fect and interesting scholarly works to the field of international law. May be repeated for credit up to five times. Students are allowed to participate in the journal for more than one term. (S/U grading only.) (change in existing course—eff. spring 17)

411B. Journal of Juvenile Law and Policy (1-2) Independent study—1-2 hours. The Journal of Juve- nile Law & Policy is a biannual publication of the UC Davis School of Law that addresses the unique con- cerns of youth in the American legal system. May be repeated for credit up to five times; students are allowed to participate in the journal for more than one term. (S/U grading only.) (change in existing course—eff. spring 17)

411C. UC Davis Business Law Journal (1-2) Independent study—1-2 hours. The UC Davis Business Law Journal is run by dedicated law students who are committed to providing current and valu- able legal and business analysis. May be repeated for credit up to five times. Students are allowed to participate in the journal for more than one term. (S/U grading only.) (change in existing course—eff. spring 17)

416. Law Review Writer (1-2) Writing of a law review article under the editorial supervision of editors of the UC Davis Law Review. Office hours (including but not limited to Bluebook- ing and cite-checking) are required. 1 or 2 units. In the spring semester, credit is obtained only upon achieving status as a member of the UC Davis Law Review, which requires that the student has made substantial progress towards completing an editor- ship article. Credit is awarded only after certification by the editor in chief and approval of the faculty advisers. One unit of credit is earned the first semes- ter. Two units are earned the second semester upon nomination and acceptance of nomination to the Edi- torial Board. One unit is earned second semester if only a membership draft and office hours are com- pleted. May be repeated for credit. (S/U grading only.) (change in existing course—eff. spring 17)

418. Environmental Law and Policy Journal (1-2) Independent study. Enviros is a biannual environmen- tal law and policy journal that provides an open forum for the discussion of current environmental issues, particularly those pertaining to the state of California. May be repeated for credit up to five times. Students are allowed to participate in the jour- nal for more than one term. (S/U grading only.) (change in existing course—eff. spring 17)

446A. UC Davis Capital Law Scholars Seminar (1) Seminar—2 hours. May be required for students enrolled in Capital Law Scholars Externship. Covers issues related to California’s state capital and help students maximize educational and professional experience in their externship placements. (new course—eff. fall 16)

450. Environmental Law Externship (2-12) Fieldwork—4-24 hours. Program is designed to pro- vide students with an opportunity to gain experien- ce in a legislative office, with a legislative committee, or with a government/nonprofit office engaged in legis- lative and policy work. (S/U grading only.) (new course—eff. fall 16)

495. Instruction in Legal Research and Writing Skills (1-2) Discussion—2 hours. Prerequisite: consent of instruc- tor. Participants assist in instructing the Legal Research and Writing programs for first-year stu- dents under the direction of the Legal Research and Writing instructors. (S/U grading only.) (change in existing course—eff. spring 17)

497. Introduction to Syntactic Theory (4) Lecture—4 hours; discussion—1 hour. Prerequisite: course 103B recommended. Introduction to syntactic theory, primarily through the syntactic, semantic, and phonological phenomena. Emphasizes development of analytical skills and appreciation of structural regularities and differences among languages. Not open for credit to students who have completed course 139. GE credit: ArtHum | AH—F. (F.) Barreda, Zellou (change in existing course—eff. winter 17)

112. Phonetics (4) Lecture—3 hours; term paper. Prerequisite: course 1 recommended. Detailed examination of articulatory and acoustic phonetics. GE credit: SciEng | SE—F. (F.) Barreda, Zellou (change in existing course—eff. winter 17)

121. Morphology (4) Lecture—3 hours; discussion—1 hour. Prerequisite: courses 103A, 103B recommended. Introduction to the analysis of word structure and the relation of word structure to the lexicon and other grammatical components. GE credit: ArtHum | AH—S. (S.) Aranovich (change in existing course—eff. winter 17)

275. Text Processing and Corpus Linguistics (4) Lecture—3 hours; extensive problem solving. Prereq- isite: course 1, course 5, course 6, or Anthropology 4 recommended. Investigation of the lexical organi- zation of human languages through corpus linguis- tics. Application of principles of linguistic analysis, automatic text processing, and statistical research to solving problems of textual evaluation and classification, as well as information retrieval and extraction. Offered in alternate years. GE credit: ArtHum or SocSci | AH or SS, QL—S. (S.) Aranovich (change in existing course—eff. winter 17)

131. Introduction to Syntactic Theory (4) Lecture—3 hours; discussion—1 hour. Prerequisite: course 103B recommended. Introduction to syntactic theory, primarily through the syntactic, semantic, and phonological phenomena. Emphasizes development of analytical skills and appreciation of structural regularities and differences among languages. Not open for credit to students who have completed course 139. GE credit: ArtHum | AH—F. (F.) Barreda, Zellou (change in existing course—eff. winter 17)

141. Semantics (4) Lecture—3 hours; term paper. Prerequisite: course 103B recommended. The linguistic study of mean- ings of words and phrases. Meanings expressed by lexical items and derivational and inflectional mor- phology. Contribution of argument structure, quantifi- cation, and coordination to meaning. GE credit: ArtHum, Wnt | AH—F. (F.) Ojeda (change in existing course—eff. winter 17)
150. Languages of the World (4)
Lecture—3 hours; discussion—1 hour. Prerequisite: course 103A recommended. Survey of the world’s languages, their geographical distribution and classification, both genetic and typological. Illustrative descriptions of several major languages from different geographical areas: pidgins and creoles, lingua francas and other languages of wide spread use. Not open for credit to students who have completed course 50. GE credit: ArtHum or SocSci, Wt| AH or SS, WC.—F. (J) Hawkins
(change in existing course—eff. winter 17)

151. Historical Linguistics (4)
Lecture—3 hours; discussion—1 hour. Prerequisite: course 103A recommended. Description and methods of the historical study of language, including the comparative method and internal reconstruction; sound change, morphological change, syntactic change, semantic change. Offered irregularly. GE credit: ArtHum | AH.—Hawkins, Farrell
(change in existing course—eff. winter 17)

152. Language Universals and Typology (4)
Lecture—3 hours; term paper. Prerequisite: course 103B recommended. Investigation into common features of language and the classification of languages in terms of their structural features. Theories of universal grammar. Detailed discussion of non-Indo-European languages and comparison with English. Offered in alternate years. GE credit: ArtHum, Wt| AH.—S. (S.) Farrell, Hawkins
(change in existing course—eff. winter 17)

163. Language, Gender, and Society (4)
Lecture—3 hours; discussion—1 hour. Prerequisite: course 1 or Anthropology 4 recommended. Investigation of real and putative (stereotyped) gender-linked differences in language structure and usage, with a consideration of some social and psychological consequences of such differences. Focus is on English, but other languages are also discussed. GE credit: SocSci, Div, Wt| ACGH, DD, SS, WE.—W. (W.) Timura, Merrell
(change in existing course—eff. winter 17)

166. The Spanish Language in the United States (4)
Lecture—3 hours; term paper. Prerequisite: course 1 or Spanish 111N; Spanish 23 or equivalent to Spanish 23 recommended. Linguistic features of the varieties of the Spanish language spoken throughout the United States; phonology, morphology, syntax, vocabulary. Focus on the relationship between United States Spanish and other world varieties of Spanish, within a historical framework. GE credit: SocSci, Div, Wt| SS.—S. (S.)
(change in existing course—eff. winter 17)

173. Language Development (4)
Lecture—3 hours; discussion—1 hour. Prerequisite: course 1; or consent of instructor; course 103A, 103B recommended. Theory and research on children’s acquisition of their native language, including the sound system, grammatical systems, and basic semantic categories. [Same course as Education 173.] Offered in alternate years. GE credit: SocSci| SS.—S. (S.)
(Ushiodi
(change in existing course—eff. winter 17)

175. Biological Basis Language (4)
Lecture—3 hours; discussion—1 hour. Prerequisite: course 1 recommended; consent of instructor. Overview of issues in the field of neurolinguistics and techniques used to explore representation of language in the human brain. GE credit: SciEng| SE.—F. (F.) Corina
(change in existing course—eff. winter 17)

177. Computational Linguistics (4)
Lecture—3 hours; discussion—1 hour. Prerequisite: consent of instructor; course 1 recommended. Understanding the nature of language through computer modeling of linguistic abilities. Relationships between human cognition and computer representations of cognitive processing. Not open for credit to students who have completed course 7. GE credit: SciEng or SocSci| SE or SS.—W. (W.) Ojeda
(change in existing course—eff. winter 17)

180. Second Language Learning and Teaching (4)
Lecture/discussion—4 hours. Prerequisite: course 1; or equivalent required. Psycholinguistic and sociolinguistic aspects of second language learning. Connections between theoretical perspectives and pedagogical practices in formal and informal second language settings, with focus on tutoring. Impact of sociocultural factors (e.g., gender, ethnicity). GE credit: SocSci, Div, Wt| SS, WE.—F. (F.) Menard-Warwick
(change in existing course—eff. winter 17)

Graduate

253. Speech Perception (4)
Discussion—3 hours; extensive writing—2 hours. Investigation into how listeners map a continuous and variable acoustic signal to a linguistic interpretation. Phonetic context, variation, linguistic knowledge, and sociolinguistics as factors in perceiving speech. Offered in alternate years. —W. (W.) Zellou
(new course—eff. winter 17)

Management

New and changed courses in Management (MGT/MGB/MGP)

Lower Division

11A. Elementary Accounting (4)
(change in existing course—eff. summer 17)

11B. Elementary Accounting (4)
Lecture—3 hours; discussion—1 hour. Prerequisite: course 11A. Theory of product costing; Analyzing the role and impact of accounting information on decision making; planning and performance evaluation. GE credit: SocSci| SS.—S. (S.)
(change in existing course—eff. summer 17)

12Y. Navigating Life’s Financial Decisions (3)
Lecture—2 hours; web virtual lecture—1 hour. Survey of major financial decisions (e.g., career choice, consumption v. saving, investments, mortgages, insurance) and how decision-making biases (e.g., overconfidence, present bias, limited attention) can lead to suboptimal choices. The course draws on research from economics, psychology, and sociology. GE credit: SS,QL.—S. (S.)
(new course—eff. winter 16)

Upper Division

120. Managing and Using Information Technology (4)
Lecture—3 hours; discussion—1 hour. Develop an analytical framework to manage and monitor business systems concerned with operational, human, and organizational interactions. Introduction to computer hardware, software systems and infrastructure, and information systems. Management of information technology and the impact of information systems on modern management. GE credit: SocSci| SS.—S. (S.) Aram
(change in existing course—eff. summer 16)

140. Marketing for the Technology-Based Enterprise (4)
Lecture—3 hours; discussion—1 hour. Quantitative analysis of needs in a product [technology-based] economy, with emphasis on how scientists, engineers, and business people interact to develop and market products and services. —W. (W.) Findlay
(change in existing course—eff. winter 17)

150. Technology Management (4)
Lecture—3 hours; discussion—1 hour. Management of firms in high technology industries such as software development and biotechnology research. Motivating and managing workers, organizing for innovation, and making decisions. GE credit: SocSci| SS.—F. (F.) Goldberg
(change in existing course—eff. fall 16)

160. Financing New Business Ventures (4)
Lecture—3 hours; discussion—1 hour. Prerequisite: course 11A. Designing cost systems in high technology organizations and managing operations to maximize quality and minimize costs. Topics include activity based costing and management, quality and time to create value, ethical issues in cost assignment, and differential costing for decision. GE credit: SocSci| SS.—S. (S.)
(change in existing course—eff. spring 17)

180. Supply Chain Planning and Management (4)
Lecture—3 hours; discussion—1 hour. Course develops key concepts and relationships between supply chain design and business models and strategies. Much of the focus is on quantitative techniques for analysis and management of supply chain developments and delivery of goods and services by an organization. GE credit: SocSci| SS.—W. (F.)
(change in existing course—eff. winter 17)

190. Special Topics in Accounting (4)
Seminar—11 hours. Prerequisite: course 11A; course 11B; course 101. Seminar in the theory and practice of advanced or emerging areas related to the practice of professional accounting. Specific topics will vary according to the interests of the instructor or students—S. (S.)
(new course—eff. winter 17)

Graduate

224. Managing People in High-Performance Organizations (3)
Lecture—3 hours. Restricted to students in the MBA program. Strategic approach to the management of people within organization. Analyze employment systems that fit with firms’ environments and strategies. Explore consequences of choices firms make in managing people—decisions as to selection, performance evaluation, compensation, and other management policies and practices. Not open to students who have taken MGT 224 or MGP 224.—W. Su, (W., Su, Su) Greta
(change in existing course—eff. winter 17)

Professional

401. Crisis Management (1)
Discussion/laboratory—1 hour. Establishes and explores the defining characteristics of crises. Will learn to anchor crisis management firmly within over-
all strategic management and also acquire a set of useful tools and techniques for planning for and handling actual crises. — W. (W.)

[change in existing course—eff. winter 17]

404. Organizational Change Management (1) Laboratory/discussion—1 hour. Challenges in getting significant changes made in organizations. Learn Organization Change Management (OCM) techniques and discuss case situations where OCM techniques play a role. — F. (F.) Mathur

[change in existing course—eff. fall 16]

405. Business Literature (1) Lecture/discussion—1 hour. Will examine Business history—historical trends that might influence contemporary business. Some argue that the recent collapse of our financial system might have been averted if business leaders had a better sense of history. — W. (W.)

[change in existing course—eff. winter 17]

406. Ethical Issues in Management (1) Lecture/discussion—1 hour. Explores the philosophical foundation of ethical theory and its recent applications to business situations. Professional codes of ethics, such as those promulgated by educational, managerial, engineering, scientific, medical and legal professional societies, are presented. — W. (W.)

[change in existing course—eff. winter 17]

407. Storytelling for Leadership (1) Lecture/discussion—1 hour. Internalize the fundamental principles and stories that educate, influence, motivate, inspire, persuade and connect. — Su. (Su.) Chansupharindu

[change in existing course—eff. fall 16]

410. Corporate Governance (1) Lecture/discussion—1 hour. Covers recent and not-so-recent business and accounting scandals, discuss how corporations can better operate in the interests of shareholders, and the public and learn from people who rely on corporate governance in making investment decisions. — W. (W.)

[change in existing course—eff. winter 17]

411. Turnaround Management (1) Lecture/discussion—1 hour. Evaluate the financial performance of a company, identify opportunities for improvement, propose new solutions to enhance performance, and most important inspire action in staff. — S. (S.)

[change in existing course—eff. winter 17]

412. International Marketing (1) Lecture/discussion—1 hour. Basic concepts of international marketing. Understanding and managing heterogeneous, dynamic, and interdependent environments across countries. How to develop and implement an international marketing strategy: where and how to compete, how to adapt your marketing mix. — W. (W.) Peters

[change in existing course—eff. fall 16]

414. Multi-Channel Marketing (1) Lecture/discussion—1 hour. Multi-channel marketing strategies empower managers to create value for different customer segments. Covers the necessary concepts to evaluate and select go-to-market strategies in order to capitalize on the ubiquity of modern customers. — W. (W.) Rubel

[change in existing course—eff. winter 17]

416. Topics in Private Equity (1) Lecture—1 hour. Prerequisite: course 205. Restricted to students in the MBA program. Focuses on the finance principles related to the risk and return of the private equity (PE) industry, evaluation of PE target companies, the structuring of leveraged buyouts (LBOs), and the management of portfolio companies. — F. (F.) Goldberg

[change in existing course—eff. winter 17]

421. Monte Carlo Simulation for Managerial Analysis (1) Lecture—1 hour. Students create Excel-based simulation models across business domains, from finance to hypothesis testing and inventory management. By coursework, students are experts at recognizing this decision-making fallacy and fixing it. Offered irregularly. — S. (S.) Saigal

[change in existing course—eff. spring 17]

422. Behavioral Finance and Valuation (1) Lecture—1 hour. Prerequisite: MGT 252 or MGB 252 or MGT 252, MGP 206 or MGB 206 or MGT 206. Restricted to students enrolled in the MBA program. Investors psychology and market frictions can cause asset prices to deviate from fundamental values, creating profit opportunities for sophisticated investors. The course will cover techniques of financial analysis with the goal of learning how to value assets and identify mispricing. — S. (S.) Scherbina

[change in existing course—eff. winter 17]

423. Leader as Coach: An Introduction to Coaching Skills for Leaders (1) Lecture—1 hour. Restricted to students enrolled in the MBA program. Course introduces the fundamental coaching skills and coaching models that leaders can apply in everyday interactions with their team and colleagues in order to build trust, overcome challenges and help others discover their own full potential. — S. (S.) Chansupharindu

[change in existing course—eff. winter 17]

425. Digital Marketing Techniques (1) Lecture—1 hour. Course provides students with an introduction to digital marketing. The course introduces MBA students to the fundamental aspects and tools of online marketing communication, i.e., how organizations use digital channels to effectively communicate their value propositions to the target customers. — S. (S.) Blanchard

[change in existing course—eff. winter 17]

426. The Business of Healthcare (1) Lecture—1 hour. Restricted to students enrolled in the MBA program (Business Administration—Working Professional, Business Administration—Bay Area, Business Administration—Full-Time). Course is intended to provide students with an overall understanding of the unique business aspects of the healthcare industry. — S. (S.)

[change in existing course—eff. winter 17]

427. Implementing International Strategy (1) Lecture—1 hour. Restricted to students enrolled in the MBA program (Business Administration—Working Professional, Business Administration—Bay Area, Business Administration—Full-Time). Course looks at the pitfalls of implementing international strategies, and suggest several accessible, yet powerful frameworks to help international managers implement strategies successfully and completely. — S. (S.) Katzenstein

[change in existing course—eff. winter 17]

431. Project Management (1) Lecture—10 hours. Open to students enrolled in the MBA program. Students learn project management; including project scope, project planning, milestones and project closing. Important themes include leadership, team dynamics, storytelling/creating a narrative, communication, and conflict management. Offered in alternate years. — F. Goldberg

[new course—eff. fall 16]

432. Project Management with Applications in Healthcare (1) Lecture—1 hour. Course will focus on the heart of healthcare administration and how project management can be applied as a key lever to increase efficiency, decrease costs and improve the patient experience. Offered irregularly. — S. (S.) Beckler

[new course—eff. spring 17]

440. Integrated Management Project (5) Project—15 hours. Prerequisite: first-year core courses of MBA program. Applies classroom learning to solve complex business problems for real world clients. Students learn practical consulting skills while their clients benefit from the student’s experience, insights, and work product. — W. (W.) Dinunzio, Lowe

[change in existing course—eff. fall 16]


[new course—eff. fall 16]
Maternal and Child Nutrition

New and changed courses in Maternal and Child Nutrition (MCN)

Graduate
260. Nutrition During Pregnancy (6)
Lecture—5 hours; term paper. Prerequisite: acceptance into the Master of Advanced Studies in Maternal and Child Nutrition; other students by consent of instructor. Overview of the anatomical, physiological and biochemical changes that occur during pregnancy and early development. Discussion and evaluation of nutritional needs and interventions for pregnant women. Offered in alternate years. —F. (F) Keen (new course—eff. fall 16)

261. Lactation and Infant Nutrition (6)
Lecture—5 hours; term paper. Prerequisite: course 260; graduate standing. Restricted to students enrolled in the MAS program; other graduate students by consent of instructor. Overview of the physiologic and biochemical processes underlying human lactation and nutritional needs of both mother and infant. Development of skills in assessment, nutrition counseling, education and support of new mothers and their families. Offered in alternate years. —W. (W) Devey (new course—eff. fall 16)

262. Child and Adolescent Nutrition (6)
Lecture—5 hours; term paper. Prerequisite: course 261; graduate standing. Restricted to students enrolled in the MAS program; other graduate students by consent of instructor. Relationships among nutrition, growth, and development during childhood and adolescence. Nutritional assessment for normal and high risk groups; psychological, social, and economic factors contributing to nutritional status. Nutritional needs and interventions for special groups, including obese children/adolescents, athletes, and eating disordered. Offered in alternate years. —S. (S) Heining (new course—eff. fall 16)

Lecture/discussion—4 hours. Prerequisite: graduate standing. Restricted to students enrolled in the MAS program; other graduate students by consent of instructor. Application of epidemiological principles to the study of maternal and child nutrition. Topics include quantitative and qualitative study procedures, including study design, data collection, and related analytical techniques. Offered in alternate years. —F. (F) Stewart (new course—eff. winter 18)

264A. Current Topics in Maternal and Child Nutrition: Principles of Adult Education (2)
Seminar—2 hours. Prerequisite: graduate standing. Restricted to students enrolled in the MAS program; other graduate students by consent of instructor. Current scientific literature related to Maternal and Child Nutrition in adult education settings. Topics include methods and theories of adult education and critical thinking skills related to research evaluation. Offered in alternate years. —(W) Heining (new course—eff. spring 17)

264B. Current Topics in Maternal and Child Nutrition: Epidemiology and Evidence-Based Practice (2)
Seminar—2 hours. Prerequisite: graduate standing. Restricted to students enrolled in the MAS program; other graduate students by consent of instructor. Current scientific literature related to Maternal and Child Nutrition. Topics include epidemiology, evidence-based practice, breastfeeding promotion, and nutritional assessment of populations. Offered in alternate years. —(W) Heining (new course—eff. spring 17)

264C. Current Topics in Maternal and Child Nutrition: Public Policy Development and Implementation (2)
Seminar—2 hours. Prerequisite: graduate standing. Restricted to students enrolled in the MAS program; other graduate students by consent of instructor. Current scientific literature related to Maternal and Child Nutrition. Topics include nutrition surveillance and monitoring, as well as public policy development and implementation. Offered in alternate years. —(S) Heining (new course—eff. fall 17)

Mathematics

New and changed courses in Mathematics (MAT)

Lower Division
16B. Short Calculus (3)
Lecture—3 hours. Prerequisite: course 16A, or better or course 17A C- or better or course 21A C- or better or course 21B C- or better. Integration; calculus for trigonometric, exponential, and logarithmic functions; applications. Not open for credit to students who have completed courses 17B, 21B, or 21C. Only 2 units of credit to students who have completed course 17B. GE credit: SciEng [Q, SE, SL, F, W, S, F, W, S] (change in existing course—eff. winter 17)

16C. Short Calculus (3)
Lecture—3 hours. Prerequisite: course 06B, or better or course 17B C- or better or course 21B C- or better or course 21C C- or better. Differential equations; partial derivatives, double integrals; applications; series. Not open for credit to students who have completed course 21C. Only 2 units of credit to students who have completed course 17C. GE credit: SciEng [Q, SE, SL, F, W, S, F, W, S] (change in existing course—eff. winter 17)

17B. Calculus for Biology and Medicine (4)
Lecture—3 hours; discussion—1 hour. Prerequisite: course 16A C- or better or course 17A C- or better or course 21A C- or better or course 21B C- or better or course 21C C- or better. Introduction to integral calculus and elementary differential equations via applications to biology and medicine. Fundamental theorem of calculus, techniques of integration including integral tables and numerical methods, improper integrals, elementary first order differential equations, applications in biology and medicine. Not open for credit to students who have completed course 16C, 21B, or 21C; only 2 units of credit to students who have completed course 16B. GE credit: SciEng [Q, SE, SL, F, W, S, F, W, S] (change in existing course—eff. winter 17)

21B. Calculus (4)
Lecture—3 hours; discussion—1 hour. Prerequisite: course 21A or 21AH with C or above; or 17A or 17B or above. Definition of definite integral, fundamental theorem of calculus, techniques of integration. Application to area, volume, arc length, average of a function, improper integral, surface of revolution. Only 2 units of credit to students who have completed course 16B, 16C, 17C. GE credit: SciEng [Q, SE, SL, F, W, S, F, W, S] (change in existing course—eff. winter 17)

21C. Calculus (4)
Lecture—3 hours; discussion—1 hour. Prerequisite: course 16C, 17C, 21B, or 21BH with C- or above; or 17B with grade of B or above. Sequences, series, tests for convergence, Taylor expansions. Vector algebra, vector calculus, scalar and vector fields. Partial derivatives, total differentials. Applications to maximum and minimum problems in two or more variables. Applications to physical systems. GE credit: SciEng [Q, SE, F, W, S, F, W, S] (change in existing course—eff. winter 17)

21D. Vector Analysis (4)
Lecture—3 hours; discussion—1 hour. Prerequisite: course 21C or 21CH with C- or above; or 17C with B or above. Continuation of course 21C. Definite integrals over plane and solid regions in various coordinate systems. Line and surface integrals. Green’s theorem, Stoke’s theorem, divergence theorem. GE credit: SciEng [Q, SE, F, W, S, F, W, S] (change in existing course—eff. winter 17)

22A. Linear Algebra (3)
Lecture—3 hours. Prerequisite: course 16C, or better or course 17C C- or better or course 21C C- or better or course 21CH C- or better; or Mechanical Engineering 9 or Mechanical Engineering 22AL, can be concurrent. Matrices and linear transformations, determinants, eigenvalues, eigenvectors, diagonalization, factorization. GE credit: SciEng [Q, SE, F, W, S, F, W, S] (change in existing course—eff. winter 17)

22AL. Linear Algebra Computer Laboratory (1)
Lecture—4 hours. Prerequisite: course 16C or course 17C or course 21C or course 21CH. Introduction to Matlab and its use in linear algebra. GE credit: QL, SE, F, W, S, F, W, S] (change in existing course—eff. winter 17)

25. Advanced Calculus (4)
Lecture/discussion—4 hours. Prerequisite: course 16C C- or better or course 21C C- or better or course 21CH C- or better. Introduction to the rigorous treatment of abstract mathematical analysis. Proofs in mathematics, induction, sets, cardinality; real number system, theory of convergence of sequences. Not open for credit to students who have completed former course 127A. GE credit: SciEng [Q, SE, F, W, S, F, W, S] (change in existing course—eff. winter 17)

67. Modern Linear Algebra (4)
Lecture/discussion—4 hours. Prerequisite: course 16C C- or better or course 21C C- or better or course 21CH C- or better. Rigorous treatment of linear algebra; topics include vector spaces, bases and dimensions, orthogonal projections, eigenvalues and eigenvectors, similarity transformations, singular value decomposition and positive definiteness. Only one unit of credit to students who have completed course 22A. Only one unit of credit to students who have completed course 22A. GE credit: SciEng [SE, F, W, S, F, W, S] (change in existing course—eff. winter 17)

Upper Division

116. Differential Geometry (4)
Lecture—3 hours; extensive problem solving. Prerequisite: course 21D; course 22B; course 22A or course 67. Vector analysis, curves, and surfaces in three dimensions. Offered in alternate years. GE credit: SciEng [S, F, W, S] (change in existing course—eff. winter 17)
New and changed courses in Medical Sciences (MDS)

**Professional**

400. Summer Pre-Matriculation Program (1)

PE activity—7 hours; independent study—15 hours; lecture—14 hours. Prerequisite: consent of instructor. Two week program provides students from diverse backgrounds an early introduction to learning skills that will facilitate success in medical school. (P/F grading only.)—Su. (Su.)

(change in existing course—eff. summer 16)

415. Principles of Public Health and Preventive Medicine (2)

Lecture—36 hours; discussion—12 hours. Prerequisite: consent of instructor. Course focuses on the bedrock themes of public health: populations and prevention. (P/F grading only; deferred grading only, pending completion of sequence.)—F, Su. (F, Su.) McCurdy

(change in existing course—eff. summer 16)

464. Multidisciplinary Approach to the Neurosurgical Patient (3-9)

Clinical Activity—40 hours. Prerequisite: consent of instructor. Participate in the perioperative care of patients undergoing neurosurgical procedures while under the supervision of anesthesia, neurology and neurosurgical ICU residents and attending physicians. May be repeated for credit. (H/P/F grading only.)—F, W, S. (F, W, S.) Sheeh

(new course—eff. fall 16)

Medicine: Anesthesiology and Pain Medicine

New and changed courses in Anesthesiology and Pain Medicine (ANE)

**Professional**

435. Primary Care Multidisciplinary Pain Management (3)

Clinical Activity—80 hours. Rotation will give 3rd year primary-care bound students an overview of the scope of Pain Medicine. May be repeated for credit. (H/P/F grading only.)—F, W, S. (F, W, S.) Tirado

(new course—eff. fall 16)

480. Ambulatory Elective in Emergency Medicine (3-18)

Restricted to MS4 students in good standing, externships/away rotations only. Credit will be given for approved non-AI Emergency Medicine courses at other institutions to which there is not an equal learning experience at UC Davis. May be repeated for credit up to two times. (H/P/F grading only.)—F, W, S. Su. (W, S. Su.) Jones

(new course—eff. fall 16)

Medicine: Family and Community Medicine

New and changed courses in Medicine—Family and Community Medicine (FAP)

**Professional**

405. The Healer’s Art (1)

Lecture—0.6 hours; workshop—3 hours. Prerequisite: consent of instructor. Limited to first-year medical students. Learning to strengthen your humanity and remain open-hearted can make the difference between burnout and a fulfilling life. Learn tools for selfcare, healing, finding meaning, strengthening commitment and becoming a true physician. May be repeated for credit. (P/F grading only.)—W. Eidson-Ton

(new course—eff. fall 16)

431. Introduction to Primary Care Continuity Clinic (1)

Clinical activity—4 sessions; project—1 session. Prerequisite: completion of the Pre-Clincial Curriculum; consent of instructor. Longitudinal component of the third-year primary care curriculum. Student attends their clinic roughly 18 half-days over the course of the year, working one-on-one with a primary care preceptor. (H/P/F grading only.)—S. (S.) Eidson-Ton, Schwartz, Srinivasan

(change in existing course—eff. fall 16)

Medicine: Internal Medicine—Infectious Diseases

New and changed courses in Internal Medicine—Infectious Diseases (IDI)

**Professional**

493. Correctional Medicine SSM—Evaluation of HIV and Hepatitis C Patients (6)

Clinical activity—30 hours; discussion—5 hours. Primary agenda focuses on the evaluation of treatment of HIV and Hepatitis C patients in the correctional environment. (H/P/F grading only.)—F, W, S. Su. (F, W, S. Su.)

(change in existing course—eff. fall 16)
**Medicine: Neurosurgery**

New and changed courses in Medicine: Neurosurgery (NSU) Professional

464. Externship (3-9)
Clinical activity. Prerequisite: fourth-year medical student having completed a neurological clerkship or consent of instructor. Clerkship in neurosurgery to be arranged at another institution with accredited residency program in neurosurgery under proper supervision. (H/P/F grading only)—F, W, S, Su. (F, W, S, Su.)

430T. TeachMS Longitudinal Pediatrics Clerkship (C) (6)
Clinical activity—45 hours. Prerequisite: consent of instructor. Longitudinal clerkship runs concurrently with Primary Care and Psychiatry for 24 weeks. Time is spent in direct patient care situations under the guidance of faculty. On-going patient write-ups, rounds, conferences are required. (H/P/F grading only; deferred grading only, pending completion of sequence)—W, (F) Butani, Plant

460A. Acting Internship: General Inpatient Pediatric Clerkship (3-18)
Clinical activity. Prerequisite: course 430 B or better; consent of instructor; letter of recommendation from Pediatrics faculty member. Limited enrollment. The Ward Acting Intern functions in a manner similar to that of a pediatric intern. The Acting Intern takes admissions in the regular sequence and is expected to take night call. (H/P/F grading only)—F, W, S, Su. (F, W, S, Su.) Kim

476. Acting Internship in Pediatric Intensive Care (6-18)
Clinical activity. Prerequisite: course 430 with grade of A or consent of instructor; letter of recommendation from Pediatrics faculty member. Limited enrollment. Evaluation and support of critically ill infants and children. In general, student expected to take night call every third night during rotation. May be repeated for credit. (H/P/F grading only)—F, W, S, Su. (F, W, S, Su.) Plant

464. Externship (3-9)
Clinical activity. Prerequisite: fourth-year medical student having completed a neurological clerkship or consent of instructor. Clerkship in neurosurgery to be arranged at another institution with accredited residency program in neurosurgery under proper supervision. (H/P/F grading only)—F, W, S, Su. (F, W, S, Su.)

**Medicine: Ophthalmology**

New and changed courses in Medicine: Ophthalmology (OPT) Professional

499. Research in Ophthalmology (1-12)
Variable—3-36 hours. Prerequisite: medical students with consent of instructor. Individual research on selected topics in optics and visual physiology, cornea and external disease. (H/P/F grading only)

430T. TeachMS Longitudinal Pediatrics Clerkship (A) (4)
Clinical activity—45 hours. Prerequisite: consent of instructor. Longitudinal Clerkship runs concurrently with Primary Care and Psychiatry for 24 weeks. Time is spent in direct patient care situations under the guidance of faculty. On-going patient write-ups, rounds, conferences are required. (H/P/F grading only; deferred grading only, pending completion of sequence)—F, (F) Butani, Plant

430T. TeachMS Longitudinal Pediatrics Clerkship (B) (6)
Clinical activity—45 hours. Prerequisite: consent of instructor. Longitudinal clerkship runs concurrently with Primary Care and Psychiatry for 24 weeks. Time is spent in direct patient care situations under the guidance of faculty. On-going patient write-ups, rounds, conferences are required. (H/P/F grading only; deferred grading only, pending completion of sequence)—W, (F) Butani, Plant

430T. TeachMS Longitudinal Pediatrics Clerkship (C) (6)
Clinical activity—45 hours. Prerequisite: consent of instructor. Longitudinal clerkship runs concurrently with Primary Care and Psychiatry for 24 weeks. Time is spent in direct patient care situations under the guidance of faculty. On-going patient write-ups, rounds, conferences are required. (H/P/F grading only; deferred grading only, pending completion of sequence)—W, (F) Butani, Plant

**Medicine: Pathology**

New and changed courses in Medicine: Pathology (PMD) Graduate

298. Advanced Group Study in Neurosciences (1-5)
Prerequisite: consent of instructor. Course will explore mechanisms that impact perinatal development of the cerebral cortex, and other cortical structures, under normal and pathological conditions.

New and changed courses in Medicine: Pathology (PED) Professional

430T. TeachMS Longitudinal Pediatrics Clerkship (A) (4)
Clinical activity—45 hours. Prerequisite: consent of instructor. Longitudinal Clerkship runs concurrently with Primary Care and Psychiatry for 24 weeks. Time is spent in direct patient care situations under the guidance of faculty. On-going patient write-ups, rounds, conferences are required. (H/P/F grading only; deferred grading only, pending completion of sequence)—F, (F) Butani, Plant

430T. TeachMS Longitudinal Pediatrics Clerkship (B) (6)
Clinical activity—45 hours. Prerequisite: consent of instructor. Longitudinal clerkship runs concurrently with Primary Care and Psychiatry for 24 weeks. Time is spent in direct patient care situations under the guidance of faculty. On-going patient write-ups, rounds, conferences are required. (H/P/F grading only; deferred grading only, pending completion of sequence)—W, (F) Butani, Plant

430T. TeachMS Longitudinal Pediatrics Clerkship (C) (6)
Clinical activity—45 hours. Prerequisite: consent of instructor. Longitudinal clerkship runs concurrently with Primary Care and Psychiatry for 24 weeks. Time is spent in direct patient care situations under the guidance of faculty. On-going patient write-ups, rounds, conferences are required. (H/P/F grading only; deferred grading only, pending completion of sequence)—W, (F) Butani, Plant

**Medicine: Pharmacology and Toxicology**

New and changed courses in Medicine: Pharmacology and Toxicology (PHA) Graduate

225. Gene and Cellular Therapies (3)
Lecture/discussion—3 hours. Gene therapy from basic concepts to clinical applications. Topics include the human genome and genetic variation, genetic diseases, methods to manipulate gene expression, viral and non-viral delivery vectors, history and progress of gene therapy, case studies, and ethical issues. (Same course as Genetics 225.)—S. (S.) Anderson

225. Gene and Cellular Therapies (3)
Lecture/discussion—3 hours. Gene therapy from basic concepts to clinical applications. Topics include the human genome and genetic variation, genetic diseases, methods to manipulate gene expression, viral and non-viral delivery vectors, history and progress of gene therapy, case studies, and ethical issues. (Same course as Genetics 225.)—S. (S.) Anderson

**Medicine: Psychiatry**

New and changed courses in Medicine: Psychiatry (PSY) Professional

420. Acting Internship in Psychiatry (3-6)
Clinical activity—40 hours. Prerequisite: course 430 and/or consent of course coordinator. Acting intern position with close faculty supervision with emphasis on biological psychiatry, psychopharmacology and psychodynamic aspects appropriate to diagnostic and long-term patient management. (H/P/F grading only)—F, W, S, Su. (F, W, S, Su.)

[change in existing course—eff. summer 16]
280. Introduction to SAS Programming (3)
Lecture—2 hours; discussion/laboratory—1 hour.
Prerequisite: introductory statistics course (e.g., Preventive Veterinary Medicine 402, Statistics 102).
Introduction to SAS, an integrated software system for data retrieval and management, data manipulation and programming. [Same course as Epidemiology (Graduate Group) 280].—Qi
[new course—eff. fall 16]

290. Topics in Public Health (1)
Seminar. Prerequisite: consent of instructor. Open to students in Master of Public Health program. Key issues and current topics in public health. Course begins in August SSU. Students must enroll in August, then Fall and Winter. The course is a series but grades and units are given at end of each quarter. May be repeated for credit up to ten times. (S/U grading only).—F, W, S, Su. [F, W, S, Su.] Kass, McCurdy
[change in existing course—eff. winter 17]

Medicine: Radiology—Diagnostic

New and changed courses in Medicine: Radiology—Diagnostic (RDI)

Professional
477. Advanced Clinical Clerkship in Ultrasound Radiology (3-6)
Clinical activity—30 hours; conference—5 hours; film viewing—3 hours. Prerequisite: fourth-year medical student with interest in Radiology, OB/GYN, or in other medical or surgical subspecialties employing ultrasound in their clinical practice; prior completion of course 461, or the equivalent, is encouraged. Restricted to two students per 2/4 week rotation. Participation as an active team member on a busy clinical ultrasound service. May be repeated for credit. (H/P/F grading only).—F, W, S, Su. [F, W, S, Su.] McGahan
[change in existing course—eff. summer 16]

Medicine: Surgery

New and changed courses in Medicine: Surgery (SUR)

Professional
493. Clinically-Oriented Anatomy Special Study Module (6)
[canceled course—eff. fall 16]

Medicine: Urology

New and changed courses in Medicine: Urology (URO)

Professional
499. Research in Urology (1-12)
Prerequisite: medical or veterinary medical students with consent of instructor. Research in oncology, male infertility, urodynamics, neurogenic bladder. Unique opportunity to apply recent technologies (nuclear medicine resonance, flow cytometry, recombinant DNA) in investigation, diagnosis and treatment of GU cancer, infectious disease, male infertility and development of genitourinary bioprosthetics. May be repeated for credit. (H/P/F grading only).—F, W, S, Su. [F, W, S, Su.] Ghosh, Kurucz
[change in existing course—eff. winter 17]

Molecular and Cellular Biology

New and changed courses in Molecular and Cellular Biology (MCB)

Upper Division
182. Principles of Genomics (3)
Lecture—3 hours. Prerequisite: Biological Sciences 101. Fundamentals of genomics, including structural genomics, functional genomics, proteomics, and bioinformatics, focusing on the impact of these disciplines on research in the biological sciences. Social impacts of genomic research. GE credit: SciEng | SE.—W. [W.] Korf, Quon
[new course—eff. winter 17]

Music

New and changed courses in Music (MUS)

Lower Division
17B. Intermediate Musicanship, Part 2 (2)
Lecture/laboratory—2 hours. Prerequisite: course 17A; course 7B (can be concurrent); course 17B required concurrently; completion of course 17A or demonstration of required proficiency level on diagnostic exam. The melodic, rhythmic, and harmonic materials of Western music. Includes sight singing, explanations, drills, melodic/rhythmic/harmonic dictations, and listening analysis. GE credit: ArtHum | AH.—W. [W.] Craig
[change in existing course—eff. winter 17]

Upper Division
101A. Advanced Theory, Part 1 (4)
Lecture—3 hours; lecture/laboratory—1 hour. Prerequisite: course 7C. Twentieth-century music from 1930 through 1950 and the various analytical tools pertaining to it. Works of Copland, Sessions, Schoenberg, Bartók, and Stravinsky. Composition of small pieces for piano and voice. GE credit: ArtHum | AH.—F. [F.] Bauer, Pelo, Rohde, San Martin
[change in existing course—eff. winter 17]

102. Tonal Counterpoint (4)
Lecture—3 hours; practice—1 hour. Prerequisite: course 6C; or consent of instructor. Imitative tonal counterpoint with an analytical focus on the Two-Part Inventions and fugues from The Well-Tempered Klavier by J. S. Bach. Composition of exercises and short pieces using contrapuntal techniques. Intended for music majors. GE credit: ArtHum | AH.—F. [F.] Bauer
[change in existing course—eff. winter 17]

105. History and Analysis of Jazz (4)
Lecture—3 hours; discussion—1 hour. Prerequisite: course 3A or course 10 or course 28; or consent of instructor. Jazz and the evolution of jazz styles in historical and cultural context. For non-majors. GE credit: ArtHum, Div, Wrt | ACGH, AH, DD, WE.—F. [F.] Bauer
[change in existing course—eff. winter 17]

106. History of Rock Music (4)
Lecture—3 hours; discussion—1 hour. Prerequisite: course 3A or course 10 or course 28; or consent of instructor. Rock and the evolution of rock styles in historical and cultural context. For non-majors. GE credit: ArtHum, Div, Wrt | ACGH, AH, DD, WE.—W. [W.] Froh, Reynolds
[change in existing course—eff. winter 17]
107B. Handmade Electronic Music (4)
Lecture—5 hours; laboratory—1 hour. Prerequisite: course 107A; consent of instructor. Hacking, bending, and creating electronic circuits to make sound. Learning to read circuit diagrams, to build prototypes, and to solder components together. Repertoire study. Offered in alternate years. GE credit: ArtHum | AH. — [W] Nichols (change in existing course—eff. winter 18)

112A. Jazz Fundamentals (2)
Lecture/laboratory—6 hours. Prerequisite: course 3A C- or better, or consent of instructor. Concurrent enrollment with course 140 or course 146 required. Fundamentals of Jazz music theory, ear training, harmony, and composition techniques. Designed to complement participation in Jazz Combo or Jazz Band. First course of a three course sequence. GE credit: ArtHum | AH. — [F] Griffith, Manricks (new course—eff. winter 17)

112B. Jazz Theory (2)
Lecture/laboratory—6 hours. Prerequisite: course 112A C- or better, or consent of instructor. Concurrent enrollment with course 140 or course 146 required. Intermediate level Jazz music theory, ear training, harmony, and composition techniques including improvisation. Designed to complement participation in Jazz Combo or Jazz Band. Second course of a sequence. GE credit: ArtHum | AH. — W. (W) Griffith, Manricks (new course—eff. winter 17)

112C. Jazz Composition (2)
Lecture—6 hours. Prerequisite: course 112B C- or better, or consent of instructor. Concurrent enrollment in course 140 required. Jazz compositions and arranging in different styles using techniques of Jazz theory, harmony and improvisation. Third course of a sequence. GE credit: ArtHum | AH. — S. (S) Griffith, Manricks (new course—eff. winter 17)

123. Music as Culture (3)
Lecture/discussion—3 hours. Prerequisite: course 24C; or consent of instructor. Introduction to the study of music in cross-cultural perspective. Basic theories and frameworks of ethnomusicology; in-depth case studies of three musical traditions from around the world. Intended for music majors. Offered in alternate years. GE credit: ArtHum | AH, WC, WE. — F, F, F, F (T) Ieee, Spiller (change in existing course—eff. winter 17)

140. University Jazz Band (2)
Rehearsal—2 hours; practice—4 hours. Prerequisite: consent of instructor; audition by audition. Open to students in any major, rehearsal, study, and performance of jazz band music and full variety of jazz band styles, including swing, bebop, and contemporary jazz styles. May be repeated for credit. [P/NP grading only].—F, W, S. [F, W, S] Griffith (change in existing course—eff. spring 17)

Native American Studies

New and changed courses in Native American Studies (NAS)

Upper Division
133. Ethnography of Native People of Mexico and Central America (4)
Lecture/discussion—4 hours. Ethnographic development of pre-colonial, colonial, post-colonial Mexican and Central American indigenous people; the impact of economic and political factors on the process of cultural adaptation. Attention is given to the questions of nation-building, forced assimilation, indigenous resistance, organized political responses. GE credit: SocSci, Div SS. (change in existing course—eff. winter 17)

133A. Ethnography of Native Peoples of Mexico and Central America to 1500 (4)
Lecture/discussion—4 hours, term paper. Ethnographic development of the indigenous peoples of Mexico and Central America up to and including the earliest period of European contact. Focus is on an indigenous written historical records of the Maya, Mixtec, and Nahua peoples. May be repeated one time for credit. This course can be repeated provided the student chooses a new topic for the term paper/project and for the PowerPoint presentations. The material is so extensive that more than one expose to it can be very beneficial to students wanting to focus on ancient Mesoamerica. Offered in alternate years. GE credit: ArtHum or SocSci, Div | AH or SS, VL, WC, WE. (change in existing course—eff. winter 17)

133B. Ethnography of Native Peoples of Mexico and Central America 1500 to 2000 (4)
Lecture/discussion—4 hours; term paper. Ethnographic development of peoples of Mexico and Central America from 1500 to contemporary times. Focus on social and cultural dynamics, particularly the role of indigenous peoples in the process of nation-building in Mexico and Central America. Offered in alternate years. GE credit: ArtHum or SocSci, Div, Wrt | AH, OL, SS, WE. (change in existing course—eff. winter 17)

Neurobiology, Physiology, and Behavior

New and changed courses in Neurobiology, Physiology, and Behavior (NPB)

Upper Division
100. Neurobiology (4)
Lecture—3 hours; discussion—1 hour. Prerequisite: Biological Sciences 2A; Biological Sciences 2B; Biological Sciences 2C; Chemistry 2A, Chemistry 2B, Physics 7A, Physics 7B recommended. Pass One restricted to majors in Neurobiology, Physiology and Behavior. Major concepts in cell biology with special emphasis on connections between cell biology and behavior. Includes: cellular metabolism, cellular sensing and signaling, molecular switches, electrical and chemical signaling, endocrine signaling, cell cycle and differentiation, cytoskeleton, and integrative examples. Credit limited to 3 units for students who have taken Biological Sciences 104. GE credit: SciEng | SE. — F, S. (F, S) Gomes, Hahn (change in existing course—eff. winter 17)

101. Systemic Physiology Discussion (1.5)
Discussion—1.5 hour. Prerequisite: course 101 can be concurrent. Consent of instructor. Discussion and problem solving related to fundamental principles of systemic physiology as presented in course 101. [P/NP grading only].—W, S. [F, W, S]. Bautista, Debello, Fuller, Furlow, Gomes, Ishida, Liets, Usrey, Weidner (change in existing course—eff. spring 17)

101D. Systemic Physiology Laboratory (3)
Lecture—3 hours; discussion—2 hours; term paper. Prerequisite: courses 101 and 110C. Selected experiments to illustrate functional characteristics of organ systems discussed in course 101. — F, W, S. (F, S, S) Bautista, Liets (change in existing course—eff. winter 17)

108Y. Animal Behavior Laboratory (3)
Lecture—3 hours; web electronic discussion—12 hours. Hybrid course, consists of limited impersonal lectures and the rest laboratory exercises. The laboratory exercises will be online, and will require students to view and score videos of animal behavior in order to test behavioral hypotheses. GE credit: SciEng | SE. — Su. [Su, S] Hedrick (new course—eff. summer 16)

110A. Foundations 1: From Molecules to Individuals (5)
Lecture—4 hours; discussion—1 hour. Prerequisite: Biological Sciences 2A, Biological Sciences 2B, Biological Sciences 2C, Chemistry 2A, Chemistry 2B, Physics 7A, Physics 7B recommended. Pass One restricted to majors in Neurobiology, Physiology and Behavior. Major concepts in cell biology with special emphasis on connections between cell biology and behavior. Includes: cellular metabolism, cellular sensing and signaling, molecular switches, electrical and chemical signaling, endocrine signaling, cell cycle and differentiation, cytoskeleton, and integrative examples. Credit limited to 3 units for students who have taken Biological Sciences 104. GE credit: SciEng | SE. — F, S. (F, S) Gomes, Hahn (change in existing course—eff. winter 17)

110B. Foundations 2: Neurobiology (5)
Lecture—4 hours; discussion—1 hour. Prerequisite: courses 110A C- or better, Pass One restricted to majors in Neurobiology, Physiology and Behavior. Major concepts in cell biology with special emphasis on connections between cell biology and behavior. Includes: cellular metabolism, cellular sensing and signaling, molecular switches, electrical and chemical signaling, endocrine signaling, cell cycle and differentiation, cytoskeleton, and integrative examples. Credit limited to 2 units for students who have taken course 100. GE credit: SciEng | SE. — F, W, F (W) Britten, Sutter (change in existing course—eff. winter 17)

110C. Foundations 3: Physiology (5)
Lecture—4 hours; discussion—1 hour. Prerequisite: Physics 7A; Physics 7B and Physics 7C recommended. Open to declared NPB majors only. Core concepts of neurobiology including single-neuron biophysics, synapses and transmitter, neuronal development, motor neuron development, nervous system, neural circuits, intracellular signaling, sensory processing, multisensory integration, autonomic nervous system, neuromodulation, learning and memory, and higher cognition and disease. Credit limited to 2 units for students who have taken course 100. GE credit: SciEng | SE. — F, W, F (W) Britten, Sutter (change in existing course—eff. winter 17)

Fall 2011 and on Revised General Education (GE) Categories:
A—American Cultures; DD—Domestic Diversity; OL—Oral Skills; Q—Quantitative; SL—Scientific; VL—Visual; WC—World Cultures; WE—Writing Experience
Pre-Fall 2011 General Education (GE): ArtHum—Arts and Humanities; SciEng—Science and Engineering; SocSci—Social Sciences; Div—Domestic Diversity; Wrt—Writing Experience
Quarter Offered: Fall, Winter, Spring; Summer—2017, 2018 offerings in parentheses
Courses & Programs are subject to change without notice.
111C. Advanced Systemic Physiology Laboratory (3) [canceled course—eff. winter 17]

111L. Advanced Systemic Physiology Laboratory (4) Lecture—1 hour; discussion—2 hours; laboratory—6 hours; term paper. Prerequisite: courses 101; course 101L. Selected comprehensive experiments in the automatic nervous system and the cardiovascular, respiratory, and neuromuscular systems. Emphasis on conceptual and methodological approaches in demonstrating the physiology of organ systems. Offered irregularly. GE credit. Wrt.—Liets (change in existing course—eff. fall 08)

112. Neuroscience (3) [canceled course—eff. winter 17]

121L. Physiology of Reproduction Laboratory (1) Laboratory—3 hours. Prerequisite: course 121 (can be concurrent). Experiments on the reproductive systems of domestic animals including male and female gametes. (P/NP grading only.)—W. (W.) Berger (change in existing course—eff. spring 17)

125. Comparative Physiology: Neurointegrative Mechanisms (3) [canceled course—eff. winter 17]

127. Comparative Physiology: Circulation (3) [canceled course—eff. fall 16]

160L. Advanced Cellular Neurobiology Laboratory (4) [canceled course—eff. winter 17]

163. Systems Neuroscience (3) Lecture—3 hours; lecture/discussion—1 hour. Prerequisite: course 100 or course 1108 or Psychology 101. Concepts and techniques in systems neuroscience: e.g., measuring and manipulating neural activity, structure of neocortex, sensory processing, motor control, storage of information, neural codes, neural mechanisms underlying cognitive functions. GE credit. SE. —S. (S.) Ditterich (change in existing course—eff. spring 17)

164. Mammalian Vision (4) Lecture—2 hours; discussion—1 hour. Prerequisite: course 100 or course 1108 or Psychology 101. Structure and function of the mammalian visual system, from the formation of images on the retina through visually guided behavior and perception. Emphasis on biological mechanisms underlying vision.—W. (W.) Britten, Werner (change in existing course—eff. spring 17)

Graduate

121. Advanced Topics in Neuroimaging (3) Seminar—2 hours; laboratory—1 hour. Prerequisite: Psychology 210; or consent of instructor. Restricted to 16 students. Critical presentation and discussion of the most influential advanced issues in neuroimaging, emphasizing fMRI design/analysis and the integration of fMRI with EEG/MEG. May be repeated for credit. (Same course as Neuroscience 211 and Psychology 211.) (S/U grading only.) Offered in alternate years.—W. (W.) Britten, Werner (change in existing course—eff. spring 17)

212. Light and Fluorescence Microscopy (3) Lecture—2 hours; laboratory—1 hour. Prerequisite: consent of instructor. Restricted to maximum 16 students. Theory and practical application of light and fluorescence microscopy in the biological sciences. Laboratory component will focus on an optics bench, where we build simple compound and confocal microscopes on an optical rail. (S/U grading only.) Offered in alternate years. —S. (S.) Zito (change in existing course—eff. spring 17)

287A. Topics in Theoretical Neuroscience (2) Lecture/discussion—2 hours. Prerequisite: consent of instructor. In-depth exploration of topics in theoretical neuroscience. Topic varies each year. Fall quarter (287A): foundational material from books and review articles. Spring quarter (287B): continuation of year's topic through readings of seminal articles from the primary literature. May be repeated for credit. (Same course as Neuroscience 287A.) (S/U grading only.) Offered in alternate years.—F. Goldman (change in existing course—eff. spring 17)

Neuroscience

New and changed courses in Neuroscience (NSC)

Graduate

211. Advanced Topics in Neuroimaging (3) Seminar—2 hours; laboratory—1 hour. Prerequisite: Psychology 210; or consent of instructor. Restricted to 16 students. Critical presentation and discussion of the most influential advanced issues in neuroimaging, emphasizing fMRI design/analysis and the integration of fMRI with EEG/MEG. May be repeated for credit. (Same course as Neuroscience 211 and Psychology 211.) (S/U grading only.) Offered in alternate years.—F. Goldman (change in existing course—eff. spring 17)

287A. Topics in Theoretical Neuroscience (2) Lecture/discussion—2 hours. Prerequisite: consent of instructor. In-depth exploration of topics in theoretical neuroscience. Topic varies each year. Fall quarter (287A): foundational material from books and review articles. Spring quarter (287B): continuation of year's topic through readings of seminal articles from the primary literature. May be repeated for credit. (Same course as Neuroscience 287A.) (S/U grading only.) Offered in alternate years.—F. Goldman (change in existing course—eff. spring 17)

Nursing, School of

New and changed courses in Nursing (NRS)

Graduate

212. Technology & Innovations in Health Care (2) Lecture/discussion—2 hours. Prerequisite: consent of instructor. Open to graduate students in the Nursing Science and Health-Care Leadership Graduate Group or by consent of the instructor. Multidisciplinary approaches to the study of health care innovation, including the evaluation of technology and the theory and practice of innovation in care. S/U grading only. Offered in alternate years.—S. Goldman, Goldman (change in existing course—eff. spring 17)

222A. Research Quality Improvement and Evidence Based Practice (2) Lecture/discussion—2 hours. Prerequisite: consent of instructor. Open to graduate students in the Nursing Science and Health-Care Leadership Graduate Group or by consent of the instructor. Introduction to providing safe, competent, and compassionate care in a highly technical and digital environment. Emphasis on safety, quality and research to clinical practice. Accessing and analyzing reliable sources of evidence for integration in care-plan.—F. (F.) (new course—eff. fall 16)

223. Quality and Safety Education in Health Care (2) Lecture/discussion—2 hours. Prerequisite: course 221; course 227; course 420; course 421; course 273; course 422; course 423; course 425; consent of instructor. Open to graduate students in the Nursing Science and Health-Care Leadership Graduate Group or by consent of the instructor. Implementing best practices alongside technological tools and focusing on continuous quality improvement. Emphasis on providing safe, competent care in a highly technical and digital environment. Building capacity to apply concepts related to safety, quality and research to clinical practice.—S. (S.) (new course—eff. spring 17)

224. Developing Future Nurse Leaders (2) Lecture/discussion—2 hours. Prerequisite: NRS 221; course 227; course 420; course 421; course 273; course 422; course 423; course 425; course 426; consent of instructor. Open to graduate students in the Nursing Science and Health-Care Leadership Graduate Group or by consent of the instructor. Develop skills around effective decision making, fiscal and environmental stewardship, initiating and maintaining excellence. Open to graduate students in the Nursing Science and Health-Care Leadership Graduate Group or by consent of the instructor. Transition from nursing student to professional nurse. Focus on emotional, professional values of social justice, autonomy, advocacy, altruism, human dignity, and integrity. Students must pass a mastery exit examination and complete a capstone project.—F. (F.) (new course—eff. fall 17)

225. Professional Nursing Role Formation (3) Lecture/discussion—3 hours. Prerequisite: NRS 221; course 220; course 221; course 222A; course 272; course 420; course 421; course 429A; course 222B; course 273; course 422; course 423; course 429B; course 203; course 421; course 425; course 429C; course 202; course 223; course 426; course 429D; course 224; course 424; course 427; course 429; consent of instructor. Open to graduate students in the Nursing Science and Health-Care Leadership Graduate Group or by consent of the instructor. Transition from nursing student to professional nurse. Focus on emotional, professional values of social justice, autonomy, advocacy, altruism, human dignity, and integrity. Students must pass a mastery exit examination and complete a capstone project.—F. (F.) (new course—eff. summer 17)

Professional

493A. Improving Quality in Health Care (4) Lecture/discussion—4 hours. Open to Nursing Science and Health-Care Leadership Students. Working in interdisciplinary teams, students will explore the theory and practical methods being employed to make improvement in health care systems while providing an opportunity for interprofessional educational experience.—F. (F.) (change in existing course—eff. fall 17)

493B. Improving Quality in Health Care (4) Lecture/discussion—4 hours. Prerequisite: course 493A; consent of instructor. Open to Nursing Science and Health-Care Leadership Students and/or consent of instructor. Working in interdisciplinary teams, students will explore advanced theory and practical methods being employed to make improvement in
health care systems while providing an opportunity for interprofessional educational experience. — W. (W.)

(change in existing course—eff. winter 18)

493C, Enhancing Patient Safety in Health Care (3)
Seminar—1 hour; clinical activity—1 hour; discussion—1 hour. Prerequisite: consent of instructor; Nursing Science and HealthCare Leadership graduate students. Inter-professional module is designed to explore the theory and practical methods being employed to improve patient safety in health care while providing an opportunity for inter-professional educational experience. — S. (S.)

(change in existing course—eff. spring 17)

Nutrition

New and changed courses in Nutrition (NUT)

Lower Division

104. Discoveries and Concepts in Nutrition (3)
Web Virtual Lecture—3 hours; project—1 hour. Nutrition as a science; historical development of nutrition concepts; properties of nutrients and foods. Not open for credit to students who have taken an upper-division course in nutrition. No credit will be granted to students who have completed course 10 or an upper-division nutrition course. GE credit: SciEng | SE, SL.—F, W, S, Su; | F, W, S, Su; | Applegate

(new course—eff. fall 16)

Upper Division

104. Environmental & Nutritional Factors in Cellular Regulation and Nutritional Toxicants (4)
Lecture—3 hours; discussion—1 hour. Prerequisite: Biological Sciences 101; Biological Sciences 103 or Animal Biology 103. Cellular regulation from nutritional/toxicological perspective. Emphasis: role of biofactors on modulation of signal transduction pathways, role of specific organelles in organization/regulation of metabolic transformations, major cofactor functions, principles of pharmacology/toxicology important to understanding nutrient/toxicant metabolism. (Same course as Environmental Toxicology 104.) GE credit: SciEng | OL, SE, SL.—F, F; Haj, Oheiza

(new course—eff. fall 16)

Graduate

260. Nutrition During Pregnancy (6)
(cancelled course—eff. fall 16)

261. Lactation and Infant Nutrition (6)
(cancelled course—eff. fall 16)

262. Child and Adolescent Nutrition (6)
(cancelled course—eff. fall 16)

(cancelled course—eff. winter 18)

264A. Current Topics in Maternal and Child Nutrition: Principles of Adult Education (2)
(cancelled course—eff. spring 17)

264B. Current Topics in Maternal and Child Nutrition: Public Policy Development and Implementation (2)
(cancelled course—eff. fall 17)

264C. Current Topics in Maternal and Child Nutrition: Public Policy Development and Implementation (2)
(new course—eff. spring 17)

Persian

New and changed courses in Persian (PER)

Lower Division

2. Elementary Persian (5)
Lecture/discussion—5 hours. Prerequisite: course 1; or consent of instructor. Introduction of course 2. Introduction to listening, speaking, reading and writing skills in Persian and to Persian culture. GE credit: ArtHum, Div | WC, —S. (S.) Sharlet

(new course—eff. spring 17)

3. Elementary Persian (5)
Lecture/discussion—5 hours. Prerequisite: course 1; or consent of instructor. Introduction of course 2. Introduction to listening, speaking, reading and writing skills in Persian and to Persian culture. GE credit: ArtHum, Div | WC, —W. (W.) Sharlet

(new course—eff. fall 16)

21. Intermediate Persian (5)
Lecture/discussion—5 hours. Prerequisite: course 21; or the equivalent. Integrated presentation of listening, speaking, reading and writing skills as well as cultural topics in Intermediate Persian. GE credit: ArtHum, Div | WC, —W. (W.) Sharlet

(new course—eff. fall 16)

22. Intermediate Persian (5)
Lecture/discussion—5 hours. Prerequisite: course 21; or the equivalent. Integrated presentation of listening, speaking, reading and writing skills as well as cultural topics in Intermediate Persian. GE credit: ArtHum, Div | WC, —W. (W.) Sharlet

(new course—eff. fall 16)

133. Logic, Probability, and Artificial Intelligence (4)
Lecture/discussion—4 hours. Prerequisite: course 112; course 112. Introduction to theoretical artificial intelligence with a focus on nonmonotonic logic, Bayesian networks, and learning theory. Offered in alternate years. — F. (F.) Kao

(change in existing course—eff. fall 16)

145. Christian, Islamic, and Jewish Philosophers of the Middle Ages (4)
Lecture/discussion—4 hours. Prerequisite: course 21 recommended. Major Christian, Islamic, and Jewish philosophers of the Middle Ages. Offered irregularly. GE credit: ArtHum | WC, —S. (S.) Szaif

(change in existing course—eff. spring 17)

Physics

New and changed courses in Physics (PHY)

Lower Division

10CY. Physics of California (3)
Web virtual lecture—1 hour; web electronic discussion—0.5 hours; discussion—1.5 hours. Conceptual understanding of the physics underlying regional sports in CA. Focus on skiing, surfing, and scuba diving. Atmospheric phenomena common in CA; local weather patterns and microclimes, applications to CA energy, and water are also discussed. Not open for credit to students who have completed Phys-
Plant Pathology

New and changed courses in Plant Pathology (PLP)

Lower Division
90. Introduction to Global Disease Biology (1)
(cancelled course—eff. fall 14)

Plant Sciences

New and changed courses in Plant Sciences (PLS)

Upper Division
100A. Metabolic Processes of Cultivated Plants (3)
Lecture—3 hours. Prerequisite: course 2 or Biological Sciences 2C; or consent of instructor. Principles of energy capture and photosynthesis, water use, and nutrient cycling. Conversion of these resources into products [carbohydrates, proteins, lipids, and other chemicals] by plants. Emphasis on the relationships between environmental resources, plant metabolism and plant growth. GE credit: SciEng | SE. — F. (F.) Gilbert [change in existing course—eff. spring 17]

100B. Growth and Yield of Cultivated Plants (3)
Lecture—3 hours. Prerequisite: course 100A; or the equivalent of course 100A. Principles of the cellular mechanisms and hormonal regulation underlying plant growth, development, and reproduction. Emphasis on how these processes contribute to the harvestable yield of cultivated plants and can be managed to increase crop productivity and quality. GE credit: SciEng | SE. — W. (W.) Bradford, Melotto [change in existing course—eff. spring 17]

100C. Environmental Interactions of Cultivated Plants (3)
Lecture—3 hours. Prerequisite: course 100A; or the equivalent of course 100A. Principles of plant interactions with their physical and biological environments and their acquisition of the resources needed for growth and reproduction. Emphasis on how management practices and environmental conditions affect crop productivity. GE credit: SciEng | SE. — S. (S.) Brown [change in existing course—eff. spring 17]

105. Concepts in Pest Management (3)
Lecture—2 hours; laboratory/discussion—3 hours. Prerequisite: Chemistry 8B, Plant Sciences 2 or Biological Sciences 2B or Biological Sciences 2C. Introduction to the ecological principles of integrated pest management, biology of different classes of pests and the types of losses they cause, population assessment, evaluation of advantages and disadvantages of different techniques used for pest management, IPM programs. Not open for credit to students who have completed Agricultural Management and Rangeland Resources 105. (Former course Agricultural Management and Rangeland Resources 105.) GE credit: SciEng | SE. — F. (F.) Bradac [new course—eff. winter 17]

110A. Principles of Agronomic Crop Production in Temperate and Tropical Systems (3)
(cancelled course—eff. spring 17)

110C. Crop Management Systems for Vegetable Production (4)
Lecture—2 hours; laboratory—one hour. Prerequisite: course 2 or Biological Sciences 2C. Principles, practices and technologies of agronomic crop production systems, including crop systems, physical, hydrological, agroecology, equipment, and management. Crop-ling systems analysis and integration of economic and ecological decision-making considerations involved in crop production. One weekend field trip required. Not open for credit to students who have completed Plant Sciences 110C. (Former course Plant Sciences 110C.) Offered in alternate years. GE credit: SciEng | SE. — F. (F.) Mitchell [new course—eff. winter 17]

111. Principles of Agronomic Crop Production Systems (4)
Lecture—3 hours; laboratory—3 hours. Prerequisite: course 2 or Biological Sciences 2A-C. Principles, practices and technologies of agronomic crop production systems, including crop systems, physical, hydrological, agroecology, equipment, and management. Crop-ling systems analysis and integration of economic and ecological decision-making considerations involved in crop production. One weekend field trip required. Not open for credit to students who have completed Plant Sciences 110A. (Former course Plant Sciences 110A.) Offered in alternate years. GE credit: SciEng | SE. — F. (F.) Mitchell [new course—eff. spring 17]

130. Rangelands: Ecology, Conservation and Restoration (3)
Lecture—3 hours. Prerequisite: Plant Sciences 2 or Biological Sciences 2B or Biological Sciences 2C; or consent of instructor. Focus on upper division standing. Introduction to the ecological principles and processes important for an understanding of the dynamics of range ecosystems. Emphasis on ecological and evo-lutionary concepts underlying management strategies for conserving biological diversity and environmental quality in rangelands. Not open for credit to students who have completed Agricultural Management and Rangeland Resources 130. (Former course Agricultural Management and Rangeland Resources 130.) Offered in alternate years. GE credit: SciEng | SE. — W. (W.) Faye [change in existing course—eff. winter 17]

131. Identification and Ecology of Grasses (2)
Lecture—7.5 hours; laboratory—20 hours; discussion—5 hours. Prerequisite: course 130 or course 102 or course 147 recommended. Taxonomy and identification of western grasses. Development of skills in using plant identification keys. Ecology and evolution of grasses in grazing ecosystems. Given the week following spring quarter. Not open for credit to students who have completed Agricultural Management and Rangeland Resources 131. (Former course Agricultural Management and Rangeland Resources 131.) Offered in alternate years. GE credit: SciEng | SE. — V. L. D’Tomaso [change in existing course—eff. spring 17]

162. Urban Ecology (3)
Lecture/discussion—3 hours. Prerequisite: Course in general or plant ecology such as Plant Biology 117, Environmental Science and Policy 100, Evolution and Ecology 101, Evolution and Ecology 120 or course 163. Application of fundamental concepts and approaches in landscape and ecosystem ecology to urban ecosystems. Ecological and social drivers and responses. Landscape heterogeneity, nutrient dynamics, invasive species, altered hydrology and climate, and pollution. Discussion of primary literature. GE credit: SciEng | SE. — W. (W.) Cadena [change in existing course—eff. winter 17]

170A. Fruit and Nut Cropping Systems (2)
Lecture—1 hour; laboratory—3 hours. Prerequisite: course 2 or Biological Sciences 2C; or consent of instructor. Overview of production and handling systems of major pomological crops, analysis of current cultural and harvesting problems and concerns associated with commercial fruit growing. Not open for credit to students who have completed Agricultural Management and Rangeland Resources 170A. (Former course Agricultural Management and Rangeland Resources 170A.) Offered in alternate years. GE credit: SciEng | SE. — S. (S.) Gradziel [change in existing course—eff. spring 17]

170B. Fruit and Nut Cropping Systems (2)
Lecture—1 hour; laboratory—3 hours. Prerequisite: course 2 or Biological Sciences 2C; or consent of instructor. Overview of production and handling systems of major pomological crops, analysis of current cultural and harvesting problems and concerns associated with commercial fruit growing. Not open for credit to students who have completed Agricultural Management and Rangeland Resources 170B. (Former course Agricultural Management and Rangeland Resources 170B.) Offered in alternate years. GE credit: SciEng | SE. — S. (S.) Gradziel [change in existing course—eff. spring 17]

173. Molecular and Cellular Aspects of Postharvest Biology (3)
Lecture/discussion—3 hours. Prerequisite: course 2, Biological Sciences 1C, 2C or equivalent. Basic concepts and current knowledge of issues relevant to postharvest biology. Mechanisms of fruit ripening, senescence, programmed cell death. Metabolism and functions of phytohormones, carbohydrates, lipids, pigments, flavor compounds, and phytonutrients at molecular and cellular levels. GE credit: SciEng | SE. — S. (S.) Zakharov [change in existing course—eff. spring 17]

Graduate

206. Applied Multivariate Modeling in Agricultural and Environmental Sciences (4)
Lecture—3 hours; discussion—1 hour. Prerequisite: course 120; Statistics 106 or Statistics 108 or course 205. Multivariate linear and nonlinear models. Model selection and parameter estimation. Analysis of manipulative and observational agroecological experiments. Discriminant, principal component, and path analyses. Logistic and biased regression. Bootstrapping. Exercises based on actual research by UC Davis students. Not open for credit to students who have completed Agronomy 206. (Former course Agronomy 205.) (Former course Agronomy 205.) [change in existing course—eff. winter 17]
Political Science

New and changed courses in Political Science (POL)

Lower Division

11A. America Decides: Who Will Win This Year’s Election? (4)
Lecture—3 hours; term paper or discussion—1 hour. Survey of factors influencing presidential and congressional elections. Analysis of candidate nominations, campaign strategy, campaign finance, media coverage, and voter decision-making. Offered irregularly. GE credit: ACGH, SS, WE—F, W, S. (F, W, S.) Boydston
(new course—fall 16)

11B. Citizen Lawmaking: Direct Democracy, Public Policy & Political Representation in America (4)
(new course—fall 16)

11C. Politics and Film (4)
Lecture—3 hours; term paper or discussion—1 hour. Survey of portrayals of politics and policy issues in moving pictures. Analysis of political processes, policy development, social mores, and historical periods as highlighted in Hollywood movies, television, and/or documentary films. Offered irregularly. GE credit: ACGH, VL, WE—F, W, S. (F, W, S.) Boydston
(new course—fall 16)

11D. Political Persuasion (4)
Lecture—3 hours; term paper or discussion—1 hour. Examination of political influence and persuasion. Offered irregularly. GE credit: SS, WE—F, W, S. (F, W, S.) Friedman
(new course—fall 16)

12A. Politics and Sports (4)
Lecture—3 hours; term paper or discussion—1 hour. Core issues in American and world politics through the lens of sports and the athletes who play them. The introduction of American civil rights movement, the Cold War, Middle East Tensions, and democratization. Offered irregularly. GE credit: SS, WE—F, W, S. (F, W, S.) Scheiner
(new course—fall 16)

12B. Climate Change and Politics (4)
Lecture—3 hours; term paper or discussion—1 hour. Analysis of political institutions’ response and adaptation to climate change. Offered irregularly. GE credit: SS, WE—F, W, S. (F, W, S.) Shugart
(new course—fall 16)

Psychology

New and changed courses in Psychology (PSC)

Lower Division

1. General Psychology (4)
Lecture—4 hours. Principles of basic concepts of psychology. The empirical study of individual behavior including perception, cognition, development, personality, social interactions and the biological underpinnings of behavior. Not open for credit to students who have taken course 1Y. GE credit: ACGH, SS, WE—F, W, S. (F, W, S.) Simpson, Thompson, Traxler
(change in existing course—eff. winter 17)

17. General Psychology (4)
Lecture—1 hour; discussion—1 hour; web virtual lecture—2 hours. Principles and basic concepts of psychology. Introduction to empirical approaches. Focus on perception, cognition, personality and social psychology, and biological aspects of behavior. Not open for credit to students who have taken course 1. GE credit: SS—F, W, S. (F, W, S.) Ferreira, Henderson, Luck, Simonton, Thompson, Traxler
(change in existing course—eff. winter 17)

415. Research Methods in Psychology (4)
Lecture—4 hours. Prerequisite: course 1; or introductory social science course or introductory life science course. Evolutionary perspectives on attraction and close relationships. Integrating social psychological and evolutionary theories with empirical evidence pertaining to human mating. GE credit: SS—W. (W.) Eastwick
(new course—eff. winter 17)

51. Relationship Science: Lust, Love, and Evolution (4)
Lecture—4 hours. Prerequisite: course 1; or introductory social science course or introductory life science course. Evolutionary perspectives on attraction and close relationships. Integrating social psychological and evolutionary theories with empirical evidence pertaining to human mating. GE credit: SS—W. (W.) Eastwick
(new course—eff. winter 17)

Upper Division

104. Applied Psychometrics: An Introduction to Measurement Theory (4)
Lecture—4 hours. Prerequisite: course 41; course 103A; Statistics 13; upper division standing in Psychology. Examination of the basic principles and applications of classical and modern test theory. Topics include test construction, reliability theory, validity theory, factor analysis and latent trait theory. Offered irregularly. GE credit: Qt.
(change in existing course—eff. spring 17)

126. Health Psychology (4)
Lecture—4 hours. Prerequisite: course 1; 41; 101 recommended. Pass One open to Psychology majors. Psychological factors influencing health and illness. Topics include stress and coping, personality and health, symptom perception and reporting, heart disease, cancer, compliance, and health maintenance and promotion. Not open for credit to students who have completed former course 160. —W. S. (W., S.) Emmons
(change in existing course—eff. spring 17)

146. The Development of Memory (4)
Lecture—3 hours; term paper. Prerequisite: courses 1; course 41; and any Psychology upper division course. Critical presentation and discussion of the neurological underpinnings of memory development with focus on infancy and childhood. Not open for credit to students who have completed course 133. (Former course 133.) GE credit: WE—S. (S.) Ghetti, Rivera
(change in existing course—eff. winter 17)

180D. Research in Developmental Psychology (4)
Lecture—2 hours; laboratory—4 hours. Prerequisite: course 1; consent of instructor, four upper division Psychology courses. Empirical research on selected topics in developmental psychology (research design and analysis, development, cognitive development, social and personality development etc.). May be repeated for credit up to one time when content differs. —(S.) Gradziel
(new course—eff. winter 17)

192. Fieldwork in Psychology (1-6)
Fieldwork—1-6 hours. Prerequisite: consent of instructor; upper division standing in psychology. Limited enrollment. Supervised internship off and on-campus, in community and institutional settings. Maximum of six units may be used toward satisfaction of upper division major requirement. May be repeated for credit up to one time per internship site. (P/NP grading only.)
(change in existing course—eff. winter 17)

Graduate

205A. Applied Multivariate Analysis of Psychological Data (4)
Lecture—4 hours. Prerequisite: course 204A; course 204B; course 204D; or consent of instructor. Review of the major methods of multivariate data analysis for psychological data. Students will program statistical routines using a linear algebra-based computing language. Topics will include multivariate analysis of variance, discriminant analysis, canonical analysis factor analysis, and component analysis. Not open for credit to students who have completed course 207E. (Former course 207E.) Offered in alternate years. —W. (W.) Miller
(change in existing course—eff. spring 17)

211. Advanced Topics in Neuroimaging (3)
Seminar—2 hours; laboratory—1 hour. Prerequisite: course 210; or consent of instructor. Restricted to 16 students. Critical presentation and discussion of the most influential advanced issues in neuroimaging, emphasizing fMRI design/analysis and the integration of fMRI with EEG/MEG. May be repeated for credit. (Same course as Neuroscience 211) and Neurobiology, Physiology, and Behavior 211.) (S/U grading only.) Offered in alternate years. (S.) Miller
(change in existing course—eff. spring 17)

Professional

390. The Teaching of Psychology (4)
Seminar—4 hours. Prerequisite: consent of instructor; advanced graduate standing in Psychology or a closely related discipline. Methods and techniques of teaching undergraduate psychology. Integration of learning outcomes with effective evaluation. Practical experience in the application of pedagogical principles. (S/U grading only.)—W. (W.) Cross
(new course—eff. winter 17)

Russian

New and changed courses in Russian (RUS)

Upper Division

142. Women in Russian Culture (4)
Lecture/discussion—3 hours; term paper. Study of the representation of women in contemporary Russian fiction and film. Exploration of issues such as family dynamics/motherhood, sexuality, work, and women’s relationship to the state. Offered in English. GE credit: Anth/Hum | AH, OL, VL, WC, WE—Kaminer
(change in existing course—eff. winter 17)

Science and Society

New and changed courses in Science and Society (SAS)

Lower Division

14. Forests and Society (3)
Lecture—2 hours; discussion—1 hour; term paper. Class size limited to 120 students. Sociology, natural history and current issues of the world’s forests. Application of scientific principles in outdoor laboratories and on-campus field trips. GE credit: ACGH, SS—OL, SL, WE—S. (S.) Harwath
(new course—fall 16)

35. The Good, the Bad, and the Ugly (3)
Lecture—2 hours; discussion—1 hour. Class size restricted to 60 students. Impact of microorganisms on Earth, Humans and Society. Historical, scientific,

Upper Division

109. Environmental Change, Disease and Public Health (4)
Lecture/discussion—3 hours; project. Analysis of environmental changes from prehistory to the present and their influence on disease distribution, virulence and public health. Focus on critical study of many human-driven environmental changes and the accelerated transformation/spread of pathogens under globalization. Not open for credit to students who have taken course History 109B. GE credit: SciEng, SocSci, Div 1, SS, SS, SL, WC. —F. (F.) Davis (new course—eff. fall 16)

Sociology

New and changed courses in Sociology (SOC)

Lower Division

6. Health and Illness (4)
Lecture—3 hours; discussion—1 hour. Introduction to the sociology of health and illness, including social determinants of health, social inequalities in health/life expectancy, social construction of health, the organization of health care, and the policies of health care reform. GE credit: SS, DD. —S. (S.) Hallmann, Hamilton (new course—eff. fall 16)

Upper Division

162. Society, Culture, and Health (4)
Lecture—3 hours; discussion—1 hour. Prerequisite: course 1, 2, 3, or 6 recommended. Analysis of how socio-cultural factors shape illness experience. Evaluation of how certain conditions come to be understood as health conditions; illness identities and biographies; doctor-patient interactions; biomedical cultures; and race, ethnicity, and gender shape health practices. GE credit: SS, DD. —F. (F. S.) Lo (new course—eff. fall 16)

163. Population Health: Social Determinants and Disparities in Health (4)
Lecture—3 hours; discussion—1 hour. Prerequisite: course 1, 2, 3, or 6 recommended. Survey of the social determinants and disparities in health: measurement of population health; health transitions and global disparities; domestic disparities in health by class, race/ethnicity, nativity, gender, and sexual orientation; social determinants including social support; social stress, neighborhoods, and policy. GE credit: SS, DD. —F. (F.) Hamilton (new course—eff. fall 16)

164. Health Policy and Politics (4)
Lecture—3 hours; discussion—1 hour. Prerequisite: course 1, 2, 3, or 6 recommended. Introduction to health policy and politics, including health care access and delivery, and policies related to health inequalities, the social determinants of illness and health behaviors. GE credit: SS, DD. —F. (F. S.) Hallmann (new course—eff. fall 16)

178. Punishment and Corrections (4)
Lecture—3 hours; term paper. Prerequisite: course 1, 2, or 3 recommended. Origins, characteristics, and consequences of various sanctions and punishment regimes including fines, banishment, incarceration, deportation, and execution. GE credit: SS, SS, WE. —S. (S.) McCarthy (new course—eff. spring 17)

Soil Science

New and changed courses in Soil Science (SSC)

Upper Division

112. Soil Ecology (3)
Lecture—3 hours; discussion—1 hour. Prerequisite: Biological Sciences 2B and 2C or course 100 or consent from instructor. Overview of living constit- uents of soils, their interactions, importance to, and impact on biogeochemical cycles, decomposition, and soil properties. Practical applications of soil biologi- cal diversity are emphasized. GE credit: SS. —F. (F.) Rodrigues (change in existing course—eff. fall 17)

Spanish

New and changed courses in Spanish (SPA)

Lower Division

98F. Student Facilitated Course (1-4)
Prerequisite: consent of instructor. Student facilitated course offered particularly for lower division students. Offered irregularly. (F/P/NP grading only).—F, W, S. (F, W, S.) (new course—eff. winter 17)

199F. Student Facilitated Course Development (1-2)
Prerequisite: consent of instructor. Open to upper division Spanish majors only. Under the supervision of a faculty member, an undergraduate student plans and develops the course they will offer under 98F/199F. (F/P/NP grading only).—F, W, S. (F, W, S.) (new course—eff. spring 17)

199F. Student Facilitated Teaching (1-4)
Prerequisite: course 199F; consent of instructor. Must have completed course 199F, and be teaching a course 98F or 199F; open to upper division Spanish majors only. Undergraduate student teaches a course under 98F/199F. (P/NP grading only).—F, W, S. (F, W, S.) (new course—eff. spring 17)

Graduate

230. Topics in Latin American Cultural Studies (4)
Seminar—3 hours; term paper. Discussion of select contemporary sociological debates in Latin American Cultural Studies. Application of critical questions to the analysis of cultural texts. May be repeated for credit up to two times when content differs.—Irwin (change in existing course—eff. fall 07)

Statistics

New and changed courses in Statistics (STA)

Lower Division

32. Introductory Statistical Analysis Through Computers (4)
Lecture—3 hours; laboratory—1 hour. Prerequisite: Mathematics 16B or Mathematics 218B or Mathematics 17B; ability to program in a high-level computer language. Probability concepts; events and sample spaces; random variables; mass, density and distribu- tion functions; parametric families; parameter esti- mation and confidence intervals; hypothesis testing; Central Limit Theorem. Recommended as alternative to course 13 for students with a background in calculus and programming. Only two units of credit allowed to students who have taken course 13, or 102; not open for credit to students who have taken course 100. GE credit: SciEng | QL, SS, WC. —F. (F. W, S.) (change in existing course—eff. spring 17)

Upper Division

100. Applied Statistics for Biological Sciences (4)
Lecture—3 hours; laboratory—1 hour. Prerequisite: Statistics 13 or Statistics 32 or Statistics 100, Mathematics 168B or Mathematics 178B or Mathematics 218B. Descriptive statistics, probability, sampling distributions, estimation, hypothesis testing, contin- guency tables, ANOVA, regression; implementation of statistical methods using computer package. Only two units credit allowed to students who have taken course 13, 32 or 103; not open for credit to students who have taken course 102. GE credit: SciEng | QL, SS, WC. —F, W, S. Su. (F, W, S. Su.) (change in existing course—eff. spring 17)

103. Applied Statistics for Business and Economics (4)
Lecture—3 hours; discussion—1 hour. Prerequisite: Mathematics 16B or Mathematics 178B or Mathematics 218B. Descriptive statistics; probability; random variables; expectation; binomial, normal, Poisson, other univariate distributions; joint distributions; sam- pling distributions, central limit theorem; properties of estimators; linear combinations of random vari- ables; testing and estimation; Minitab computing package. Two units credit given to students who have completed course 100. GE credit: SciEng | QL, SS, WC. —F, W, S. Su. (F, W, S. Su.) (change in existing course—eff. spring 17)

131B. Introduction to Mathematical Statistics (4)
Lecture—3 hours; discussion—1 hour. Prerequisite: course 131A or Mathematics 135A; or consent of instructor. Sampling, methods of estimation, sam- pling distributions, confidence intervals, testing hypotheses, linear regression, analysis of variance, elements of large sample theory and nonparametric inference. GE credit: SciEng | QL, SS, WC. —W (W) (change in existing course—eff. spring 17)

141. Statistical Computing (4)
(canceled course—eff. fall 16)

194HA. Special Studies for Honors Students (4)
Independent study—12 hours. Prerequisite: senior qualifying for honors. Directed reading, research and writing, culminating in the completion of a senior honors thesis or project under direction of a faculty adviser. (Deferred grading only, pending completion of sequence.) GE credit: SciEng | SS. (change in existing course—eff. fall 16)
194HA. Special Studies for Honors Students (4) Independent study—12 hours. Prerequisite: senior qualifying for honors. Directed reading, research and writing, culminating in the completion of a senior honors thesis or project under direction of a faculty advisor. (Deferred grading only, pending completion of sequence.) GE credit: SciEng | SE. (change in existing course—eff. fall 16)

University Writing Program

New and changed courses in University Writing Program (UWP)

Lower Division 23. Advanced Academic Reading and Writing for Multilingual Students (4) Lecture/discussion—4 hours. Prerequisite: course 22. Pass One passed course 22 with a C- or better OR a score of 80 or better on the English Language Placement Examination (ELPE) offered by the UWP. Reading and writing source/research-based texts for academic purposes. Suitable for students whose primary home language was not English.—F, W, S. (F, W, S.) (canceled course—eff. fall 16)

Upper Division 102N. Writing in the Disciplines: Anthropology (4) Lecture—3 hours, term paper. Prerequisite: course 1 C- or better; English 3 C- or better; Comparative Literature 1 C- or better; Comparative Literature 2 C- or better; Comparative Literature 3 C- or better; Comparative Literature 4 C- or better; Native American Studies 5 C- or better; 4 or 5 on AP English Lit and Comp exam; or 6 or better on IB HL English Exam. Restricted to upper division standing; Anthropology Major or Minor. Advanced instruction in writing and practice in effective styles of communication in Anthropology and related academic and professional fields. GE credit: AH, WE, WE.—W. (W.) (new course—eff. winter 17)

Veterinary Medicine: Molecular Biosciences

New and changed courses in Veterinary Medicine: Molecular Biosciences (VMB)

Upper Division 101Y. Principles of Pharmacology and Toxicology (3) Web virtual lecture—0.3 hours; web electronic discussion—1.5 hours; project—1.5 hours; auto tutorial—2 hours. Prerequisite: upper division standing in a science major; chemistry through organic chemistry, general biology, or consent of instructor; good standing with the university; computing capability (use MS Word®, Excel®, PowerPoint, menu driven software programs, Course LMS); own a computer or have ready access to a computer with broadband internet access; Neurobiology, Physiology, and Behavior 101 and Biological Sciences 104 recommended. Online course will provide training in core concepts of pharmacological and toxicological sciences and prepare students to develop higher-order problem solving and critical thinking skills. GE credit: SE, OL, SL—F. (F.) Puschner (new course—eff. fall 16)

101Y. Principles of Pharmacology and Toxicology (3) Laboratory/discussion—1.5 hours; web virtual lecture—1.5 hours; web electronic discussion—0.5 hour; autotutorial—5 hours. Prerequisite: upper division standing in a science major; Chemistry through organic chemistry and general biology, or consent from instructor; good standing with university; computing capability using MS Word, Excel, and PowerPoint, menu driven software programs, SmartSite; computer, or ready access to a computer, with broadband Internet access. Restricted to upper division undergraduate students in good standing with school and fulfill course prerequisites. Hybrid course provides training in core concepts of pharmaco logical and toxicological sciences. Develop higher-order problem solving and critical thinking skills. GE credit: OL, SL—S. (S.) Puschner (change in existing course—eff. winter 17)

Veterinary Medicine: Pathology, Microbiology, and Immunology

New and changed courses in Veterinary Medicine: Pathology, Microbiology, and Immunology (PMI)

Graduate 206. Mentored Scientific Writing (1) Discussion—1.5 hours. Prerequisite: consent of instructor. Enrollment limited to 12 students. Drafting a scientific manuscript for publication based on research results. Students engage in collaborative peer review and learn effective writing, including

Technocultural Studies

New and changed courses in Technocultural Studies (TCS)

Lower Division 100. Experimental Digital Imaging I (4) Lecture/discussion—3 hours; laboratory—3 hours. Prerequisite: Cinema & Technocultural Studies 20 or Dramatic Art 12 or course 78; course 170B; or equivalent with consent of instructor. Class size limited to 20 students. Experimental approaches to the making of film and video in the age of digital technologies. Builds upon foundation provided by course 20. Instruction in technical, conceptual, creative, and critical skills for taking a project from idea to fruition. GE credit: AH, OL, VL.—Wyman (change in existing course—eff. spring 17)

Textiles and Clothing

New and changed courses in Textiles and Clothing (TXC)

Upper Division 180A. Introduction to Research in Textiles (2) Laboratory—6 hours. Prerequisite: senior standing with textile-related major, and consent of instructor. Senior thesis on independent problems. Research begun in course 180A will be continued and completed in course 180B. (Deferred grading only, pending completion of sequence.) GE credit: SocSci | SS, WE.—F, W, S. (F, W, S.) (change in existing course—eff. fall 16)

180B. Introduction to Research in Textiles (2) Laboratory—6 hours. Prerequisite: senior standing with textile-related major, and consent of instructor. Senior thesis on independent problems. Research begun in course 180A will be continued and completed in course 180B. (Deferred grading only, pending completion of sequence.) GE credit: SocSci | SS, WE.—F, W, S. (F, W, S.) (change in existing course—eff. fall 16)

UC Davis Washington Center

New and changed courses in UC Davis Washington Center (WAS)

Upper Division 175. Health Policy and Health Politics (4) (canceled course—eff. fall 16)
New and changed courses in Veterinary Medicine: Population Health and Reproduction (PHR)

Graduate

Lecture—2 hours; discussion/laboratory—1 hour. Prerequisite: Evolution and Ecology 101 or equivalent course (can be taken concurrently). Introduction to conservation biology focusing on the related to the loss of species and habitats. Intended for students with no background in biological sciences. GE credit: SciEng | SE, WE, SS. —S. (S.) Botsford
(new course—eff. fall 16)

Veterinary Medicine: Preventive Veterinary Medicine

New and changed courses in Veterinary Medicine: Preventive Veterinary Medicine (MPM)

Graduate

208. Research Planning and Reporting I (2)
Lecture/discussion—2 hours. Prerequisite: MPVM standing or consent of instructor. Identifying and implement research questions through hypothesis construction, articulation of aims, acquiring permits, working as a team, and all other techniques needed to develop a successful research program. Not open for credit to students who have previously taken course 408B. —F. (F.)
(new course—eff. winter 17)

209. Research Planning and Reporting II (1)
Lecture/discussion. Prerequisite: course 208. Concepts and skills in effective scientific writing for publication in a peer-reviewed journal in animal health or biomedicine. Includes developing an argument, organizing and writing a manuscript, improving readability, and responding to peer review. —W. (W.)
(change in existing course—eff. fall 16)

210. Advanced Health Leadership (1.5)
Lecture; discussion. Class size limited to 35 students. Develop skills for effective scientific leadership, including: project management and collaboration, conflict resolution, communication with the public, dynamic distribution of health information, and evidence-based policy influence. —F. (F.) Mazer
(change in existing course—eff. winter 17)

212. Concepts and Methods in Infectious Disease Surveillance and Control (3)
Lecture—2 hours; discussion/laboratory—1 hour. Prerequisite: consent of instructor. Basic and advanced level of conceptual and methodological foundations in infectious disease epidemiology necessary for veterinarians to develop and evaluate programs for detection, prevention, and control of infectious diseases in animal populations. —W. (W.) Lopez
(new course—eff. fall 16)

Professional

410. Animal Health Policy and Risk Communication (1)
Lecture—2 hours; discussion/laboratory—1 hour. Prerequisite: course 111, course 111L strongly recommended or consent of instructor. Detailed examination of distribution, behavior, population dynamics, and management of waterfowl and upland game birds. Offered in alternate years. —W. (W.) Eadie
(change in existing course—eff. winter 17)

141. Behavioral Ecology (4)
Lecture—3 hours; film viewing—1 hour. Prerequisite: Biological Sciences 2A-2C; Evolution and Ecology 101 or Environmental Science and Policy 100 or equivalent course can be taken concurrently. Basic theories underlying the functional and evolutionary significance of behavior, and the role of ecological constraints. Supporting empirical evidence taken mainly from studies of wild vertebrates. Offered in alternate years. GE credit: SciEng | SE. —W. (W.) Caro
(change in existing course—eff. winter 17)

152. Ecology of Human—Wildlife Conflicts (3)
Lecture—3 hours. Prerequisite: Biological Sciences 2B or equivalent. Ecological approaches to managing wild vertebrates that come into conflict with agriculture, public health, or the conservation of biodiversity. Offered in alternate years. —W. Van Vuren
(change in existing course—eff. winter 17)

154. Conservation Biology (4)
Lecture—3 hours; term paper. Prerequisite: Biological Sciences 2A-2C; Evolution and Ecology 101 or Environmental Science and Policy 100 or equivalent course can be taken concurrently. Introduction to conservation biology and background to the biological issues and controversies surrounding loss of species and habitats. Review of species’ recovery plan. GE credit: SciEng | SE, WE. —F. (F.) Todd
(change in existing course—eff. winter 17)

160. Animal Coloration (3)
Lecture/discussion—3 hours. Prerequisite: Biological Sciences 2A, 2B, 2C. Evolutionary and ecological significance of coloration in mammals, birds, reptiles, amphibians, fish, cephalopods, crustaceans, spiders, insects, humans as well as color in fashion, plants and the military. Topics include history, protective coloration, warning coloration, mimicry, sexual dichromatism and color change. Offered in alternate years. —W. (W.) Caro
(change in existing course—eff. winter 17)

Women’s Studies

New and changed courses in Women’s Studies (WMS)

Upper Division

165. Feminist Media Production (6)
Lecture/discussion—2 hours; laboratory—3 hours; fieldwork—6 hours. Prerequisite: Cinema & Technocultural Studies 20 or equivalent; one course in Women and Gender Studies or consent of instructor. Media production as a mode of cultural criticism, furthering feminist/ social justice activist goals. Fundamentals of camera, editing and distribution via a social engagement model. Study and hands-on response to key historic and contemporary feminist and social justice media discourses. (Same course as Cinema and Digital Media 105.) Offered in alternate years. GE credit: ArtHum, SocSci, Div | AH, SS, ACGH, DD, VL —W. (W.) Wyman
(change in existing course—eff. winter 17)
Policies & Requirements Addendum

The Minor

Change to Minor section in the Academic Information chapter. (change—eff. fall 16)

College of Letters and Science
With the exception of interdisciplinary minors approved by the College Executive Committee, students in the College of Letters and Science may not complete a minor offered by the department or program in charge of the student’s major. You can elect only one minor in a subject area.

No more than one course applied to the satisfaction of requirements in the major program shall be accepted in satisfaction of the requirements of a minor. No course used to satisfy the requirements of one minor shall be applied toward any other minor.

Students wishing to pursue a minor offered by the College of Letters and Science, must have completed at least one upper division course toward the minor with a GPA of 2.000 or higher to be eligible to declare that minor.

Undergraduate Education

Change to College of Letters and Science Natural Sciences and Mathematics section in the Undergraduate Education chapter. (change—eff. fall 16)

Natural Sciences and Mathematics

• Psychology 41, 100, 101, 103A, 103B, 104, 113, 121, 122, 123, 124, 126, 127, 129, 130, 131, 132, 135, 146, 180B

Communication

Change to A.B. Major Requirements

A.B. Major Requirements:

Preparatory Subject Matter .............29-30

Anthropology 4 or Linguistics 1 ..............4

Communication 10Y .......................... 4

Communication 1 or 3 or 5/Linguistics 5 4

Depth Subject Matter .....................40

Psychology 1 ......................................... 4

Sociology 1 ......................................... 4

Statistics 13 or Sociology 66 .......................... 4

Communication 101; 102; 120; 140; 170/170V or 172 .......................... 20

Select five of the following additional courses:


Note: Many of the upper division courses offered by the other IAS departments have their own prerequisites not accounted for by lower division Communication courses. To the degree that students elect to take those courses having "hidden prerequisites," the number of units necessary to complete the major increases above the stated minimum.

Total Units for the Major ..................69-70

Graduation recommendation. Although not required, it is recommended that all courses offered in satisfaction of the major, except variable-unit courses, be taken for a letter grade.

Major Advisers. Faculty; contact department.

Advising Office. 466 Kerr Hall

Minor Program Requirements:

COMMUNICATION

UNITS

Communication 1, 3 .......................... 4

At least five upper division courses in communication .......................... 20

Graduate Study. The Department of Communication offers programs of study and research leading to M.A. and Ph.D. degrees in Communication. Detailed information may be obtained from the Graduate Adviser, Department of Communication.

Graduate Adviser. B. Feng

Community and Regional Development

Change to B.S. Major Requirements

B.S. Major Requirements:

Preparatory Subject Matter .............22-26

Community and Regional Development 1, 2 .......................... 8

Plant Sciences 21 or Computer Science Engineering 15 .......................... 3-4

Economics 1A or 1B .......................... 4

Anthropology 2 or Sociology 1 .......................... 4-5

Statistics 13 or Sociology 66 .......................... 3-5

Depth Subject Matter .....................40-43

Core Issues in Community Research

Three courses from: Community and Regional Development 142, 152, 153A or 153B or 153C, 164, 172, 176, or 180 .......................... 12-13

Economics of Community Change: Two courses from: Community and Regional Development 118, 140, 141, 162, or International Agricultural Development 103 .......................... 8

Political Processes and Community Change: Two courses from: Community and Regional Development 147, 149, 154, 157, 158, or 171 .......................... 8

Global Communities Option .......................... 40

Students must consult with a faculty adviser to identify an emphasis within the option and to select suitable courses.


Gender and Development: Sociology 132, 145A, 145B, Anthropology 126B, Women and Gender Studies 102, 182

Globalization and Politics: Political Science 124, 130, 131, 175

Experiential Learning, Area Studies, and Language: Total number of units of credit in Experiential learning, Area Studies, and Language courses cannot exceed 32. Up to 12 credits transferred from an accredited foreign program or foreign internship, including UCD EAP and Summer Abroad programs.

Up to 12 credits in regional area studies classes; e.g., Middle East, China, Latin America.

Up to 12 credits for foreign language.

Organization and Management Option .......................... 40

Students must consult with a faculty adviser to identify an emphasis within the option and to select suitable courses.

Advising Office. 466 Kerr Hall
Human Resources: Community and Regional Development 151, 172, 176, Communication 102, Economics 151B, Sociology 120, 128, 129
Policy, Planning, and Social Services Option.............................................. 40

Students must consult with a faculty adviser to identify an emphasis within the option and to select suitable courses.

Community Health and Counseling: Communication 120, 122, 165, Community and Regional Development 164, Education 160A, 160B. Public Health Sciences 101, Human Development 120, 130, Psychology 123, 126, 151, 154, 162, 168, Sociology 154
Education and Community: Agricultural Education 100, 160, Communication 101, 146, Education 100, 110, 120, 151, 152, 153, Psychology 100, 132, Sociology 124
Family and Community: American Studies 132, Community and Regional Development 147, Human Development 100A, 100B, 100C, 101, 102, 103, 110, 130, 140, 140L, 141, 143, 160, 161, 163, Psychology 140, Sociology 122, 131, 134, 135, 152

Three courses in English Composition from the following list:

English 3, University Writing Program 1, 18, 19, 101, 102A, 102B, 102C, 102D, 102E, 102F, 102G, 102H, 102I, 102K, 102L, 104A, 104B, 104C, 104D, 104E, 104F, 104L, Communication 1, Comparative Literature 1, 2, 3, 4, or Native American Studies 1.

At least one course must be selected from:

University Writing Program 101, 102 and 104 series.

The Upper Division Composition Examination does not satisfy the requirement.

Advanced Placement English score of 4 or 5 which satisfies English 3 and/or University Writing Program 1 will satisfy one of the three required courses.

Total Units for Major........................................ 106-113

Major Adviser. M. Kenney, mikenney@ucdavis.edu

Computer Science

Change to Major Preparatory Requirements & Minor Program Requirements

(change—eff. fall 16)

The Major Program

The Department of Computer Science administers two majors: Computer Science and Engineering (CSE), in the College of Engineering, and Computer Science (CS), in the College of Letters and Science. It also administers two minors: Computer Science, in the College of Letters and Science, and Computational Biology, in the College of Engineering. For information on the Computer Science and Engineering curriculum and the minor in Computational Biology, see: Engineering: Computer Science, on page 289.

The primary differences between the CSE and CS majors are the extent of hardware coverage and curricular flexibility. The CSE major develops a solid understanding of the entire machine, including hands-on experience with its hardware components. The CS major teaches some hardware, at the digital-design level, on simulators. The CSE major has fewer free electives. The CS major’s more generous electives make it easier to complete a minor or double major.

Students in the CS major receive a solid grounding in the fundamentals of computer languages, operating systems, computer architecture, and the mathematical abstractions underlying computer science. Students are prepared for both industry and postgraduate study.

Preparatory Requirements. Before declaring a major in Computer Science, students must complete the following five courses with an overall UC Davis grade point average of at least 3.000. All five courses must be completed with a grade of C- or better.

Mathematics 21A, 21B................................. 8
Engineering: Computer Science 20, 30, 40........................ 12

B.S. Major Requirements:

Preparatory Subject Matter.................50-55
Mathematics 21A-21B-21C, 22A or 67................................. 15-16
Computer Science Engineering 20, 30, 40, 60............................... 16

Computer Science Engineering 50 or Electrical and Computer Engineering 70...... 4
One series from the following four....... 15-19
(a) Chemistry 2A-2B-2C
(b) Chemistry 2A-2B and Biological Sciences 2A
(c) Chemistry 2AH-2BH-2CH
(d) Physics 9A-9B-9C and Mathematics 21D

Depth Subject Matter..........................51-54
Computer Science Engineering 122A, 120 or 122B, 140A, 150, 154A.......................... 20
Computer Science Engineering 132 or Mathematics 135A or Statistics 131A.................. 4
Computer Science electives.............. 27-30
Minimum of 7 courses, including at least one mathematics or statistics course, from:
Computer Science Engineering courses numbered between 120 and 189 inclusive;
Computer Science and Engineering 193AB (counts as one); one approved course of 3 or 4 units from Computer Science and Engineering 192 or 199; Electrical and Computer Engineering 171, 172, 180A, 180B; Linguistics 177, Mathematics courses numbered between 100 and 189, excluding Mathematics 111, Statistics 131A, 131B. No course can count as both a required course and a Computer Science elective.

Total Units for the Major......................101-109

Minor Program Requirements:

Computer Science..........................23-24
Computer Science Engineering 60........ 4
Select any three upper division Computer Science Engineering courses. A single approved course of 3 or 4 units from Computer Science and Engineering 192 or 199 is allowed.
Select any two Upper Division courses including any Upper Division Computer Science and Engineering courses or any upper division course in Math (excluding Math 111), Statistics 131A, 131B, Economics 122, Psychology 120, or linguistics 177................................. 8

Note. The minor program has prerequisites of Computer Science Engineering 20, 30, and 40, and Mathematics 16A, 17A, or 21A.

Graduate Study. See Graduate Studies, on page 121.

English

Change to A.B. Major Requirements (change—eff. fall 16)

A.B. Major Requirements:

Preparatory Subject Matter.................. 20
English 3 or University Writing Program 1................................. 4
One course from: English 40, 43, 44................................. 4
English 10A, 10B, 10C................................. 12

Depth Subject Matter..........................44
English 110A or 110B................................. 4
Historical Distribution Requirements.......20
Three courses focusing on literature written in English before 1800, at least one of which must be on literature written primarily before 1500:
Before 1500
English 111, 113A, 113B
1500-1800
English 115, 117, 122, 123, 142, 150A, 155A, 185A
One course focusing on literature written in English between 1800 and 1900:
English 130, 131, 143, 144, 155B, 185A, 181A, 185B
One course focusing on literature written in English between 1900 and present:
English 137N, 138, 146N, 147, 150B, 153C, 156, 158B, 166, 167, 168, 181B, 185C
Non-Historical Distribution Requirements ... 8
One course on literature and ethnicity, literature and gender, or literature and sexuality:
English 125, 139, 140, 141, 166, 167, 178, 179, 181A, 181B, 185A, 185B, 185C, 186
One course in film and media studies, language studies, cultural studies and contexts, literature and science/technology, or literature and the environment:

Please note that while some courses are identified as fulfilling more than one distribution requirement, a given course may only fulfill one such requirement.
Managerial Economics

Change to B.S. Major Requirements

B.S. Major Requirements:

Major English Requirement.........................................................8
Choose one course from: Communications 1 or 3........................................4
University Writing Program 104A ..................................................4
(The upper-division composition exam will not satisfy this requirement)

Preparatory Subject Matter............................................39-41
Agricultural and Resource Economics 18-4 ........................................8
Economics 1A-1B ...........................................................................8
One course from: Plant Sciences 21, Engineering Computer Science 10, 15 or 30 ..................................................3-4
Management 11A-11B ..................................................................8
Mathematics 16A-16B-16C, 17A-17B, or 21A-21B ...............................8-9
Statistics 13, 103 .................................................................8-10

Total Depth Subject Matter.......................................................52-55
Core..........................................................................................20
Agricultural and Resource Economics 100A, 100B, 106, 155 and Economics 101

Restricted Electives.................................................................32-35
Choose at least one of the emphases below:

Business Economics emphases

International Business Economics emphases
Select the remaining 12 units from the above list or from Agricultural and Resource Economics 130, 171A, 171B, 175, 176, Economics 121A, 121B, Political Science 130 or Environmental Science & Policy 175.

Environmental and Resource Economics emphases
Agricultural and Resource Economics 175 and 176 ........................................8
Three sections of English 100F, 100P, 100NF, 100FA, 100PA

Total Units for the Major...................................................... 64

Mathematics

Change to Major Requirements

A.B. Major Requirements:

Preparatory Subject Matter.............................................43-47
One of the following two options: (a) Mathematics 22A and 108 OR (b) Mathematics 67 .................................................4-7
Computer Science 30 or Engineering 6 ...........................................4
Mathematics 22AL or equivalent MATLAB knowledge ...........................0
Additional non-Mathematics courses chosen from natural sciences ..........12
NOTE: Basic knowledge of MATLAB is required for both Mathematics 67 and 22A.
Students can learn it on their own, enroll in Engineering 6, Mechanical Engineering 5 or the one unit course Mathematics 22AL (can be taken concurrently).

Depth Subject Matter.....................................................35-36
A. Core........................................................................16
Mathematics 125A .................................................................4
Mathematics 125B .................................................................4
Mathematics 135A .................................................................4
Mathematics 150A .................................................................4
B. Choose one Plan from the following two; up to 4 of these 16 units may be approved upper division course outside the Department of Mathematics with extensive use of mathematics .........................16
Plan 1: General Mathematics
Choice of four Mathematics courses from Mathematics 111 through Mathematics 185B (excluding Mathematics 180) worth at least four units each ..................................................16
Plan 2: Secondary Teaching
Mathematics 111 ..................................................................4
Mathematics 115A .................................................................4
Mathematics 115B .................................................................4
Mathematics 141 .................................................................4
Choice of one or more Mathematics courses from Mathematics 111 through Mathematics 185B (excluding Mathematics 180) worth at least four units each .................4
NOTE: Students who wish to satisfy the single subject matter waiver for the teaching credential should see an advisor as early as possible.
C. Capstone Course: Mathematics 189 or 192 (Internship in Applied Mathematics or 194 [Undergraduate Thesis] or 180 [Special Topics] or an approved substitute in consultation with the Undergraduate Vice Chair .................................................3-4

Total Units for the Major...................................................... 99-104

Applied Mathematics

B.S. Major Requirements:

Preparatory Subject Matter.............................................42-49
One of the following two options: (a) Mathematics 22A and 108 OR (b) Mathematics 67 .................................................4-7
Mathematics 22AL or equivalent basic knowledge of MATLAB .................................0-1
Computer Science 30, 40 ......................................................8
One two-quarter sequence from Physics 9A-9B, Biological Sciences 2A-2B, Chemistry 2A-2B, Economics 1A-1B, Statistics 32, 100, or other approved preparatory courses approved by your advisor ....................................................7-10
NOTE: Basic knowledge of MATLAB is required for both Mathematics 67 and 22A.
Students can learn it on their own, enroll in Engineering 6, Mechanical Engineering 5 or the one unit course Mathematics 22AL (can be taken concurrently).

Depth Subject Matter.....................................................47-48
A. Core........................................................................32
Mathematics 150A .................................................................4
Mathematics 135A .................................................................4
Mathematics 125A .................................................................4
Mathematics 125B .................................................................4
Mathematics 119A .................................................................4
Mathematics 185A .................................................................4
Choose any two from the following:
Mathematics 128A, 128B, 128C .................................................8
B. Enrichment Courses ..........................................................12
1. Choice of two Mathematics courses from Mathematics 111 through Mathematics 185B (excluding Mathematics 180) worth at least four units each ..................................................8
2. One approved upper division course outside the Department of Mathematics with extensive use of mathematics .........................4
C. Capstone Course: Mathematics 189 or 192 (Internship in Applied Mathematics) or 194 (Undergraduate Thesis) or 180 (Special Topics) or an approved substitute in consultation with the Undergraduate Vice Chair .........................................................3-4

Total Units for the Major...................................................... 89-97

Mathematics

B.S. Major Requirements:

Preparatory Subject Matter.............................................34-39
One of the following two options: (a) Mathematics 22A and 108, OR (b) Mathematics 67 .................................................4-7
Computer Science 30 or Engineering 6 ...........................................4
Physics 9A (Plans 1) or one course from: Physics 7A, 9A, Statistics 13, 32, 100 (Plan 2) ..................................................3-5
NOTE: Basic knowledge of MATLAB is required in both Mathematics 67 and 22A.
Students can learn it on their own, enroll in Engineering 6, Mechanical Engineering 5 or the one unit course Mathematics 22AL (can be taken concurrently).

Depth Subject Matter.....................................................47-48
Choose one plan from the following two:
Plan 1: General Mathematics
...
A. Core ........................................28
Mathematics 150A..........................4
Mathematics 150B..........................4
Mathematics 150C..........................4
Mathematics 135A..........................4
Mathematics 125A..........................4
Mathematics 125B..........................4
Mathematics 185A..........................4
B. Enrichment................................20
Choice of four Mathematics courses from Mathematics 111 through Mathematics 185B (excluding Mathematics 180) worth at least four units each. Up to four units can be approved upper division units outside the Department of Mathematics with extensive use of mathematics.
C. Capstone Course: Mathematics 189 or 192 (Internship in Applied Mathematics) or 194 (Undergraduate Thesis) or 180 (Special Topics) or an approved substitute in consultation with the Undergraduate Vice Chair ........................................3-4
Total Units for the Major .............97-102

Mathematical and Scientific Computation

B.S. Major Requirements:

Preparatory Subject Matter ..............33-39

One of the following two options:
(a) Mathematics 22A and 108 OR Mathematics 22AL (can be taken concurrently).
(b) Mathematics 22B ..............................4
Mathematics 128A ..............................4
Mathematics 128B ..............................4
Mathematics 128C ..............................4
B. Enrichment................................20
Choice of two Mathematics courses from Mathematics 111 through Mathematics 185B (excluding Mathematics 180) worth at least four units each. Up to four units can be approved upper division units outside the Department of Mathematics with extensive use of mathematics.
C. Capstone Course: Mathematics 189 or 192 (Internship in Applied Mathematics) or 194 (Undergraduate Thesis) or 180 (Special Topics) or an approved substitute in consultation with the Undergraduate Vice Chair ........................................3-4

Total Units for the Major .............81-87

Mathematical Analytics and Operations Research

B.S. Major Requirements:

Preparatory Subject Matter ..............43-47

One of the following two options:
(a) Mathematics 22A and 108 OR Mathematics 22AL (can be taken concurrently).
(b) Mathematics 22B ..............................4
Mathematics 128A ..............................4
Mathematics 128B ..............................4
Mathematics 128C ..............................4
B. Enrichment................................20
Choice of two Mathematics courses from Mathematics 111 through Mathematics 185B (excluding Mathematics 180) worth at least four units each. Up to four units can be approved upper division units outside the Department of Mathematics with extensive use of mathematics.
C. Capstone Course: Mathematics 189 or 192 (Internship in Applied Mathematics) or 194 (Undergraduate Thesis) or 180 (Special Topics) or an approved substitute in consultation with the Undergraduate Vice Chair ........................................3-4

Total Units for the Major .............97-102

Native American Studies

Change to Minor Program Requirements

Minor Program Requirements: The Native American Studies minor provides an interdisciplinary introduction to the Native experience in the Americas through coursework in history, literature, art, performance, languages, values, phi-
losophy, religion, current events, political economy, and the environment.

Native American Studies .......................24
One lower division course in Native American Studies .................................4
Five upper division courses in Native American Studies .................................20

Physics

Change to Applied Physics—
Atmospheric Physics Concentration

Applied Physics—Atmospheric Physics Concentration

B.S. Major Requirements:

Preparatory Subject Matter ..............50-56

Physics 9A, 9B, 9C, 9D or 9HA, 9HB, 9HC, 9HD, 9HE .............................19-25
Mathematics 21A, 21B, 21C, 21D, 22A, 22B .............................22
Computer Science Engineering 30 (or equivalent programming course) .............................4
Chemistry 2A or 2HA .............................5

Depth Subject Matter .......................61-65

Physics 102 (1 unit) or 104B .............................1-4
Laboratory Requirement .............................4

Physics 116C or 122A or 122B .............................4
Concentration Courses [complete all of the following] .............................20
Physics 105C, Atmospheric Science 120, 121A, 121B, Geology 150A .............................4
Additional Electives [choose one from the following] .............................4
Physics 104B or 116C, Geology 116N, Atmospheric Science 128, Mathematics 118A or 118B .............................8

Total Units for the Major .......................111-120

Program Variance. Similar courses from other departments may be substituted for courses in the depth subject matter requirements by obtaining prior written permission from the Undergraduate Curriculum Committee Chairperson.

Political Science

Change to A.B. Major Requirements

A.B. Major Requirements:

Preparatory Subject Matter ..............20
Four lower division Political Science courses from: 1, 2, 3, 4, 5 .............................16
Political Science 51 [required course] .............................4
Statistics 13 or 32 .............................4

Depth Subject Matter .......................44-45

Four courses in one of the fields of concentration listed below .............................16
Three courses in another field of concentration listed below .............................12
Two courses in another field of concentration listed below .............................8
Two other upper division courses in Political Science .............................8
Five upper division courses in Political Science 192 may be counted toward the depth subject matter requirement .............................8-9
Sustainable Agriculture and Food Systems

Change to B.S. Major Requirements

B.S. Major Requirements:

UNITS

English Composition Requirement 4-8
See College requirement, must include

Communications 1.

Core Courses 23-26

Plants Sciences 15 4

Community and Regional Development 20 4

Animal Science 112 or Plants Science 150 4

Agricultural and Resource Economics 121 4

Bio Sciences 190 2-4

Environmental Science and Policy 191A, 191B 6

Internship Requirement 12

Students must complete at least 12 units of

internship, six of which must be completed off

campus and must involve advanced responsibilities from an employer.

Applied Production 6-9


Select 1 course from: Animal Science 49A 2

Animal Science 411 2-3

Select 1 course from: Applied Biological Systems Technology 49, 52, 101, 142, Food Science and Technology 50 2-3

Track I: Agriculture and Ecology

Focuses on crop and animal production systems, ecology, and practices that mitigate negative impacts while producing economic and social benefits.

Track I Adviser, W. Harvath, Ph.D.

Preparatory Subject Matter 60-61

Mathematics 16A 6

Plant Sciences 120 or Statistics 100 4

Chemistry 2A 10

Physics 1A 3

Biological Sciences 2A 4

Animal Sciences 2 4

Animal Sciences 1 or 2 4

Food Science 1 3

Economics 1A 4

Community and Regional Development 1 4

Select one course from: Philosophy 14, 15, 24 4

Select one course from: Anthropology 2, Political Science 4, Sociology 1, Sociology 3 4

Depth Subject Matter 34-38

Agricultural and Resource Economics 120 or 147 4

Environmental Science and Policy 161 or 169 4

Soil Science 100 or Soil Science 109 4


Additional upper-division restricted electives chosen in consultation with the track faculty adviser 20

Track II: Food and Society

Focuses on issues related to the social, cultural, political and community development aspects of agricultural and food systems.

Track II Adviser, T. Galt, Ph.D.

Preparatory Subject Matter 57-64

Philosophy 3 or 31 4

Select one course from: Philosophy 14, 15, 24 4

Sociology 46B or Statistics 13 4

Select at least one course from: Community and Regional Development 151, Landscape Architecture 150, Statistics 103, Sociology 106 4

Chemistry 2A 5

Biological Sciences 2A or 10 5

Plant Sciences 2 4

Select one course from: Biological Sciences 28 or Environmental Science, and Policy 1 or 30 or Wildlife, Fish, and Conservation Biology 10 or 11 3-5

Food Science 1 3

Soil Science 10 4

Economics 1A 4

Political Science 4 4

Select one course from: Anthropology 2, Sociology 1, Sociology 3 4-5

Community and Regional Development 1, 2 8

Depth Subject Matter 43-44

Agricultural and Resource Economics 112 or 130 4

Select 1 course from: Anthropology 101, and Resource Economics 147, 176, Environmental Science and Policy 160, 161, 169, 172, 179 4

Choose 12 units from: Anthropology 101, Community and Regional Development 118, 142, 149, 152, Sociology 130, 160 12

Select 1 course from: American Studies 101G, 156, History 108, 109A, 172, Native American Studies 123, 162, Philosophy 109, or Women's Studies 104, 136 4

Additional upper-division restricted electives chosen in consultation with the track faculty adviser 20

Track III: Economics and Policy

Focuses on issues related to agricultural and resource economics, policy and management.

Track III Adviser, T. Tomich, Ph.D.

Preparatory Subject Matter 60-64

Mathematics 16A 6

Sociology 46B or Statistics 13 4

Select one course from: Biological Science 106, Statistics 103, Sociology 106 4

Chemistry 2A 5

Biological Sciences 2A or 10 5

Plant Sciences 2 4

Select one course from: Biological Sciences 28, Environmental Science and Policy 1, 30, Wildlife, Fish, and Conservation Biology 10, 11, 3-5

Soil Science 10 4

Economics 1A, 1B 8

Political Science 4 4

Select one course from: Anthropology 2, Sociology 1, Sociology 3 4-5

Community and Regional Development 1, 4

Select 1 course from: Philosophy 14, 15, 24 4

Depth Subject Matter 43-44

Select one course from: Agricultural and Resource Economics 112, 150, 157 4

Select 11-12 units from: Agricultural and Resource Economics 120, 130, 147, 176, Environmental Science and Policy 100, Evolution and Ecology 101 11-12

Select 8 units from: Anthropology 101, Community and Regional Development 118, 142, 149, 152, Sociology 130, 160 8

Additional upper-division restricted electives chosen in consultation with an adviser 20

Total units for the major 140-163

Wildlife, Fish, and Conservation Biology

Change to B.S. Major Requirements

B.S. Major Requirements:

UNITS

Written/Oral Expression 8

University Writing Program 1 4

Communication 1, 3 or Dramatic Art 10 4

Completing University Writing Program 1 and Communication 1 will simultaneously satisfy the College requirements.

Preparatory Subject Matter 50-51

Biological Sciences 2A, 2B, 2C 15

Chemistry 2A, 2B, 8A, 8B 16

Mathematics 16A, 16B 6

Physics 1A, 1B 6

Statistics 100, 102 120 4

Wildlife, Fish, and Conservation Biology 10, 11, or 50 3-4

Depth Subject Matter 45-50

Students graduating with this major are required to attain total units 204-209 (2,000) in all courses taken at the university in depth and area of specialization subject matter.

Environmental Science and Policy 100 or Evolution and Ecology 101 4

Evolution and Ecology 100 4

Biological Sciences 101 4

Wildlife, Fish, and Conservation Biology 121 or 130 4

Neurobiology, Physiology, and Behavior 102 or Wildlife, Fish, and Conservation Biology 141 4

Wildlife, Fish, and Conservation Biology 122 4

Wildlife, Fish, and Conservation Biology 154 4

Choose three lecture courses and two (laboratory) courses from: Wildlife, Fish, and Conservation Biology 100, 110, [110L], 111, [111L], 120, [120L], or 134, [134L], 14-15

Wildlife, Fish, and Conservation Biology 100, or 101 & 101L, or 102 & 102L 47
Strongly recommended, but not required,
Statistics 104, 106, or 108 ..................... 4
Strongly recommended, but not required,
Landscape Architecture 150 .................. 3
Strongly recommended, but not required,
Anatomy, Physiology and Cell Biology 100.................................................................4

Restricted Electives .......................... 12-24

Choose one from the four Areas of Specialization
shown below. No course can be used to simultaneously satisfy the Depth Subject Matter and the Area of Specialization.

Areas of Specialization

(1) Wildlife and Conservation Biology:
Complete Wildlife, Fish, and Conservation Biology 151.
Choose one course from: Wildlife, Fish, and Conservation Biology 110, 111, 120, 134, 136, 141, 144, 152, 155 & 155L, 156, 157 or 160.
Note: Students interested in certification as a Wildlife Biologist from The Wildlife Society should consider additional courses in plant sciences.

(2) Fish Biology: Complete Wildlife, Fish, and Conservation Biology 120 & 120L.
Choose one course from: Entomology 116, Evolution and Ecology 112 & 112L or 114.
Choose three courses including at least one course from each of the following two groups:
(a) Aquatic Systems
(b) Water Policy/Law
Choose one course from: Hydrology 150, Environmental Science and Policy 161, 162, 166N or 169.

(3) Wildlife Health: Complete Wildlife, Fish, and Conservation Biology 151.
Complete either Biological Sciences 102 and 103 or Animal Biology 102 and 103.
Choose one course from: Wildlife, Fish, and Conservation Biology 110, 111, 120, 134, 136, 141, 144, 152, 155 & 155L or 160.
Choose one course from: Animal Science 103, 104, 170, Anatomy, Physiology, and Cell Biology 100, Microbiology 101, 104, Molecular and Cell Biology 150, Neurobiology, Physiology, and Behavior 101, 140, or Veterinary Medicine and Epidemiology 158.
Note that this AOS recommends additional preparatory courses; prerequisites for admission to Veterinary Medicine vary among schools and students should confirm the specific requirements of the school(s) to which they wish to apply.
Additional Preparatory (recommended, not required): Chemistry 2C, 118A, 118B, 118C, Physics 7A, 7B, 7C.

(4) Individualized: Students may, with prior approval of their adviser and the curriculum committee, design their own individualized specialization within the major. The specialization will consist of at least four upper division courses with a common theme.

Total Units for the Degree ............115-133

Major Adviser, N.A. Fangue