Pomology

260. Political Parties (4) Seminar—3 hours; term paper. Survey of selected topics in American and comparative parties.

261. Political Parties (4) Seminar—3 hours; term paper. Survey of selected topics in political behavior and public opinion. May be repeated three times for credit when topics differ.

274. Political Economy (4) Seminar—3 hours; term paper. Restricted to graduate students. Political economy policy as reflected in taxation, spending and regulation; impact of prices, employment, and growth on political demands; government responses to economic conditions; electoral politics and the political business cycle. Offered in alternate years.

279. Political Networks: Methods and Applications (4) Seminar—3 hours; term paper. Prerequisite: graduate standing. Structure of political networks, socio-matrices and affiliation networks; general network characteristics: density, centralization, polarization, interdependence, dyadic and triadic characteristics: structural and role equivalence; subsets of networks: cliques, blocks and bloc modeling; characteristics of individuals in networks: centrality and prestige.

280. Bayesian Methods: for Social and Behavioral Sciences (4) Seminar—3 hours; term paper. Prerequisite: course 212 or equivalent. Pass One open to graduate majors only. Pass Two open to graduate students. Methodology seminar introducing Bayesian quantitative methods to issues and problems in political science and other social and behavioral sciences. Offered in alternate years.

281. Statistical Computing Issues in Political Science (4) Seminar—4 hours; discussion/laboratory—1 hour. Prerequisite: course 213 or equivalent. Restricted to graduate students. Methodology seminar introducing computing issues in empirical models for political science and other social and behavioral sciences. Offered in alternate years.

282. Advanced Modeling of Political Behavior (4) Seminar—3 hours; term paper. Prerequisite: course 212 or equivalent. Restricted to graduate students only. Special research seminar on selected problems and issues in the study of political parties, politics, and political behavior.

290F. Research in Comparative Government and Policy (4) Lecture—3 hours; term paper. Prerequisite: graduate standing. May be repeated three times for credit if topic varies.

290E. Research in Political Parties, Politics, and Political Behavior (4) Seminar—4 hours. Special research seminar on selected problems and issues in the study of political parties, politics, and political behavior.

290D. Research in Judicial Politics (4) Seminar—4 hours. Prerequisite: graduate standing in political science or consent of instructor. Controversy research on judicial politics, judicial institutions, jurisprudence, and judicial behavior.

290C. Research in International Relations (4) Lecture—3 hours; term paper. Restricted to graduate students only. Special research seminar on selected problems and issues in the study of international relations. May be repeated six times for credit if topic varies.

290B. Research in Political Economy (4) Seminar—4 hours. Special research seminar on selected problems and issues in the study of comparative government and policy. May be repeated six times for credit if topic varies.

290A. Research in American Government and Public Policy (4) Seminar—3 hours; term paper. Restricted to graduate students. Special research seminar on problems and issues in the study of American government and public policy. May be repeated up to 6 times for credit if topic differs.

290. Research in Political Theory (4) Lecture—3 hours; term paper. Restricted to graduate students only. Special research seminar on problems and issues in the study of political theory. May be repeated six times for credit if topic varies.

290. Directed Reading (1-12) (S/U grading only.)

Professional

390. The Teaching of Political Science (1) Seminar—1 hour. Prerequisite: graduate student in Political Science. Methods and problems of teaching political science at the undergraduate level. (S/U grading only.)

396. Teaching Assistant Training Practicum (1-4) Prerequisite: graduate standing. May be repeated for credit. (S/U grading only.)

Pomology

See Plant Sciences, on page 514.

Population Biology (A Graduate Group)

Alan M. Hastings, Ph.D., Chairperson of the Group

Group Office. 2320 Storer Hall 530-752-1274; http://www.eve.ucdavis.edu/eve/pbg/

Faculty

Marissa L. Basket, Ph.D., Associate Professor (Environmental Science and Policy) David J. Begun, Ph.D., Professor (Evolution and Ecology) Monique Borgerhoff Mulder, Ph.D., Professor (Anthropology) Louis W. Botsford, Ph.D., Professor (Wildlife, Fish, and Conservation Biology) Tim Caro, Ph.D., Professor (Wildlife, Fish, and Conservation Biology) Graham M. Coop, Ph.D., Associate Professor (Evolution and Ecology) Houpt, Ph.D., Associate Professor (Environmental Science and Policy) Jonathan A. Eisen, Ph.D., Professor (Evolution and Ecology)

Valerie Eviner, Ph.D., Associate Professor (Plant Sciences) Jennifer Greener, Ph.D., Assistant Professor (Evolution and Ecology) James R. Griesemer, Ph.D., Professor (Philosophy) Richard K. Grosberg, Ph.D., Professor (Evolution and Ecology) Acacia Senft Distinguished Teaching Award, UC Davis Prize for Teaching and Scholarly Achievement Susan P. Harrison, Ph.D., Professor (Environmental Science and Policy) Alan M. Hastings, Ph.D., Professor (Environmental Science and Policy) Brian R. Johnson, Ph.D., Assistant Professor (Entomology and Neurobiology) Richard Karban, Ph.D., Professor (Entomology) Daniel Kliebenstein, Ph.D., Professor (Plant Sciences) Artym Kopp, Ph.D., Professor (Evolution and Ecology) Charles H. Langley, Ph.D., Professor (Evolution and Ecology) Sharon P. Lawler, Ph.D., Professor (Entomology) Susan E. Lott, Ph.D., Assistant Professor (Evolution and Ecology) Richard McElreath, Ph.D., Professor (Anthropology) Brian R. Moore, Ph.D., Assistant Professor (Evolution and Ecology) David B. Neude, Ph.D., Professor (Plant Sciences) Gail L. Patricelli, Ph.D., Professor (Evolution and Ecology) Santiago Ramirez, Ph.D., Assistant Professor (Evolution and Ecology) Bruce H. Rannala, Ph.D., Professor (Evolution and Ecology) Jay Rosenheim, Ph.D., Professor (Entomology) Academic Senate Distinguished Teaching Award Jeffery Ross-Ibarra, Ph.D., Associate Professor (Plant Sciences) Eric D. Sanford, Ph.D., Professor (Evolution and Ecology) Johanna Schmitt, Ph.D., Professor (Evolution and Ecology) Thomas W. Schoener, Ph.D., Professor (Evolution and Ecology) Sebastian Schreiber, Ph.D., Professor (Evolution and Ecology) Mark W. Schwartz, Ph.D., Professor (Environmental Science and Policy) Academic Senate Distinguished Teaching Award Arthur M. Shapiro, Ph.D., Professor (Evolution and Ecology) UC Davis Prize for Teaching and Scholarly Achievement Sharon Y. Strauss, Ph.D., Professor (Evolution and Ecology) Donald R. Strong, Ph.D., Professor (Evolution and Ecology) Andrew Sih, Ph.D., Professor (Environmental Science and Policy) John J. Stachowicz, Ph.D., Professor (Evolution and Ecology) Academic Senate Distinguished Teaching Award Maureen L. Stanton, Ph.D., Professor (Evolution and Ecology) UC Davis Prize for Teaching and Scholarly Achievement Susan E. Lott, Ph.D., Assistant Professor (Environmental Toxicology) Louie H. Yang, Ph.D., Assistant Professor (Entomology) Truman P. Young, Ph.D., Professor (Plant Sciences)

Emeriti Faculty

Hugh Dingle, Ph.D., Professor Emeritus John H. Gillespie, Ph.D., Professor Emeritus Kevin J. Rice, Ph.D., Professor Emeritus Judy A. Stamps, Ph.D., Professor Emeritus

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; OLW—Oral Skills; OLW—Oral Skills; VL—Visual; WC—Writing Experience

Pre-Fall 2011 General Education (GE): ACH—Arts and Humanities; SCiEnG—Science and Engineering; SocSci—Social Sciences; Div—Domestic Diversity; Wrt—Writing Experience Quarter Offered: F—Fall, W—Winter, S—Spring, Su—Summer; 2017-2018 offering in parentheses
Graduate Study. The Graduate Group in Population Biology emphasizes programs of study and research leading to the Ph.D. degree. The Group focuses on population biology as the broad discipline that blends ecology, evolution, population genetics and systematics into a unified field. The course curriculum consists of first-year core courses offered by the Group faculty, seminars, and advanced courses in population biology; and related disciplines, chosen in consultation with a guiding committee.

Graduate Adviser. Consult the Population Biology Graduate Group office or website.

Courses in Population Biology (PBG)

Graduate

200A. Principles of Population Biology (5)
Lecture—3 hours, discussion—2 hours. Prerequisite: course 201A concurrently or consent of instructor. Principles of single-species ecology and evolution. Topics include ecology of individuals, population growth models, structured populations, life history strategies, stochastic populations, basic population genetics theory, deleterious alleles in natural populations, and molecular population genetics. —F. (F.) 200B. Principles of Population Biology (6)
Lecture—5 hours, discussion—1 hour. Prerequisite: course 200A, 231. Principles of multi-species communities. Topics include competition, mutualism, metapopulations, food webs and trophic cascades, interactions between simple ecological communities, island biogeography, succession, and large-scale patterns. —W. (W.) 200C. Principles of Population Biology (6)
Lecture—5 hours, discussion—1 hour. Prerequisite: course 200B. Principles of microevolution and macroevolution. Topics include evolutionary quantitative genetics, analysis of hybrid zones, speciation, the fossil record, biogeography, and phylogeny reconstruction. —S. (S.)

203. Advanced Evolution (3)
Lecture—1 hour, discussion—2 hours. Prerequisite: graduate standing. Adaptation and speciation, and biochemical and morphological evolution in plants and animals with emphasis on the appropriateness of different methods of analysis. Offered in alternate years.

206. Ecology of Insect Parasitoids (4)
Lecture—3 hours, seminar—1 hour. Prerequisite: introductory animal ecology or behavior. Insect parasitoids will be investigated as model systems to address current topics in behavioral, population, and evolutionary ecology. Theory will be synthesized and critical empirical tests of ecological hypotheses emphasized. Offered in alternate years. 207. Animal Biology (5)
Lecture—2 hours, laboratory/discussion—1 hour. Prerequisite: advanced undergraduate ecology course (e.g., Environmental Science and Policy 100, Evolution and Ecology 101, Entomology 104, Plant Biology 117), and advanced undergraduate course in genetics and/or evolution (e.g., Biological Sciences 101 or Evolution and Ecology 100). Introduction to theoretical and empirical research in plant population biology. Emphasis placed on linking ecological and genetic approaches to plant population biology. (Same course as Ecology 207.) Offered in alternate years. —W. (W.)

210. Topics in Invertebrate Evolution (2)
Seminar—2 hours. Prerequisite: graduate standing or consent of instructor and Evolution and Ecology 112-112L, courses in evolutionary biology, systematics, and ecology highly recommended. Advanced seminar in critical issues that examines problems relevant to evolutionary patterns among the invertebrates. May be repeated for credit when topic differs. (S/U grading only.)—(S.) Grosberg

211. Animal Behavior, Ecology and Evolution (3)
Lecture—2 hours. Prerequisite: Neurobiology, Physiology, and Behavior 102, Ecology and Evolution 100, 101 or the equivalent, graduate standing, and consent of instructor. Interface between animal behavior, ecological and evolutionary research opportunities in northern and central California. May be repeated for credit. (S/U grading only.)

225. Terrestrial Field Ecology (4)
Seminar—1 hour, field work—12 hours. Prerequisite: introductory ecology and introductory statistics, or consent of instructor. A field course conducted over spring break and four weekends at Bodega Bay emphasizing student projects. Ecological hypothesis testing, data gathering, analysis, and written and oral presentation of results will be stressed. (Same course as Ecology/Entomology 225.)—S. (S.) Karban

231. Mathematical Methods in Population Biology (3)
Lecture—3 hours. Prerequisite: Mathematics 16C or 21C or the equivalent. Mathematical methods used in population biology. Linear and nonlinear differential equations and difference equation models are studied, using stability analysis and qualitative methods. Partial differential equation models are introduced. Applications to population biology models are stressed. (Same course as Ecology 231.)—F. (F.) Hastings

233. Computational Methods in Population Biology (3)
Lecture/lab—2 hours, discussion/lab—1 hour. Prerequisite: a course in theoretical ecology (e.g., Ecology 231 or an equivalent to Environmental Science and Policy 121 from your undergraduate institution) or consent of instructor, no programming experience required. Numerical methods for simulating population dynamics using the computational software package R. Emphasis placed on model formulation and development, theoretical concepts and principles, guide simulation efforts, model parameterization, and implementing simulations with R. (Same course as Ecology 233.) (S/U grading only.) Offered in alternate years. —W. (W.) Basket, Schreiber

250A. Interdisciplinary Approaches to Biological Invasions (4)
Lecture/discussion—4 hours. Prerequisite: graduate standing. An integrative consideration of biological invasions. Concepts from ecology, ecological theory, evolution, genetics, philosophy, and other areas. Emphasis on potential contributions of each area for interdisciplinary problem solving. —S. (S.) Shapiro

250B. Interdisciplinary Approaches to Biological Invasions (4)
Lecture/discussion—4 hours. Prerequisite: graduate standing. An integrative consideration of biological invasions, including an overview of concepts from history, sociology, communications, law, policy, management, and other areas. Emphasis on potential contributions of each area for interdisciplinary problem solving. —W. (W.)

251. Collaborative Project in Biological Invasions (3)
Project—discussion—1 hour. Prerequisite: course 250A, 250B, or equivalent; and consent of instructor. A year-long collaborative project focusing on biological invasions, resulting in a paper or other suitable product presented at a symposium at the conclusion of the project. May be repeated up to five times. (S/U grading only.)—F, W. (F, W.)

270. Research Conference in Evolutionary Biology (1)
Seminar—1 hour. Prerequisite: consent of instructor. Critical presentation and evaluation of current literature and ongoing research in evolutionary biology. May be repeated for credit. (S/U grading only.)—F, W. (F, W.)

271. Research Conference in Ecology (1)
Seminar—1 hour. Prerequisite: consent of instructor. Critical presentation and evaluation of current literature and ongoing research in ecology. Requirements include active participation in weekly discussions and the presentation of a paper or chapter once per quarter. May be repeated for credit. (S/U grading only.)—W. (W.) Schoener, Schreiber

287. Advanced Animal Behavior (2)
Seminar—2 hours. Prerequisite: graduate standing and consent of instructor, courses in animal behavior (Neurobiology, Physiology, and Behavior 102 or the equivalent), and either evolution (Evolution and Ecology 100 or the equivalent) or ecology (Evolution and Ecology 101 or the equivalent). Reading, reports and discussion on current topics in animal behavior, with a focus on topics that lie at the interface between animal behavior, ecology and evolution. (Same course as Animal Behavior 287.) May be repeated two times for credit.

290. Seminar (1)
Seminar—1 hour. Prerequisite: graduate standing and consent of instructor. Seminars presented by visiting lecturers, UC Davis graduate students and faculty. May be repeated for credit. (S/U grading only.)—F, W. (F, W.)

290C. Research Conference in Population Biology (1)
Seminar—1 hour. Prerequisite: graduate standing. Seminar presented by visiting lecturers, UC Davis faculty and graduate students. May be repeated for credit. (Same course as Ecology 290.) (S/U grading only.)—F, W. S. (F, W, S.)

292. Topics in Ecology and Evolution (1)
Discussion—1 hour. Prerequisite: graduate standing and consent of instructor. Current research in Ecology. May be repeated for credit. (S/U grading only.)—F, W. S. (F, W, S.)

299. Seminar in Geographical Ecology (2)
Seminar—2 hours. Prerequisite: Evolution and Ecology 100 or 101 or consent of instructor. Recent developments in theoretical and experimental biogeography, historical biogeography and related themes in systematics, the biology of colonizing species, and related topics. (Same course as Geogr 214.) (S/U grading only.)—F, W. S. (F, W, S.)

299A. Interdisciplinary Approaches to Biological Invasions (3)
Lecture—4 hours. Prerequisite: graduate standing. An integrative consideration of biological invasions, including an overview of concepts from ecology, ecological theory, evolution, genetics, philosophy, and other areas. Emphasis on potential contributions of each area for interdisciplinary problem solving. —S. (S.) Shapiro

299B. Interdisciplinary Approaches to Biological Invasions (3)
Lecture—4 hours. Prerequisite: graduate standing. An integrative consideration of biological invasions, including an overview of concepts from ecology, ecological theory, evolution, genetics, philosophy, and other areas. Emphasis on potential contributions of each area for interdisciplinary problem solving. —W. (W.)

Population Health and Reproduction

See Veterinary Medicine, School of, on page 381.

Precision Agriculture

(College of Agricultural and Environmental Sciences)
The Department of Biological and Agricultural Engineering offers a minor in Precision Agriculture, the latest farming concept that optimizes fertilizer, pesti-