Between 1950 and 1962 Richard L. Nelson brings together a legendary faculty including Roland Petersen, Ralph Johnson, Wayne Thiebaud, Manuel Neri, William T. Wiley, Robert Arneson and Roy DeForest to build UC Davis’ world-famous art program. Robert Arneson (left) was hired in 1962.

1966 Switch is made from semesters to quarters.
Environmental Science and Policy

(College of Agricultural and Environmental Sciences)
Howard V. Cornell, Ph.D., Chairperson of the Department
Department Office, 2132 Wickson Hall
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Faculty
Marissa L. Baskett, Ph.D., Assistant Professor
Howard V. Cornell, Ph.D., Professor
Charles R. Goldman, Ph.D., Professor
Distinguished Graduate Mentoring Award
Susan L. Handy, Ph.D., Professor
Susan P. Harrison, Ph.D., Professor
Alan M. Hastings, Ph.D., Professor
Marcel Holyoak, Ph.D., Professor
John L. Bargier, Ph.D., Professor
C.-Y. Cynthia Lin, Ph.D., Assistant Professor
(Continued)

Courses in Environmental Science and Policy (ESP)

10D. Current Issues in the Environment—Discussion (1)
   Discussion—1 hour. Prerequisite: course 10 concurrently.
   Small group discussions and preparation of papers for course 10. GE credit with concurrent enrollment in course 10. Wrt.—II. [II] Schwartz

30. World Ecosystems & Geography (3)
   Lecture—3 hours. An introduction to the earth’s major geographic regions and associated ecosys-
   tems, such as deserts, temperate forests, and oceans with an examination of how climate, vegetation
   regimes, ecological processes, and human activities interact in different regions of the world. (Same
   course as Environmental and Resource Sciences 30.) GE credit. SciEng.—II, III, III

30E. The Global Ecosystem: Laboratory/Discussion (2)
   Laboratory/discussion—3 hours. Prerequisite: course 30 concurrently. Presents natural history skills
   in plant and animal identification, soils, and geol-
   ogy. Emphasis on the diversity of vegetation and habi-
   tats of Northern California. GE credit with concurrent enrollment in course 30. Wrt.

92. Internship—1-12)
   Internship—3-36 hours. Prerequisite: lower division standing and consent of faculty. Work experience
   off and on campus in all subject areas offered in the College of Agricultural and Environmental Sciences.
   Internship supervised by member of the faculty. (P/NP grading only).

98. Directed Group Study (1-5)
   Prerequisite: consent of instructor. Primarily for lower division students. (P/NP grading only)

Upper Division Courses

100. General Ecology (4)
   Lecture—3 hours; discussion—1 hour. Prerequisites: Biological Sciences 1A, 1B, 1C, Mathematics 1A, 1B, Statistics 13 recommended. Theoretical and experimental analysis of the distribution, growth and regulation of species populations; predator-prey and competitive interactions; and the organization of nat-ural communities. Application of evolutionary and ecological principles to selected environmental problems. —I, II, [I, II] Cornell, Sih

   Lecture—3 hours; discussion—1 hour. Prerequisite: Anthropology 1 or 2 or course 30 or Evolution and Ecology 100 or Biological Sciences 101. Interdisci-
   plinary study of diversity and change in human soci-
   eties, using frameworks from anthropology, evolutionary ecology, history, archaeology, psychol-
   ogy, and other fields. Topics include population dynamics, subsistence transitions, family organiza-
   tion, disease, economics, warfare, politics, and resource conservation. (Same course as Anthropol-

102. Cultural Ecology (4)
   Lecture—3 hours; discussion—1 hour. Prerequisite: one lower division course in the social sciences,
   upper division standing. Comparative survey of the interaction between diverse human cultural systems and the environment. Primary emphasis given to people in rural and relatively undeveloped environ-
   ments as a basis for interpreting complex environ-
   ments. Not open for credit to students who have completed course 133. (Former course 133.) [Same course as Anthropology 102.] GE credit: SocSci, Div, Wrt.—II, III, [Il

105. Evolution of Societies and Cultures (4)
   Lecture—3 hours; discussion—1 hour. Prerequisite: Anthropology 1 or 2 or course 30 or Evolution and Ecology 100 or Biological Sciences 101. Interdisci-
   plinary study of social and cultural evolution in humans. Culture as a system of inheritance, psychol-
   ogical of cultural learning, culture as an adaptive sys-
   tem, evolution of technologies, and evolution of technology and institutions, evolutionary transitions
   in human history, coevolution of genetic and cultural variation. Only 2 units of credit to students who have
completed course 101 or Anthropology 105 prior to fall 2004. (Same course as Anthropology 105.) GE credit: SciEng. [I.] Largier, Richardson

(a) Environmental Science

110. Principles of Environmental Science (4)
Lecture—3 hours; discussion—1 hour. Prerequisite: Physics 1A or 7A, Mathematics 16B or 21B, and Biological Sciences 1A. Application of physical and chemical principles to ecological concepts, and systems approach to policy analysis of atmospheric environments, freshwater and marine environments, land use, energy supplies and technology, and other resources. [II.] Largier

111. Marine Environmental Issues (1)
Discussion—1 hour; seminar—2 hours. Prerequisite: upper division standing or consent of instructor; concurrent enrollment in at least one course from courses 124, 152, Evolution and Ecology 106, 110, 114, residence at or near Bodega Marine Laboratory required. Student must complete the application available at http://www.bml.ucdavis.edu. An examination of critical environmental issues occurring in coastal waters. Course links together material from concurrent courses at BML to develop an integrative understanding of marine environments and their conservation. Students will attend group discussions, and interaction with visiting speakers. May be repeated two times for credit. [Same Course as Evolution and Ecology 111.]—IV. (IV.) Gaylord, Largier, Morgan, Sanfodel

116. The Oceans (3)
Lecture—3 hours. Introductory survey of the marine environment; oceanic physical phenomena, chemical constituents, geological history, the sea's biota, and utilization of marine resources. [Same course as Geology 116.] GE credit: SciEng.

116N. Oceanography (3)
Lecture—2 hours; laboratory—3 hours; field work. Prerequisite: one of Geology 1, 2, 16 or 50. Advanced oceanographic topics: Chemical, physical, biological, and geological processes; research methods and data analysis; marine resources, anthropogenic impacts, and climate change; integrated earth/ocean/atmosphere systems, weekly lab and one weekend field trip. Offered in alternate years. [Same course as Geology 116N.]—II. (II.) Hill, McClain, Spero

(b) Ecological Analysis

121. Population Ecology (4)
Lecture—2 hours; discussion—1 hour. Prerequisite: Biological Sciences 1B, 1C, Mathematics 16A-16B. Development of exponential and logistic growth models for plant and animal populations, analysis of age structure and genetic structure, analysis of competition and predator-prey systems. Emphasis is on developing models and using them to make predictions and solve problems. Offered in alternate years. GE credit: SciEng. [IV. (IV.) Hastings]

123. Introduction to Field and Laboratory Methods in Ecology (4)
Lecture—2 hours; laboratory—6 hours. Prerequisite: course 100 or the equivalent, Statistics 102 or the equivalent. Introduces students to methods used for collecting ecological data in field and laboratory situations. Methods used by population ecologists and community ecologists; emphasis on experimental design, scientific writing and data analysis. [III.] M. Schwartz

124. Marine and Coastal Field Ecology (3)
Lecture—2 hours; discussion—1 hour; laboratory—3 hours; fieldwork—3 hours. Prerequisite: upper division standing or consent of instructor. Introductory animal biology (Biological Sciences 1B) recommended; residence at or near Bodega Marine Lab required. Student must complete the application available at http://www.bml.ucdavis.edu. Ecology of marine populations and communities living in diverse habitats along the California coast. Hands-on learning using scientific process and tools of the biological and ecological questions arising during field trips. Critical thinking through discussion scientific literature. [IV. (IV.) Morgan

125A. Field Ecology (4)
Lecture—15 hours; discussion—10 hours; field work—12 hours for two weeks. Prerequisite: consent of instructor. Designed to instruct and demonstrate to students the value and approaches of experimental research using the hypothético-deductive experimental design approach. May be taken only as part of the White Mountain Research Supercourse.

125B. Physiological Ecology (4)
Lecture—15 hours; discussion—10 hours; laboratory—15 hours (for two-week period). Prerequisite: consent of instructor. Demonstration of the functional means by which animals and plants cope with their environments, the physiological limits that determine the boundary conditions of various ecological niches. Unifying principles that describe the regulatory features of all animals or plants emphasized. May be taken only as part of the White Mountain Research Supercourse.—Quinn

125C. Applied Conservation Biology (4)
Lecture—10 hours; discussion—10 hours; field work—15 hours (for two-week period). Prerequisite: consent of instructor. Designed to introduce students to the complexities, and realities, of natural resource exploitation and preservation, emphasizing the trade-offs between economic benefits and ecosystem stability and sustainability. May be taken only as part of the White Mountain Research Supercourse.

127. Plant Conservation Biology (4)
Lecture/discussion—3 hours; term paper. Prerequisite: Environmental Science and Policy 100 or equivalent upper division general ecology. Principles governing the conservation of plant species and plant communities, including roles of fire, exotic species, grazing, pollution, soils, and population genetics; analytic and practical techniques for plant conservation; and introduction to related legal, ethical, and policy issues. Limited enrollment.—II. (II.) Harrison

(d) Aquatic Ecosystems Analysis

150A. Physical and Chemical Oceanography (4)
Lecture—3 hours; discussion—1 hour. Prerequisite: Environmental Science and Policy/Geology 116, Physics 9B, Mathematics 22C, Chemistry 1C; or upper division standing in a natural science and consent of instructor. Physical and chemical properties of seawater, fluid dynamics, air-sea interaction, currents, waves, tides, mixing, major oceanic geochemical cycles. [Same course as Geology 150A.]—I. (I.) McClain, Spero, Largier

150B. Geologic Oceanography (3)
Lecture—3 hours; discussion—1 hour. Prerequisite: Geology 50 or 116. Introduction to the origin and geologic evolution of ocean basins. Composition and structure of oceanic crust; marine volcanism; and deposition of marine sediments. Interpretive history of the ocean floor in terms of sea-floor spreading theory. [Same course as Geology 150B.]—II. (II.) McClain, Spero, Largier

150C. Biological Oceanography (4)
Lecture—3 hours; discussion—1 hour; fieldwork—one weekend field trip required. Prerequisite: Biological Sciences 1A and a course in general ecology or consent of instructor. Ecology of major marine habitats, including intertidal, shelf benthic, deep-sea and plankton communities, existing knowledge and contemporary issues in research. Segment devoted to human use. [Same course as Geology 150C.]—IV. (IV.)

151. Limnology (4)
Lecture—3 hours; discussion—1 hour; special project. Prerequisite: Biological Sciences 1A and junior standing. The biology and productivity of inland waters with emphasis on the physical and chemical environment.—III. (III.) C. Goldman

151L. Limnology Laboratory (3)
Laboratory—6 hours; two weekend field trips. Prerequisite: course 151 (may be taken concurrently); junior, senior, or graduate standing. Limnological studies of lakes, streams, and reservoirs with interpretation of aquatic ecology.—III. (III.) C. Goldman

152. Coastal Oceanography (3)
Lecture—2 hours; discussion—1 hour; laboratory—3 hours; fieldwork—3 hours. Prerequisite: upper division standing or consent of the instructor; physics (Physics 9B), calculus (Mathematics 21B) and exposure to physical and chemical oceanography. [Geology/Environmental Science 115 or 150A] are recommended; residence at or near Bodega Marine Laboratory required. Student must complete the application available at http://www.bml.ucdavis.edu. The prehistory of coastal waters, including bays, river plumes, nearshore and estuaries, focus on transport patterns, how they are forced and implications for ecological and environmental problems. Pertinent for students in geology, oceanography, ecology, environmental engineering, geology and hydrology.—IV. (IV.) Largier

155. Wetland Ecology (4)
Lecture—3 hours; discussion—1 hour. Prerequisite: course 100 or Plant Biology 117 required; course 110 or 151 recommended. Introduction to wetland ecology. The structure and function of major wetland types and principles that are common to wetlands and that distinguish them from terrestrial and aquatic ecosystems.—I. (I.) Rejmankova

155L. Wetland Ecology Laboratory (3)
Lecture—1 hour; laboratory—6 hours; fieldwork—two 1-day weekend field trips. Prerequisite: course 125 required (may be taken concurrently). Introduction to modern and classic techniques in wetland field ecology. Emphasis on sampling procedures, vegetation analysis, laboratory analytical procedures, and examples of successful wetland restoration techniques.—I. (I.) Rejmankova

(c) Environmental Policy Analysis

160. The Policy Process (4)
Lecture—3 hours; discussion—1 hour. Prerequisite: Political Science 1, Economics 1A; intermediate statistics, course 172. Alternative models of public policymaking and application to case studies in the U.S. and California.—II. (II.) Sabatier

161. Environmental Law (4)
Lecture—3 hours; discussion—1 hour. Prerequisite: upper division standing and/or consent of instructor. An introduction to environmental science (course 1, 10, 110, Biological Sciences 1A, Environmental Toxicology 10, or Resource Sciences 100); Political Science 1 and University Writing Program 1 recommended. Introduction for non-Law School students to some of the principal issues in environmental law and the judicial interpretation of some important environmental statutes, e.g., NEPA. GE credit: SocSci. [III. (III.)]

162. Environmental Policy (4)
Lecture—3 hours; discussion—1 hour. Prerequisite: Economics 1A. Compares economic with socio-cultural approaches to understanding the causes of environmental problems and strategies for addressing them. Includes different approaches to the policy process, policy instruments, and environmental behavior. Applies these principles to several problems.—III.

163. Energy and Environmental Aspects of Transportation (4)
Lecture—3 hours; extensive writing. Prerequisite: Economics 1A and Civil and Environmental Engineering 162. Energy, air quality and selected environmental attributes of transportation technologies. Strategies for reducing pollution and petroleum consumption in light of institutional and political constraints. Evaluation of vehicle emission models. [Same course as Civil and Environmental Engineering 163.] Offered in alternate years. GE credit: Wrt.—I. (I.) Spirling

164. Ethical Issues in Environmental Policy (3)
Lecture—3 hours. Prerequisite: courses 160, 168A; seniors only in Environmental Policy Analysis and Planning or by consent of instructor. Basic modes of ethical reasoning and criteria of distributive justice applied to selected topics in environmental policy-making.—III. (III.) Sabatier
165. Science, Experts and Public Policy (4)
Lecture—4 hours. Prerequisite: upper division standing in the social and biological sciences; course 160 or Political Science 108 recommended. Analysis of factors affecting the influence of scientists, planners, and other experts in policymaking. Several cases and controversies will be examined.

166. Policy Making in Natural Resource Agencies (4)
Lecture—3 hours; laboratory/discussion—2 hours. Prerequisite: Political Science 1. Analysis of factors that shape the structure and performance of public agencies responsible for natural resource management and environmental protection. Internet resources and field work used to design and execute a research project on a selected agency or inter-agency program. GE Credit: Wrt.

167. Energy Policy (4)
Lecture—4 hours. Prerequisite: Resource Sciences 3 or Engineering 160; course 160 or Political Science 101, 107, or 109. Overview of U.S. energy policy; policy analysis, philosophy and methods; major policy issues, such as renewable vs. nonrenewable, and applied studies of power plants, solar residential, and wind policy. Offered in alternate years. (ILL) Ogden

168A. Methods of Environmental Policy Evaluation (5)
Lecture—3 hours; discussion—1 hour; term paper. Prerequisite: Statistics 3; Economics 100 or Agricultural and Resource Economics 100A; Mathemastics 165 or 218; course 1, upper division standing. Evaluation of alternatives for solution of complex environmental problems using cost-benefit analysis, benefit-cost analysis, distributional analysis, decision making under uncertainty, and multi-objective evaluation. (I-I) Ogden

168B. Methods of Environmental Policy Analysis (4)
Lecture—3 hours; discussion—1 hour. Prerequisite: course 168A. Continuation of course 168A, with emphasis on writing a research paper. GE credit: SocSci.—II. (III) Lubell

(f) Environmental Planning

170. Conservation Biology Policy (4)
Lecture—3 hours; discussion—1 hour. Prerequisite: courses 1 and Economics 1A; Economics 100 or Agricultural and Resource Economics 100A recommended. Analysis of policies designed to conserve species and their habitats. Emphasis on how individual incentives affect the success of conservation policies. Valuation of endangered species and biodiversity. Criteria for deciding conservation priorities. (Schwartz)

171. Urban and Regional Planning (4)
Lecture—3 hours; discussion—1 hour; term paper. Prerequisite: course 1; a course in social science and a course in environmental science. How cities plan for growth in ways that minimize environmental harm. Standard city planning tools (general plan, zoning ordinance) and innovative new approaches. Focus on planning requirements and practices in California. Relationships between local, regional, state, and federal policy. (III) (HANDY)

172. Public Lands Management (4)
Lecture—3 hours; discussion—1 hour. Prerequisite: Economics 1A. Investigation of alternative approaches to public lands management by Federal and state agencies. The role each agency’s legislation plays in determining the range of resource allocations. GE credit: SocSci. (I) Lubell

173. Land Use and Growth Controls (4)
Lecture—3 hours; discussion—1 hour. Prerequisite: Political Science 1A; intermediate statistics (Sociology 106 or Statistics 102 or the equivalent), and local government (Applied Political Science 157, 158 or Political Science 100, 102 or 104). Examination of political, legal, and financial factors affecting land use and growth controls, and helps students critically evaluate written materials in terms of their arguments and supporting data.

175. Natural Resource Economics (4)
Lecture—3 hours; discussion—1 hour. Prerequisite: Agricultural and Resource Economics 100B or Economics 100 or the equivalent. Economic concepts and policies associated with natural resources, renewable resources (ground water, forests, fisheries, and wildlife populations) and non-renewable resources (minerals and energy resources, oil). (Same course as Agricultural and Resource Economics 175.) GE credit: SocSci.—III. (III) LIN

178. Applied Research Methods (4)
Lecture—3 hours; discussion—1 hour. Prerequisite: Statistics 103 or Sociology 106 or the equivalent. Research methods for analysis of urban and regional land use, transportation, and environmental problems. Survey research and other data collection techniques; demographic analysis, basic forecasting, air quality, and health effects; Collection, interpretation, and critical evaluation of data. (II) Handy

179. Environmental Impact Assessment (4)
Lecture—3 hours; discussion—1 hour. Prerequisite: upper division standing and one course in environmental science (course 100, 110 or the equivalent). Introduction to the information resources and methods typically used in environmental impact analysis. Emphasis on how environmental information is applied to planning, environmental regulation, and public policymaking, with case studies from California land use and natural resource policy. (III) Quinn

179L. Environmental Impact Reporting Using Geographic Information (2)
Laboratory/discussion—2 hours; laboratory—4 hours. Prerequisite: course 179 concurrently. Introduction to Geographic Information Systems (GIS) by using ArcView for assessment and environmental planning. Not open for credit to students who have completed Applied Biological Systems Technology 192, 181 or Agricultural Systems and Environment 132.

(g) Other Courses

190. Workshops on Environmental Problems (1-8)
Laboratory—2-16 hours. Prerequisite: consent of instructor. Workshops featuring empirical analyses of contemporary environmental problems by multidisciplinary student teams. Guided by faculty and lay professionals, the teams seek to develop an integrated view of a problem and outline a series of alternative solutions. Open to all upper division and graduate students on application. (P/NP grading only.) (I-I, I, I, II, III)

192. Internship (1-12)
Internship—3-18 hours. Prerequisite: completion of 84 units and consent of instructor. Work experience off and on campus in all subject areas offered in the College of Agricultural and Environmental Sciences. Internships supervised by a member of the faculty. (P/NP grading only.)

198. Directed Group Study (1-5)
(P/NP grading only)

199. Special Study for Advanced Undergraduates (1-5)
Prerequisite: consent of instructor. (P/NP grading only)

Graduate Courses

212A. Environmental Policy Process (4)
Lecture—3 hours; discussion—1 hour. Prerequisite: course in public policy (e.g., Environmental Science and Policy 160); environmental law (e.g., Environmental Science and Policy 161); course in bureaucratic theory (e.g., Political Science 187 on Environmental Science and Policy 160); course in statistics (e.g., Sociology 106 or Agricultural and Resource Economics 106). Introduction to selected topics in the policy process, applications to the field of environmental policy. Develops critical reading skills, understanding of frameworks of the policy process and political behavior, and an ability to apply multiple frameworks to the same phenomenon. Offered in alternate years. (Same course as Ecology 212A.)—III. Sabatier

212B. Environmental Policy Evaluation (4)
Lecture—1 hour; discussion—1 hour; seminar—2 hours. Prerequisite: intermediate microeconomics (e.g., Economics 100); Statistics 108 or Agricultural and Resource Economics 106; policy analysis (e.g., Environmental Science and Policy 168A or the equivalent); Agricultural and Resource Economics 176. Methods and practices of policy analysis; philosophical and intellectual bases of policy analysis and the political role of policy analysis. (Same course as Ecology 212B.) Offered in alternate years.

220. Tropical Ecology (3)
Lecture—2 hours; discussion—1 hour. Prerequisite: advanced introductory ecology course—course 100, Evolution and Ecology 101, 117; Evolution and Ecology 138 recommended. Undergraduate and graduate students who meet requirement subject to consent of instructor. An overview of present status of knowledge on structure and processes of major tropical ecosystems. Differences and similarities among tropical ecosystems of special stress. Offered in alternate years. (III) Rejmankova

228. Advanced Simulation Modeling (3)
Lecture—2 hours; discussion—1 hour. Prerequisite: courses 128-128L; Statistics 108 or Agricultural and Resource Economics 106. Advanced techniques in simulation modeling; optimization and simulation, dynamic parameter estimation, linear models, error propagation, and sensitivity testing. Latter half of course will introduce model development in ecological and social system models.

252. Sustainable Transportation Technology and Policy (4)
Lecture—2 hours; discussion—1 hour. Prerequisite: course 160 or the equivalent. Role of technical fixes and demand management in creating a sustainable transportation system. Emphasis on technology options, including alternative fuels, electric propulsion, and IVHS. Analysis of market demand and travel behavior, environmental impacts, economics and politics. (Same course as Civil and Environmental Engineering 252.)—III. Spierling

275. Economic Analysis of Resource and Environmental Policies (4)
Lecture/discussion—4 hours. Prerequisite: Agricultural and Resource Economics 204/Economics 204. Development of externalities theory, market failure concepts, welfare economics, theory of renewable and non-renewable resource use, and political economic models. Applications to policy issues regarding the agricultural/environmental interface and managing resources in the public domain. (Same course as Agricultural and Resource Economics 275.)—III. (III)

278. Research Methods in Environmental Policy (3)
Lecture/discussion—3 hours. Prerequisite: Agricultural and Resource Economics 106 or the equivalent. Introduction to scientific research in environmental policy. Major issues in the methodology of the social sciences. How to design research that acknowledges theoretical assumptions and that is likely to produce evidence in an intersubjectively reliable fashion with explicit recognition of its limitations. Offered in alternate years. (III) Sabatier

298. Directed Group Study (1-5)

299. Research (1-12)
Prerequisite: graduate standing. (S/U grading only)