Environmental and Resource Sciences

Open to upper division undergraduate students with consent of instructor(s). Vector-borne infectious diseases and sexually transmitted diseases as they relate to changing patterns associated with climatic changes, trade and population movement. Same course as PMI 214. — F (F).

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 Bedega Bay, emphasizing projects. Ecological hypothesis testing, data gathering, analysis and written and oral presentation of results. (Same course as Ecology 225/Population Biology 225.) — S. (S.) Karlban

230. Advanced Biological Control (4)
Lecture—2 hours; laboratory—6 hours. Prerequisite: graduate or upper division standing in biological science or consent of instructor. Principles and current issues in biological control of arthropods; weeds; laboratory devoted to identification and life history of the major groups of parasitic and preda- ceous arthropods. Offered irregularly. — F.

253. Advanced Medical Entomology (3)
Lecture—2 hours; discussion—1 hour. Prerequisite: one upper division course in entomology (other than course 153) and one course in microbiology; course 153 strongly recommended. An analysis of several anthozoan human diseases with emphasis on the relationships of the biology of the vector to the ecology of the disease. Discussion includes demonstration of vectors and techniques. Offered irregularly. — F.

290. Exploratory Topics in Entomology (2)
Seminar—2 hours. Interdisciplinary topics in entomology, including innovative applications of entomological concepts to other fields of research and human endeavor (e.g. medicine, technology, art, criminology). May be repeated for up to 8 units of credit when topic differs. — F, W, S.

291. Current Topics in Medical and Veterinary Entomology (2)
Seminar—2 hours. Prerequisite: course 153. Discussion of parasitology, ecology and epidemiology related to vectors of pathogens causing disease in humans and animals. May be repeated one time for credit. Offered irregularly. — F, W, S, R. Kimsey

292. Current Topics in Insect Physiology and Behavior (2)
Seminar—2 hours. Prerequisite: course 102 if topic is physiology, a course in behavior if topic is behavior, or either if neither bridges both. Analysis of contemporary advances in insect physiology, biochemistry and/or behavior. Interpretation and description of physiological and behavioral mechanisms and functions. Application of general principles to solution of problems in the laboratory and field. May be repeated for up to 8 units of credit if topic differs. Offered irregularly. — F, W, S.

293N. Current Topics in Insect Biotechnology and Genomics (2)
Seminar—2 hours. Prerequisite: course 212. Discussion of advances in insect biotechnology, including genetic engineering and genomics. May be repeated for up to 6 units of credit if topic differs. Offered irregularly. — F, W, S. Hammad

294. Current Topics in Insect Ecology, Evolution, and Systematics (2)
Seminar—2 hours. Prerequisite: course 103, general course in ecology or evolution. Discussions of advanced topics in ecology, evolution and systematics with emphasis on analysis of factors influencing the distribution, abundance, adaptations and evolutionary relationships of insects. Includes consideration of applications of basic theory (e.g. biological control). May be repeated for up to eight units if topics differ. Offered irregularly. — F, W, S.

295. Current Topics in Agricultural Entomology and Bee Biology (2)
Seminar—2 hours. Prerequisite: course 110 if topic covers pests and beneficial insects, course 119 if topic is bee biology, or either if topics bridges both. Discussion of advanced topics about the biology, ecology, behavior, and management of pest and beneficial insects. May be repeated for up to 8 units of credit if topic differs. Offered irregularly. — F, W, S.

297N. Seminar in Entomology (1)
Seminar—1 hour. Weekly entomology seminar. May be repeated up to 8 units of credit if topic differs. (S/U grading only.) — F, W, S (F, W, S.)

298. Group Study (1-5)
(S/U grading only.)

299. Research (1-12)
(S/U grading only.)

Environmental and Resource Sciences

[College of Agricultural and Environmental Sciences] This major was discontinued as of Fall 2008; see Environmental Science and Management, on page 325.

Environmental Geology

[College of Letters and Science] The minor in Environmental Geology examines the multidisciplinary factors of geography and related earth science fields, and planning and resources oriented programs. Students in the minor are encouraged to participate in internship programs that assist them in solidifying the Environmental Geology minor with their Geology major or other major field areas that include geologic components. The minor is sponsored by the Department of Earth and Planetary Sciences in 2119 Earth and Physical Sciences Building.

Minor Program Requirements:

UNITS
Environmental Geology ................. 25-26
Geology 130, 134, and Environmental Science and Management 186 .......... 9
Soil Science 118 .......... 4
Hydrologic Science 141 or Civil and Environmental Engineering 142 .......... 4
Two courses chosen from Environmental Science and Policy 160, 171, 179, Hydrologic Sciences 144, 146 .......... 8-9

Minor Adviser. See Geology major advisers.

Environmental Horticulture

[College of Agricultural and Environmental Sciences]

Faculty. See Plant Sciences, on page 514.

Major Program. See Environmental Horticulture and Urban Forestry, on page 324.

Minor Program Requirements:

UNITS
Environmental Horticulture ................. 23-25
Environmental Horticulture 6 and 105 .......... 5
Plant Sciences 171 .......... 4
Select three courses from: Environmental Horticulture 100, 120, 125, 130, 133 ................. 11-13

Minor Adviser. A. Volder (Plant Sciences)

Related Undergraduate Programs. See the undergraduate majors in Ecological Management and Restoration, on page 250; Plant Biology, on page 509, and Plant Sciences, on page 514.

Graduate Study. For graduate study related to this field, see the M.S. and Ph.D. degree programs in the graduate groups of Horticulture and Agronomy, Plant Biology, and Ecology. Also see Graduate Studies, on page 120.

Related Courses. See Plant Biology and Plant Sciences.

Courses in Environmental Horticulture (ENH)

Questions pertaining to the following courses should be directed to the instructor or to the Plant Sciences Advising Office in 1224 Plant and Environmental Sciences Building 530-725-7738.

Lower Division

1. Introduction to Environmental Horticulture/Urban Forestry (3)
Lecture—3 hours. Introduction to the use of plants to enhance the physical, visual and social environment, the use of ecological principles in developing sustainable, low maintenance landscapes, and the career opportunities in these areas. GE credit: SciEng | SE, VL. — F.

6. Introduction to Environmental Plants (4)
Lecture—1 hour; discussion—2 hours; laboratory—3 hours. Classification, nomenclature and variation of environmental plants. The use of floral and vegetative characteristics and terminology to key unknown plants. Characteristics of plant groups and basics of climate, soils and plant selection. Identification of 150 common landscape plants. GE credit: SciEng | SE, VL. — F (F)

Upper Division

100. Urban Forestry (4)
Lecture—2 hours; laboratory—3 hours; term paper. Prerequisite: Biological Sciences 1C or Plant Sciences 2. Principles and practices of planning and managing urban vegetation. Basics of tree appraisal, natural resource inventory, and development of long term urban forest management plans. GE credit: SciEng | SE. — F. (F) Volder

101. Trees of the Urban Forest (2)
Lecture—1 hour; laboratory—2 hours. Prerequisite: course 6 or consent of instructor. Identification and evaluation of 200 tree species of the urban forest on campus, in the Arboretum, and in the city of Davis; appraised and aesthetic values, condition, and branch structure; contribution of trees to this ecosystem. Bicycle required. GE credit. GE credit: SciEng | VL. — F. (F) Harding

102. Physiological Principles in Environmental Horticulture (4)
Lecture—3 hours; discussion—1 hour. Prerequisite: Biological Sciences 1C. Physiological principles and processes essential to food culture, nursery crop production, turficulture and landscape horticulture. Emphasis on the control of vegetative and reproductive development for a broad species range in greenhouse and extensive landscape environments. GE credit: SciEng | SE.

105. Taxonomy and Ecology of Environmental Plant Families (4)
Lecture—2 hours; laboratory—6 hours. Prerequisite: course 6 or consent of instructor. Classification and identification of introduced and native species used in urban forests, with emphasis on floral and vegetative characteristics of the prominent families of angiosperms and gymnosperms, adaptations to environmental variations in western landscapes, and horticultural classification. GE credit. SciEng | VL. — S. (S.) Harding

120. Management of Container Media (3)
Lecture—2 hours; laboratory—3 hours. Prerequisite: Soil Science 10. Principles of soil science and practices related to management of container media are taught, emphasizing appropriate use of soils and amendments, irrigation, and fertilizers. Physical and
chemical properties are tested and effects of management on crops are evaluated in the laboratory. GE credit: SciEng SE, SL, WE — F (F) Evans 125. Greenhouse and Nursery Crop Production (5) Lecture — 3 hours; discussion — 1 hour; laboratory — 3 hours. Prerequisite: Plant Sciences 2 or Biological Sciences 1C. 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, SL, WE — W (W) Leith 133. Woody Plants in the Landscape: Growth, Ecology and Management (4) Lecture — 3 hours; laboratory — 2 hours; discussion — 1 hour. Prerequisite: Biological Sciences 1C or the equivalent preparation in plant biology. Principles and practices 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, SL, WE — F (F) Evans 150. Genetics and Plant Conservation: The Biodiversity Crisis (3) Lecture/discussion — 3 hours. Prerequisite: Biological Sciences 1C or the equivalent preparation in plant biology. Principles and practices 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, SL, WE — F (F) Evans 160. Restoration Ecology (3) Lecture — 3 hours. Prerequisite: Plant Biology/Evolution & Ecology 117 or Evolution & Ecology 121 or Plant Biology 147 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, SL, WE — S. (S) Eviner 160L. Restoration Ecology Laboratory (1) Laboratory/discussion — 3 hours. Prerequisite: course 160 (may be taken concurrently). Companion field course to course 160. A series of part-day and all-day visits to various field sites, involving site evaluations, guest field presentations by local restorationists, and actual restoration activities. Not open for credit to students who completed course 160 prior to spring 2004. GE credit: SciEng SE, SL, WE — S. (S) Eviner 175. Environmental Horticulture and Urban Forestry (College of Agricultural and Environmental Sciences) Faculty. See Department of Plant Sciences, on page 514. The Major Program. Students majoring in Environmental Horticulture and Urban Forestry learn how plants improve the environment and the quality of our lives. The major focuses on the biological and physical concepts and horticultural principles of plant production, management of plants and plant ecosystems in landscape settings and sociological aspects of plant/people interactions in the urban environment. Plants are used to revitalize and restore disturbed landscapes, control erosion and reduce energy and water consumption. The horticultural aspects of this major improve the aesthetic quality of urban and rural landscapes, recreational areas, interscapes and commercial sites is an important aspect of this major. A strong background in applied biological systems technology, environmental science & management, plant science and policy is necessary to develop substantive knowledge in a specific field of environmental policy, such as urban and regional planning, water policy, transportation and energy, climate policy, or conservation management. Careers. Environmental policy analysis and planning graduates are prepared for employment in environmental, natural resource, energy, and transportation focused public agencies, consulting firms, non-governmental organizations, and businesses, or as legislative aides for elected representatives. The major is also excellent preparation for students who want to go on to graduate work in law, planning, public policy, political science, economics, or business. B.S. Major Requirements: UNITS Communications 1 recommended as part of the College English Composition Requirement or the Words and Images Core Literacy Component. Preparatory Subject Matter..............56-62 Environmental Horticulture 1 and 6 .......................... 7 Landscape Architecture 30 .......................... 4 Biological Sciences 2A, 2B, and Plant Sciences 2 .......................... 14 Chemistry 2A-2B .......................... 10 Environmental Science and Policy 1 or 10 or 30 .......................... 3-4 Physics 1A-1B .......................... 6 Plant Sciences 21 .......................... 3 Mathematics 16A or Statistics 33 .......................... 3 University Writing Program 102B, 102G, or other upper division composition course [may overlap with college composition requirement] (may be satisfied by passing the English Composition Exam) .......................... 0-4 Lower division restricted electives .......................... 6 Select one: 1 division science course and one lower division social science/humanities course in consultation with adviser; minimum 6 units. Depth Subject Matter .......................... 42-46 Environmental Horticulture 102 or Plant Sciences 100A .......................... 3-4 Environmental Horticulture 105 or Plant Sciences 102 or Plant Biology 108 .......................... 4-5 Plant Biology 117 or Plant Sciences 150 .......................... 4 Plant Sciences 21 or Plant Sciences 158 or Soil Science 100 .......................... 5 Select two courses from Entomology 110, Entomology 10, Plant Biology 147, Animal Sciences 116 .......................... 3-7 Internship or research; must be approved by major adviser .......................... 3 Upper division restricted electives .......................... 12 Select two: upper division science courses and two upper division social science/humanities courses in consultation with adviser; minimum 12 units. Areas of Specialization (choose one) No course may be used to satisfy more than one requirement: Floriculture/Nursery Option .......................... 18 Environmental Horticulture 120, 125 .......................... 8 Applied Biological Systems Technology 165 .......................... 2 Entomology 130 .......................... 2 Plant Sciences 100C or 158 or Soil Science 109 .......................... 4 Plant Biodiversity/Restoration Option .......................... 16-22 Environmental Horticulture 160, 165 .......................... 4 Environmental Horticulture 116, 120, or Evolution and Ecology 100, or Plant Biology 116 .......................... 3-5 (a) Select one course from: Environmental Science and Management 153, Environmental Science and Policy 127, 155L, Plant Sciences 130, 150, Wildlife, Fish, and Conservation Biology 155 .......................... 3-4 (b) Select one course from: Environmental Science and Policy 155, Plant Biology 108, 117, 119, Plant Sciences 102, 144, 147/149, 156, 176, Wildlife, Fish, and Conservation Biology 156, 157 .......................... 3-5 Select one or additional class from section a or b .......................... 3-5 Urban Landscape Management Option .......................... 16-17 Environmental Horticulture 100, 133 .......................... 8 Applied Biological Systems Technology 165 .......................... 2 Plant Sciences 162 .......................... 3 Science and Society 18 or Landscape Architecture 150 .......................... 3-4 Total Units for the Major......................... 114-130 Major Adviser. T.P. Young Advising Center for the major is located in 1224 Plant and Environmental Sciences 530.752.7738 Environmental Policy Analysis and Planning (College of Agricultural and Environmental Sciences) The Major Program. The major in environmental policy analysis and planning develops skills for designing and assessing sustainable policies for environmental quality and natural resource management. Any student in good standing is eligible to transfer to the major; to do so, please see the staff adviser, Melissa Whaley, in 2134 Wickson Hall, or the master adviser, Prof. J. Sanchirico, in 2102 Wickson Hall. The Program. This major provides students with a strong background in policy analysis, including the evaluation of policy alternatives and the study of factors affecting policy formulation and implementation. Key components of this interdisciplinary training include a general background in the natural sciences relevant to environmental policy, economics, political science, statistics, and research methodology to quantitatively analyze environmental problems and policy options. In addition, students are encouraged to develop substantive knowledge in a specific field of environmental policy, such as urban and regional planning, water policy, transportation and energy, climate policy, or conservation management. Careers. Environmental policy analysis and planning graduates are prepared for employment in environmental, natural resource, energy, and transportation focused public agencies, consulting firms, non-governmental organizations, and businesses, or as legislative aides for elected representatives. The major is also excellent preparation for students who want to go on to graduate work in law, planning, public policy, political science, economics, or business. B.S. Major Requirements: UNITS English Composition and Public Speaking Requirement .......................... 3-8 University Writing Program 101, 102A-G, 102A-E, or passing the Divisional English Composition exam .......................... 0-4 Communication 1 or 3 or Dramatic Art 10 .......................... 3-4 Preparatory Subject Matter .......................... 46-52 Biological Sciences 2A, 10, or 10V, Chemistry 2A or 10, and 1 Physics 1A .......................... 11-13 Biological Sciences 2B or Chemistry 2B or Physics 1B .......................... 3-5 Plant Sciences 21, or Science & Society 18 .......................... 3 Economics 1A, 1B .......................... 8 Animal Science 1, Animal Science 60, Environmental Science & Management 100, Environmental Science 1 or 134, Plant Sciences 12, or Wildlife, Fish, & Conservation Biology 11 .......................... 3-5 Fall 2011 and on Revised General Education (GE) AJH—Arts and Humanities; SE—Science and Engineering; SS—Social Sciences; AGCH—American Cultures; DD—Dominant Diversity; OL—Oral Skills; GL—Quantitative; SL—Scientific; VL—Visual; WC—World Cultures; WE—Writing Experience Pre-Fall 2011 General Education (GE): AH—Arts and Humanities; SciEng—Science and Engineering; SocSci—Social Sciences; DivDom—Dominant Diversity; Wrt—Writing Experience Quarter Offered: F=Fall, W=Winter, S=Spring, Su=Summer; 2017/2018 offering in parentheses