

## 2007-09 Cal Poly Catalog

### Horticulture and Crop Science Department

## HCS—HORTICULTURE AND CROP SCIENCE

### **HCS 110 Orientation to Horticulture and Crop Science (2) (CR/NC)**

Understanding the depth and breadth of horticultural and field crops, and plant protection. Examination of curricula within the department, including potential career opportunities. Introduction to both student and professional organizations and affiliations. Agricultural equipment and chemical safety. Required of all Horticulture and Crop Science students. Credit/No Credit grading only. 2 activities.

### **HCS 120 Principles of Horticulture and Crop Science (4)**

Introduction to horticulture and crop science. Basic plant processes, classification, anatomy, physiology, and biotechnology. Effect of environment on plants and how we control it. Introduction to plant growth including propagation, media, irrigation, nutrition, management, harvest, and post harvest handling. People's use of plants. Field trip required. 3 lectures, 1 laboratory.

### **HCS 124 Plant Propagation (4)**

Plant propagation practices with emphasis on understanding why practices are used, how they work, and how they are applied in commercial horticulture. Field trip required. 3 lectures, 1 laboratory. Prerequisite: HCS 110, HCS 120, and BOT 121.

### **HCS 200 Special Problems for Undergraduates (1–4)**

Individual investigation, research, studies, or surveys of selected problems. Total graduation credit limited to 4 units, with a maximum of 4 units per quarter. Report required. Prerequisite: Consent of department head.

### **HCS 231 Commercial Seed Production (4)**

Production of field and vegetable seed. Seed technology, germination, quality control, seed enhancement, storage and handling of seed, and seed laws. Field trip to a seed conditioning/seed enhancement facility required. 3 lectures, 1 laboratory. Prerequisite: HCS 120, CRSC 230 or VGSC 230, or consent of instructor.

### **HCS 304 Plant Breeding (4)**

Principles and techniques used to develop new plant varieties. Sexual reproduction, inheritance, selection and biotechnology methods useful in breeding of plants. Field trip required. 3 lectures, 1 laboratory. Prerequisite: BIO 303, CRSC 132, HCS 120.

### **HCS 327 Abiotic Plant Problems (3)**

Diagnosis of physiological disorders associated with environmental and nutritional factors. Particular emphasis on the systematic inquiry process. Case histories, multimedia use. 2 lectures, 1 laboratory. Prerequisite: HCS 120, EHS 123, HCS 124, EHS 231, EHS 232, BOT 121, CHEM 111, SS 121.

### **HCS 329 Plants, Food and Biotechnology (4) GE Area F (Also listed as BOT 329)**

Agriculture as applied biology and its impact on civilization. Application of technology to increase the efficiency of food production. Genetics and biotechnology; culminating in an assessment of genetically engineered foods, the myths, the controversy, the science. 3 lectures, 1 laboratory. Prerequisite: Junior standing, completion of GE Area B, and one of the following: BIO 111, BIO 161, BOT 121, HCS 120.

### **HCS 339 Internship in Horticulture and Crop Science (1–12) (CR/NC)**

Selected Horticulture and Crop Science students will spend up to 12 weeks with an approved agricultural/horticultural firm engaged in production or related business. Time will be spent applying and developing production and managerial skills and abilities. One unit of credit may be allowed for each full week of completed and reported internship. Degree credit limited to 6 units. Credit/No Credit grading only. Prerequisite: Consent of internship instructor prior to initiation of internship.

### **HCS 400 Special Problems for Advanced Undergraduates (1–4)**

Individual investigation, research, studies, or surveys of selected problems. Total degree credit limited to 4 units, with a maximum of 4 units per quarter. Report required. Prerequisite: Junior status or consent of department head.

### **HCS 410 Crop Physiology (4)**

Ecological and physiological interactions associated with the production of crop plants. Physiological and biochemical processes that elucidate the mechanism of whole plant performance and responses to the environment. 3 lectures, 1 laboratory. Prerequisite: HCS 120; BOT 121, or BIO 162; and CHEM 312 or consent of instructor.

### **HCS 421 Postharvest Technology of Horticultural Crops (4)**

Respiration, ethylene, ripening and senescence; modified atmosphere packaging, controlled atmosphere storage, packinghouses and transportation; survey of postharvest techniques to maximize commodity shelf-life. Field trip required. 3 lectures, 1 laboratory. Prerequisite: One production class in fruits, vegetables or ornamentals, or consent of instructor.

### **HCS 450 Plant Biotechnology Laboratory (2) (Also listed as BOT 450)**

Application of genetic engineering technology to plants; methods of plant tissue culture and transformation. 2 laboratories. Prerequisite: BIO 303 or BIO 351 or CHEM 373.

### **HCS 461 Senior Project I (2)**

Selection of a project under faculty advisor approval. Initial research and data gathering period for project information. Projects typical of problems which graduates must solve in their fields of study or employment. Project results are presented in a formal written report completed in HCS 462. Contract drawn up with approval of advisor. Minimum 60 hours. Prerequisite: All 100–200 level courses in curriculum; 135 units; ENGL 134, completion of GE Area A.

### **HCS 462 Senior Project II (2)**

Continuation of Senior Project development. Write-up of rough draft and formal draft of project. Completion of formal written report under advisor supervision. Minimum 60 hours. Prerequisite: Completion of HCS 461 with a grade of C or better.

### **HCS 463 Senior Seminar (1)**

Oral presentations by students on their senior projects, critical thinking assignment. Preparation for entry into the business world. Guest speakers. 1 activity. Prerequisite: HCS 461.

### **HCS 470 Selected Advanced Topics (1–4)**

Directed group study of selected topics for advanced students. The Schedule of Classes will list topic selected. Total credit limited to 8 units. 1 to 4 lectures. Prerequisite: Consent of instructor.

### **HCS 471 Selected Advanced Laboratory (1–4)**

Directed group laboratory study of selected topics for advanced students. Open to undergraduate and graduate students. The Schedule of Classes will list topic selected. Total credit limited to 8 units. 1 to 4 laboratories. Prerequisite: Consent of instructor.

### **HCS 500 Individual Study in Horticulture and Crop Science (1–6)**

Advanced independent study planned and completed under the direction of a member of the Horticulture and Crop Science faculty. Total credit limited to 6 units; may be repeated in same term. Prerequisite: Consent of department head, graduate advisor and supervising faculty member.

### **HCS 511 Ecological Biometrics (4) (Also listed as PPSC 511)**

General survey of current analytical methodology available to ecological researchers to evaluate effects and assess the underlying mechanisms that drive natural and cultivated ecosystems. Methodology includes general linear models, ordination, survival analysis, multivariate analyses, and computer simulations. Student research used as a basis for instruction. Total credit limited to 8 units. 3 seminars, 1 activity. Prerequisite: Any one of the following statistical methods courses: CRSC 411, STAT 212, STAT 218, STAT 313, STAT 512, STAT 513 or consent of instructor.

**HCS 539 Graduate Internship in Horticulture and Crop Science (1-9)**

Application of theory to the solution of problems of agricultural production or related business in the fields of horticulture and crop science. Analyze specific management problems and perform general management assignments detailed in a contract between the student, the firm or organization, and the faculty advisor before the internship commences. Degree credit limited to 6 units. Prerequisite: Consent of internship instructor.

**HCS 570 Selected Topics in Horticulture and Crop Science (1-4)**

Directed group study of selected topics for advanced students. The Schedule of Classes will list topic selected. Total credit limited to 12 units; may be repeated in same term. 1-4 seminars. Prerequisite: Graduate standing or consent of instructor.

**HCS 571 Selected Topics Laboratory in Horticulture and Crop Science (1-4)**

Directed group laboratory of selected topics for advanced students. The Schedule of Classes will list topic selected. Total credit limited to 12 units; may be repeated in same term. 1-4 laboratories. Prerequisite: Graduate standing or consent of instructor.

**HCS 575 Postharvest Instrumentation and Experimentation (3)**

Hands-on instruction in the instrumentation available to conduct postharvest research, including discussions of the scientific methods and typical postharvest studies. Implementation and dissemination of a personalized postharvest experiment required, both as a slide presentation and a poster. Independent research. 3 laboratories Prerequisite: STAT 218 and senior or graduate standing.