

# PLANT AND SOIL SCIENCE (PSSC)

See Course Description Symbols and Terms (<https://catalog.csuchico.edu/academic-standards-policies/course-description-symbols-terms/>) for an explanation of course description terminology and symbols, the course numbering system, and course credit units.

## PSSC 101 Introduction to Plant Science 3 Units GE

**Typically Offered:** Fall and spring

Plant structure, growth, reproduction, and responses to the environment. How humans modify plants and the environment to grow crops. 3 hours laboratory, 2 hours lecture. (007765)

**General Education:** Biological Science (5B); Laboratory (B3)

**Grade Basis:** Graded

**Repeatability:** You may take this course for a maximum of 3 units

**Course Attributes:** Lower Division

## PSSC 160 West Coast Crop Production 1 Unit

**Typically Offered:** Inquire at department

A study of people, careers, crops, and systems related to crop industries in the area. An opportunity to meet with professionals and learn about the skills required for research, management, and services that support agricultural production. Meets the second half of the semester. 1 hour lecture. (007779)

**Grade Basis:** Credit/No Credit

**Repeatability:** You may take this course for a maximum of 3 units

**Course Attributes:** Lower Division

## PSSC 198 Special Topics 1-3 Units

**Prerequisite:** Department permission.

**Typically Offered:** Fall and spring

This course is for special topics offered for 1.0-3.0 units. Typically the topic is offered on a one-time-only basis and may vary from term to term and be different for different sections. See the Class Schedule for the specific topic being offered. 3 hours supervision. (007787)

**Grade Basis:** Graded

**Repeatability:** You may take this course for a maximum of 3 units

**Course Attributes:** Lower Division

## PSSC 250 Introduction to Soil Science 3 Units

**Prerequisite:** CHEM 107 or CHEM 111.

**Typically Offered:** Fall only

Soil biology, fertility, chemistry, physical properties, taxonomy and their applications to agricultural management and environmental enhancement. Relationships of soils to the world food supply and population. 3 hours laboratory, 2 hours lecture. (007776)

**Grade Basis:** Graded

**Repeatability:** You may take this course for a maximum of 3 units

**Course Attributes:** Lower Division

## PSSC 260 Foundational Principles of Regenerative Agriculture 3 Units

**Prerequisite:** PSSC 250 or faculty permission.

**Typically Offered:** Fall only

This course introduces students to regenerative agriculture's foundational concepts, principles, and practices. Students explore how regenerative agricultural systems differ from conventional methods, emphasizing sustainability, soil health, ecosystem restoration, biodiversity, and resilience. The course covers key concepts such as soil health, biodiversity, and ecological balance, focusing on techniques that regenerate soil, improve water management, and increase resilience to climate change. Students gain foundational knowledge and practical skills to implement regenerative practices in diverse agricultural settings. 3 hours lecture. (022714)

**Grade Basis:** Graded

**Repeatability:** You may take this course for a maximum of 3 units

**Course Attributes:** Lower Division; Sustainable Course

## PSSC 266 California Orchard Production and Management 3 Units

**Typically Offered:** Fall only

An evaluation of various decisions made in the management of fruit and nut trees. Management topics include studies of climate zones, soil selection, financing, farm organization, irrigation systems, field layout, varietal selection, nutritional needs, harvesting, labor management, marketing, and budgeting. The student is required to prepare a budget and calendar of orchard operations. 3 hours laboratory, 2 hours lecture. (021078)

**Grade Basis:** Graded

**Repeatability:** You may take this course for a maximum of 3 units

**Course Attributes:** Lower Division

## PSSC 274 Greenhouse Management 3 Units

**Typically Offered:** Fall only

Greenhouse construction, environment, and management practices, including heating and cooling, irrigation, fertilization, and pest control. 3 hours laboratory, 2 hours lecture. (007818)

**Grade Basis:** Graded

**Repeatability:** You may take this course for a maximum of 3 units

**Course Attributes:** Lower Division

## PSSC 298 Special Topics 1-3 Units

**Typically Offered:** Inquire at department

This course is for special topics offered for 1.0 - 3.0 units. Typically the topic is offered on a one-time-only basis and may vary from semester to semester and be different for different sections. See the class schedule for the specific topic being offered. 3 hours seminar. (020969)

**Grade Basis:** Graded

**Repeatability:** You may take this course more than once

**Course Attributes:** Lower Division

## PSSC 299 Special Problems 1-3 Units

**Prerequisite:** Faculty permission.

**Typically Offered:** Fall and spring

This course is an independent study of a topic or problem and is offered for 1.0-3.0 units. Students must register with a supervising faculty member. A maximum of 6 units of special problems may be applied toward a bachelor's degree in agriculture. 9 hours supervision. (020960)

**Grade Basis:** Credit/No Credit

**Repeatability:** You may take this course for a maximum of 6 units

**Course Attributes:** Lower Division

<p><b>PSSC 305 Introduction to Wines</b> <span style="float: right;"><b>3 Units</b></span>  <b>Prerequisite:</b> At least 21 years of age.  <b>Typically Offered:</b> Fall only            Grape-growing, and winemaking in California wine regions. Wine and food matching. Sensory evaluation. 1 hour discussion, 2 hours lecture. (007781)  <b>Grade Basis:</b> Graded  <b>Repeatability:</b> You may take this course for a maximum of 3 units  <b>Course Attributes:</b> Upper Division</p>	<p><b>PSSC 309A Directed Work in Field and Row Crops</b> <span style="float: right;"><b>2 Units</b></span>  <b>Prerequisite:</b> AGET 150 or faculty permission.  <b>Typically Offered:</b> Fall and spring            Directed work and discussion on all aspects of field and row crop production practices applicable to northern California. 2 hours activity, 1 hour discussion. (007773)  <b>Grade Basis:</b> Graded  <b>Repeatability:</b> You may take this course for a maximum of 4 units  <b>Course Attributes:</b> Upper Division</p>	<p><b>PSSC 309B Directed Work in Vegetable Crops</b> <span style="float: right;"><b>2 Units</b></span>  <b>Typically Offered:</b> Fall and spring            Directed work and discussion on all aspects of vegetable crop production practices applicable to northern California. 2 hours activity, 1 hour discussion. (007788)  <b>Grade Basis:</b> Graded  <b>Repeatability:</b> You may take this course for a maximum of 4 units  <b>Course Attributes:</b> Upper Division</p>	<p><b>PSSC 330 Rangeland Resources and Management</b> <span style="float: right;"><b>3 Units</b></span>  <b>Typically Offered:</b> Fall only            A survey of North American rangeland resources and the principles of their use and management, including basic plant-animal-soil relationships and multiple uses. 3 hours lecture. (007775)  <b>Grade Basis:</b> Graded  <b>Repeatability:</b> You may take this course for a maximum of 3 units  <b>Course Attributes:</b> Upper Division</p>	<p><b>PSSC 340 Economic Entomology</b> <span style="float: right;"><b>4 Units</b></span>  <b>Typically Offered:</b> Fall only            A survey of the structure and function of insects, leading to a fundamental understanding of applied insect ecology and taxonomy. Particular emphasis is placed on arthropod species of economic importance to humans. 3 hours laboratory, 3 hours lecture. (007797)  <b>Grade Basis:</b> Graded  <b>Repeatability:</b> You may take this course for a maximum of 4 units  <b>Course Attributes:</b> Upper Division</p>	<p><b>PSSC 343 Introduction to Weed Science</b> <span style="float: right;"><b>3 Units</b></span>  <b>Prerequisite:</b> AGRI 331.  <b>Typically Offered:</b> Spring only            Identification, modes of spread, and population ecology of weeds and other invasive plant species. Biological, cultural, mechanical, and chemical control of weeds and invasive species. Methods of crop/vegetation management to control and reduce weed populations. 3 hours laboratory, 2 hours lecture. (007801)  <b>Grade Basis:</b> Graded  <b>Repeatability:</b> You may take this course for a maximum of 3 units  <b>Course Attributes:</b> Upper Division</p>	<p><b>PSSC 345 Horticultural Therapy</b> <span style="float: right;"><b>3 Units</b></span>  <b>Typically Offered:</b> Spring only            An introductory course in horticultural production as therapy. Focus is on the therapeutic benefits available to people engaging in horticultural activities. Covers the special needs associated with elderly, veterans, children and adolescents, and people with disabilities. Overview of techniques and training requirements for therapists ion garden and greenhouse activates. Applicable to students in recreation, kinesiology, nursing, psychology and horticulture. This course fulfills a partial requirement for becoming a registered horticultural therapist. 3 hours lecture. (021807)  <b>Grade Basis:</b> Graded  <b>Repeatability:</b> You may take this course for a maximum of 3 units  <b>Course Attributes:</b> Upper Division</p>	<p><b>PSSC 351 Survey of Regenerative Cropping Systems</b> <span style="float: right;"> <b>3 Units</b></span>  <b>Prerequisite:</b> PSSC 101, PSSC 250.  <b>Typically Offered:</b> Spring only            This course provides hands-on experience in learning and evaluating sustainable agricultural practices in Northern California. It provides a comprehensive overview of regenerative cropping systems, exploring farming practices that enhance soil health, biodiversity, and ecosystem services while maintaining productivity and economic viability. Students analyze various regenerative techniques, such as cover cropping, crop rotations, agroforestry, reduced tillage, and livestock integration, in the field. By the end of the course, students have a thorough understanding of how regenerative systems contribute to sustainable food production and environmental resilience in cropping systems relevant to California agriculture. 3 hours lecture. (022715)  <b>Grade Basis:</b> Graded  <b>Repeatability:</b> You may take this course for a maximum of 3 units  <b>Course Attributes:</b> Upper Division; Sustainable Course</p>	<p><b>PSSC 353 Plant Protection Materials, Methods, and Regulations</b> <span style="float: right;"> <b>3 Units</b></span>  <b>Prerequisite:</b> CHEM 107 or CHEM 111; PSSC 250.  <b>Typically Offered:</b> Fall only            An examination of materials and application methods used for protecting the health of plants in a manner that is safe for the environment, applicator, and consumer. Comprises the laws and regulations, safety, application, properties, mode of action, toxicology, and environmental impacts of pesticides, fertilizers, and other rmaterials used in agriculture. 3 hours laboratory, 2 hours lecture. (007806)  <b>Grade Basis:</b> Graded  <b>Repeatability:</b> You may take this course for a maximum of 3 units  <b>Course Attributes:</b> Upper Division; Sustainable Course</p>
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**PSSC 356 Soil Health and Regenerative Management** 🌱 3 Units**Prerequisite:** PSSC 250 or faculty permission.**Typically Offered:** Spring only

This course explores the ecological processes that occur within the soil of agricultural systems, focusing on the interactions between soil organisms, plant roots, and management practices. Students study how soil ecology affects crop production, sustainability, and ecosystem services within agroecosystems. The course emphasizes theoretical understanding and practical applications of soil management strategies to improve soil health and productivity as reflected in the soil microbiome. Students gain a comprehensive understanding of soil as a dynamic and living resource essential for plant growth, water filtration, and nutrient cycling, and an appreciation of the impact of regenerative agriculture management on soil microbiology and how those changes affect soil health and soil carbon accrual. 2 hours activity, 2 hours lecture. (007808)

**Grade Basis:** Graded**Repeatability:** You may take this course for a maximum of 3 units**Course Attributes:** Upper Division; Sustainable Course**PSSC 361 Agronomic Crops** 3 Units**Prerequisite:** PSSC 101.**Typically Offered:** Fall only

This course introduces students to the world's important agronomic crops including grain, protein, oilseed, and fiber crops. It covers topics such as planting methods and dates, soil fertility management, pest and disease control, and harvesting and post-harvesting methods. The laboratory activities include growing these crops and learning about the cultural practices that maximize crop yield. 3 hours laboratory, 2 hours lecture. (007810)

**Grade Basis:** Graded**Repeatability:** You may take this course for a maximum of 3 units**Course Attributes:** Upper Division**PSSC 363 Forage Crops** 3 Units**Prerequisite:** PSSC 101 or PSSC 330.**Typically Offered:** Inquire at department

Grasses and legumes; their production and management for irrigated pastures, hay, silage, and seed. Plant characteristics and adaptation. 3 hours laboratory, 2 hours lecture. (007812)

**Grade Basis:** Graded**Repeatability:** You may take this course for a maximum of 3 units**Course Attributes:** Upper Division**PSSC 365 Sustainable Vegetable Crop Production** 3 Units**Prerequisite:** PSSC 101.**Typically Offered:** Fall only

An experiential, field-oriented course covering origin, nutrition, environmental requirements, and management strategies for the sustainable production of vegetables. It provides students with the opportunity to appreciate the vast array of vegetables in the world and develop management skills for commercial production of vegetables in a sustainable manner. 3 hours lecture. (021404)

**Grade Basis:** Graded**Repeatability:** You may take this course for a maximum of 3 units**Course Attributes:** Upper Division**PSSC 366 Fruit and Nut Production** 3 Units**Prerequisite:** AGRI 331, PSSC 101.**Typically Offered:** Spring only

Managing and optimizing the fruit and nut production system. Selection of planting sites and varieties, tree training and pruning, pollination, thinning, irrigation, mineral nutrition, and pest management are included. 3 hours laboratory, 2 hours lecture. (007820)

**Grade Basis:** Graded**Repeatability:** You may take this course for a maximum of 3 units**Course Attributes:** Upper Division**PSSC 369 Seed Production** 3 Units**Prerequisite:** PSSC 101.**Typically Offered:** Spring only

This is an overview of seed production principles and practices that involves discussion of suitable environmental and nutritional conditions, as well as specific applied methods for individual important crops to produce quality seeds for the market. The lectures provide a general overview through detailed presentations. Students will also be involved in student-led presentations and discussions on seed production practices of specific crops. Seed testing methods and identification skills will also be emphasized. 3 hours lecture. (022195)

**Grade Basis:** Graded**Repeatability:** You may take this course for a maximum of 3 units**Course Attributes:** Upper Division**PSSC 389 Internship in Plant and Soil Science** 1-6 Units**Prerequisite:** Junior standing, faculty permission.**Typically Offered:** Fall and spring

This course is an internship offered for 1.0-6.0 units. You must register directly with a supervising faculty member. Internship with private industry, state, federal, international, or non-profit organization. Selected topic must be in a Plant and Soil Science Option area. 0 hours independent study. (007824)

**Grade Basis:** Credit/No Credit**Repeatability:** You may take this course for a maximum of 15 units**Course Attributes:** Upper Division**PSSC 390 Food Forever: Comparisons of Sustainable Food Production Systems** 🌱 3 Units GC, GE**Prerequisite:** GE English Composition (1A), GE Critical Thinking (1B), GE Oral Communication (1C), GE Mathematical Concepts/Quantitative Reasoning (2); or faculty permission.**Typically Offered:** Fall only

How ecological factors, technology, and human values interact to determine available choices of food and its production. Consequences of these choices in terms of community structures, resource allocations, and stability of agro-ecosystems. This course is not intended for majors, but open to them. 3 hours lecture. (004874)

**General Education:** Upper-Division Physical/Biological Sciences (UD5); Agriculture, Food, and Environment Pathway; Global Studies Pathway**Grade Basis:** Graded**Repeatability:** You may take this course for a maximum of 3 units**Course Attributes:** Upper Division; Global Cultures Course; Sustainable Course

**PSSC 392 World Food and Fiber Systems** 🌱 3 Units GC, GE

**Prerequisite:** GE English Composition (1A), GE Critical Thinking (1B), GE Oral Communication (1C), GE Mathematical Concepts/Quantitative Reasoning (2); or faculty permission.

**Typically Offered:** Spring only

A study and analysis of various world agriculture systems that provide food and fiber. Environmental, technological, socio-economic, and political factors. 3 hours lecture. (000068)

**General Education:** Upper-Division Physical/Biological Sciences (UD5); Agriculture, Food, and Environment Pathway; Global Studies Pathway

**Grade Basis:** Graded

**Repeatability:** You may take this course for a maximum of 3 units

**Course Attributes:** Upper Division; Global Cultures Course; Sustainable Course

**PSSC 398 Special Topics** 1-3 Units

**Typically Offered:** Inquire at department

This course is for special topics offered for 1.0 - 3.0 units. Typically the topic is offered on a one-time-only basis and may vary from semester to semester and be different for different sections. See the class schedule for the specific topic being offered. 3 hours seminar. (007827)

**Grade Basis:** Graded

**Repeatability:** You may take this course more than once

**Course Attributes:** Upper Division

**PSSC 399 Special Problems** 1-3 Units

**Prerequisite:** Upper-division standing.

**Typically Offered:** Fall and spring

This course is an independent study of a topic or problem and is offered for 1.0-3.0 units. Students must register with a supervising faculty member. Study/research in plant science and soil science under direct supervision of a faculty member. A maximum of 6 units may be applied toward a bachelor's degree in agriculture. 0 hours independent study. (007828)

**Grade Basis:** Credit/No Credit

**Repeatability:** You may take this course for a maximum of 6 units

**Course Attributes:** Upper Division

**PSSC 432 Farm and Ranch Planning and Design** 🌱 3 Units

**Prerequisite:** AGRI 331 or faculty permission.

**Typically Offered:** Fall only

This is a systems-based course that integrates concepts in soils, agronomy/crop production, rangeland sciences, livestock management, grazing practices and ecological cycles into an agricultural land management plan. Students discover and discuss various tools that may be used to achieve their stated holistic context including cover cropping, rangeland seeding, no-till soil management practices, composting as soil enhancement tool, crop rotations, alley cropping, value added production systems, rotational grazing, and effective use of livestock as a tool to improve riparian corridors and reduce erosion. Students determine the best land management approach for a given situation to achieve their stated goals, while assessing the financial and ecological impacts through an economic analysis and land ecological monitoring program. Students apply US Soil Survey and ArcGIS or similar mapping program to land design. 3 hours lecture. (000225)

**Grade Basis:** Graded

**Repeatability:** You may take this course for a maximum of 3 units

**Course Attributes:** Upper Division; Sustainable Course

**PSSC 441 Principles of Integrated Pest Management** 🌱 3 Units

**Prerequisite:** AGRI 331; BIOL 446, PSSC 340, PSSC 343, or PSSC 442.

**Typically Offered:** Spring only

An introduction to the principles and mechanisms of integrated management of insect pests, plant pathogens, and weeds, dealing with such areas as the agro-ecosystem, population dynamics, and specific approaches to pest management. 3 hours lecture. (007834)

**Grade Basis:** Graded

**Repeatability:** You may take this course for a maximum of 3 units

**Course Attributes:** Upper Division; Sustainable Course

**PSSC 442 Pollinator Habitat Planning and Design** 🌱 3 Units

**Prerequisite:** PSSC 101, AGRI 331.

**Typically Offered:** Spring only

This course provides an in-depth study of the critical roles that pollinators play in ecosystems and agricultural systems. It covers the biology and ecology of pollinators, the threats they face, and the strategies to create and manage habitats that support diverse and healthy pollinator populations. Students explore the importance of pollinators in maintaining biodiversity and enhancing ecosystem services, with a focus on practical approaches to conservation and habitat restoration. Students learn how to establish and monitor pollinator habitats through hands-on activities at the University Farm and cooperator farms. They examine case studies and online learning tools to design and map pollinator habitats for specific beneficials in all cropping systems. Students learn how to monitor pollinator habitats for effectiveness through surveys. 3 hours laboratory, 2 hours lecture. (022716)

**Grade Basis:** Graded

**Repeatability:** You may take this course for a maximum of 3 units

**Course Attributes:** Upper Division; Sustainable Course

**PSSC 450 Advanced Regenerative Agriculture Management** 🌱 3 Units

**Prerequisite:** AGRI 331, PSSC 101, PSSC 250, PSSC 260.

**Typically Offered:** Spring only

This senior-level course explores the advanced principles and practices of regenerative agriculture. Students gain in-depth knowledge of ecological farming methods to restore and enhance soil health, increase biodiversity, and improve ecosystem services. Through a combination of theoretical instruction and practical application, this course prepares students to implement and manage regenerative agricultural systems. Guest lecturers discuss their operations; specifics about their production practices; modes of production; holistic context or mission/vision; how they have changed over the years; transition road blocks; what works; economics of RA practices; and advice for new farmers hoping to transition their farms and ranches. 3 hours lecture. (022587)

**Grade Basis:** Graded

**Repeatability:** You may take this course for a maximum of 3 units

**Course Attributes:** Upper Division; Sustainable Course

**PSSC 451 Soil Genesis and Classification** 3 Units

**Prerequisite:** PSSC 250 or faculty permission.

**Typically Offered:** Spring only

An examination of the factors of soil formation, criteria and systems of soil classification. The laboratory consists of five all-day field trips. 3 hours laboratory, 2 hours lecture. (007837)

**Grade Basis:** Graded

**Repeatability:** You may take this course for a maximum of 3 units

**Course Attributes:** Upper Division

- PSSC 453 Soil Fertility and Plant Nutrition** **3 Units**  
**Prerequisite:** PSSC 250 or faculty permission.  
**Typically Offered:** Fall only  
 Properties of soils, fertilizers, and plant materials. Soil amendments and soil reaction effects on plants. Fertilizer usage. 3 hours laboratory, 2 hours lecture. (007840)  
**Grade Basis:** Graded  
**Repeatability:** You may take this course for a maximum of 3 units  
**Course Attributes:** Upper Division
- PSSC 459 Crop Physiology** **4 Units**  
**Prerequisite:** PSSC 101, PSSC 250 (or equivalents).  
**Typically Offered:** Spring only  
 This course is designed to examine the yield potential of field crops in various environments. Students learn about the importance of crop physiology in crop production and breeding. Topics include canopy architecture and radiation interception, photosynthesis and respiration, carbon and nitrogen allocation, plant-water relationships, and plant response to restricted environments. The course provides practical experience using instrumentation to measure physiological processes in laboratory and field. Special emphasis includes design of field and greenhouse experiments. 3 hours laboratory, 3 hours lecture. (021698)  
**Grade Basis:** Graded  
**Repeatability:** You may take this course for a maximum of 4 units  
**Course Attributes:** Upper Division
- PSSC 466 Climate Impacts on Agricultural Systems**  **3 Units**  
**Prerequisite:** AGRI 331, PSSC 101.  
**Typically Offered:** Spring only  
 This course examines the complex relationship between global ecosystems, climate change, and food production. Students explore how climate change impacts various aspects of food systems, from agricultural practices and crop yields to food security and global hunger. The course also delves into potential solutions and adaptation strategies to ensure a sustainable and resilient food system in a dynamic and changing world. 3 hours lecture. (022717)  
**Grade Basis:** Graded  
**Repeatability:** You may take this course for a maximum of 3 units  
**Course Attributes:** Upper Division; Sustainable Course
- PSSC 489 Internship: Plant/Soil Science** **1-3 Units**  
**Prerequisite:** PSSC 389, senior/graduate standing, faculty permission.  
**Typically Offered:** Fall and spring  
 Internship with private industry, state, federal, international, or non-profit organization. Selected topic must be in a PSSC option area. 9 hours supervision. (007861)  
**Grade Basis:** Credit/No Credit  
**Repeatability:** You may take this course for a maximum of 15 units  
**Course Attributes:** Upper Division
- PSSC 498 Special Topics** **1-3 Units**  
**Typically Offered:** Fall and spring  
 This course is for special topics offered for 1.0-3.0 units. Typically the topic is offered on a one-time-only basis and may vary from term to term and be different for different sections. See the Class Schedule for the specific topic being offered. 3 hours seminar. (007864)  
**Grade Basis:** Graded  
**Repeatability:** You may take this course more than once  
**Course Attributes:** Upper Division
- PSSC 499 Special Problems** **1-3 Units**  
**Prerequisite:** Faculty permission.  
**Typically Offered:** Fall and spring  
 This course is an independent study of special problems offered for 1.0-3.0 units. You must register directly with a supervising faculty member. 0 hours independent study. (007865)  
**Grade Basis:** Credit/No Credit  
**Repeatability:** You may take this course for a maximum of 6 units  
**Course Attributes:** Upper Division
- PSSC 499H Honors Research in Plant and Soil Science** **6 Units**  
**Prerequisite:** Faculty permission.  
**Typically Offered:** Fall and spring  
 An intensive 6-unit, one-year course in agricultural research. See College office for details. Open only to students with at least a 3.0 GPA in the major. The course consists of a faculty-supervised research project, a thesis, and a public presentation. 18 hours independent study. (020213)  
**Grade Basis:** Graded  
**Repeatability:** You may take this course for a maximum of 6 units  
**Course Attributes:** Upper Division