Plant Science

Overview

This CRC program offers courses designed for students in the Agriculture, Agriculture Business, and Horticulture programs.

Plant Science (PLTS) Courses

PLTS 299 Experimental Offering in Plant Science

Units: 0.5 - 4
Prerequisite: None.
Catalog Date: June 1, 2020

PLTS 300 Introduction to Plant Science

Units: 3
Hours: 36 hours LEC; 54 hours LAB
Prerequisite: None.
Transferable: CSU; UC
General Education: AA/AS Area IV
Catalog Date: June 1, 2020

This course is designed to provide the students with a working knowledge of the fundamental structures and processes of plants. Principles to be applied cover plant structures, physiology, heredity, environmental relationship to growth, adaptation, and management of crops. Techniques of research, exploration of plant growth, and identification of economical crops will be included. Field trips may be required.

Student Learning Outcomes

Upon completion of this course, the student will be able to:

- SLO 1: Demonstrate independent learning and effective communication skills.
- Operate independently by attending class regularly.
- Utilize time management effectively and prioritize tasks to meet deadlines.
- Communicate effectively (orally and/or written)
- SLO 2: Demonstrate a fundamental understanding of the California agriculture industry.
- Identify the major markets of the agriculture industry and verify how these markets function in their county in the state of California.
- Identify and evaluate the various agricultural occupations and the associated employment requirements and opportunities.
- Identify and evaluate common practices of various agricultural business types.
- SLO 3: Demonstrate a fundamental understanding of basic botany and plant genetics as it relates to plant science and production agriculture.
- Assess the role of plant cells, cells structures, and basic genetics in vegetative development, plant growth, and plant production.
- Recognize the major structures of plants and explain the function of each major plant structure.
- Identify and explain the requirements of plant growth.
- Explain plant identification and botanical terminology.
- Examine the role of plants in genetic engineering and biotechnology.
- Analyze the characteristics and qualities of agronomic, vegetable, and ornamental crops.
- Assess plant propagation through sexual and asexual methods.
- SLO 4: Demonstrate a fundamental understanding of soils and soil-water, soil-water-plant relationships. Explain soil development and structure, and describe sustainable soil maintenance and management practices.
- Evaluate various plant species' nutritional needs, and measure, mix, and apply fertilizers.
- Evaluate soil-water and soil-water-plant relationships.
- Evaluate water efficient irrigation methods and estimate watering needs.
- SLO 5: Demonstrate a fundamental understanding of common agricultural practices.
- Identify common agricultural / horticultural tools and equipment.
- Describe the methods utilized to plant and care for various crops.
- Compare various cultural practices, and the resulting effect of each on plant health and development.
- Describe the process of plant selection.
- Recognize symptoms and signs of plant diseases and pests, and identify past damage.
- Identify and explain common integrated pest management practices.
- Analyze the methods and practices utilized in the establishment, production, and management of vegetable crops.
- Analyze the methods and practices utilized in the establishment, production, and management of fruit and nut crops.
- Analyze the methods and practices utilized in the establishment, production, and management of flower and foliage crops.
- Analyze the methods and practices utilized in the establishment, production, and management of forage and ornamental grasses.
- Evaluate some of the roles plants play in herbology and pharmacology.

**PLTS 310 Soils, Soil Management, and Plant Nutrition**

**Same As:** HORT 302  
**Units:** 3  
**Hours:** 36 hours LEC; 54 hours LAB  
**Prerequisite:** None.
**Advisory:** HORT 300 and PLTS 300  
**Transferable:** CSU, UC  
**General Education:** AA/AS Area IV; CSU Area B1; CSU Area B3; IGETC Area 5A; IGETC Area 5C  
**C-ID:** C-ID AG - PS 128L  
**Catalog Date:** June 1, 2020

This course provides a basic knowledge of the physical, chemical, and biological properties of soils. The course includes factors of: fundamental soil properties, soil and plant relationships, principles of soil formation, fertilizers and soil management, salinity, pH, erosion management, and non-agricultural uses. Field trips may be required. This course is the same as Hort 302, and only one may be taken for credit.

**Student Learning Outcomes**

Upon completion of this course, the student will be able to:

- SLO 1: Demonstrate independent learning and effective communication skills.
- SLO 2: Demonstrate a fundamental understanding of the physical and chemical properties of soils.
- SLO 3: Demonstrate a fundamental understanding of the role of soil in plant nutrition.
- SLO 4: Demonstrate a fundamental understanding of best soil management practices in sustainable horticulture.
- Analyze the physical, chemical, and biological properties of soils, and understand their formation and how they are reservoirs for nutrients, water, and microscopic life.
- Assess the physical and chemical properties of soil through laboratory analysis.
- Identify the chemical elements necessary for plant growth through laboratory analysis.
- Diagnose common chemical deficiency and toxicity symptoms.
- Examine common cultural practices utilized to keep a soil's nutritional elements in an adequate supply and proper balance.
- Validate the fundamentals of plant nutrition through laboratory analysis.
- Explain why our soils, as a natural resource, must be managed and preserved.
- Demonstrate how to effectively manage the physical, chemical, and biological properties of soils for sustained productivity.
- Examine the methods and means of utilizing organic matter to improve soil structure, support soil biology, and to maintain and stimulate soil health.
- Analyze the effects of soil compaction in crop production and horticultural situations, and explain common methods utilized to alleviate soil compaction.
- Analyze the effects of soil erosion in crop production and horticultural situations, and explain common methods utilized to prevent soil erosion.
- Explain why irrigated soils must be managed in special ways to preserve its productivity.
- Explain the effects of salts and high sodium levels on soil structure, pH, drainage, and plant productivity.
- Validate the fundamentals of soil management through laboratory analysis.

**PLTS 332 Integrated Pest Management**

**Same As:** HORT 303  
**Units:** 3  
**Hours:** 36 hours LEC; 54 hours LAB  
**Prerequisite:** None.
**Advisory:** HORT 300 and PLTS 300  
**Transferable:** CSU  
**Catalog Date:** June 1, 2020

This course is a study of local plant pests including weeds, diseases, invertebrates, and vertebrates. It includes recognition of symptoms and causes, life cycle of the pests, host and habitat relationships, and the integrated pest management strategies and best management practices to achieve control. Field trips may be required. This course is the same as HORT 303, and only one may be taken for credit.

**Student Learning Outcomes**
Upon completion of this course, the student will be able to:

- SLO 1: Demonstrate independent learning and effective communication skills.
- Utilize time management effectively and prioritize tasks to meet deadlines.
- Demonstrate effective oral and written communication.
- SLO 2: Demonstrate a fundamental understanding of jobsite safety and effective and efficient work habits.
- Validate and demonstrate safety consciousness in work dress/apparel, tool use, jobsite demeanor, and personal protective equipment use.
- Assess jobsite hazards, reduce work related risks, and influence others to work in a safe and efficient manner.
- Select appropriate personal protective equipment for a given pesticide.
- Demonstrate the safe and efficient use of pesticide application equipment.
- SLO 3: Assess, evaluate, and implement the principles and practices of integrated pest management.
- Evaluate the economic significance of plant pest problems in horticulture.
- Assess the reasons conventional pest control options are no longer desirable.
- Demonstrate the ability to diagnose and analyze pest damage, recommend integrated pest management strategies, and select proper control measures.
- Identify insects and closely related plant pests, common diseases and abiotic plant disorders, weed species, and beneficial organisms as evident from existing signs and symptoms.
- Compare and contrast various methods of conventional and integrated pest management strategies.

PLTS 498 Work Experience in Plant Science

Units: 1 - 4
Hours: 60 - 300 hours LAB
Prerequisite: None
Transferable: CSU
General Education: AA/AS Area III(b)
Catalog Date: June 1, 2020

This course provides students with opportunities to develop marketable skills in preparation for employment in their major field of study or advancement within their career. It is designed for students interested in work experience and/or internships in transfer level degree occupational programs. Course content includes understanding the application of education to the
workforce; completion of required forms which document the student’s progress and hours spent at the work site; and developing workplace skills and competencies. Appropriate level learning objectives are established by the student and the employer. During the semester, the student is required to participate in a weekly orientation and 75 hours of related paid work experience, or 60 hours of unpaid work experience for one unit. An additional 75 or 60 hours of related work experience is required for each additional unit. Work Experience may be taken for a total of 16 units when there are new or expanded learning objectives. Only one Work Experience course may be taken per semester.

Student Learning Outcomes

Upon completion of this course, the student will be able to:

- DEMONSTRATE AN UNDERSTANDING AND APPLICATION OF PROFESSIONAL WORKPLACE BEHAVIOR IN A FIELD OF STUDY RELATED ONE’S CAREER.(SLO 1)
- Understand the effects time, stress, and organizational management have on performance.
- Demonstrate an understanding of consistently practicing ethics and confidentiality in a workplace.
- learn the career/life planning process and relate its relevancy to the student.
- Demonstrate an understanding of basic communication tools and their appropriate use.
- Demonstrate an understanding of workplace etiquette.
- DESCRIBE THE CAREER/LIFE PLANNING PROCESS AND RELATE ITS RELEVANCY TO ONE’S CAREER.(SLO 2)
- Link personal goals to long term achievement.
- Display an understanding of creating a professional first impression.
- Understand how networking is a powerful job search tool.
- Understand necessary elements of a résumé.
- Understand the importance of interview preparation.
- DEMONSTRATE APPLICATION OF INDUSTRY KNOWLEDGE AND THEORETICAL CONCEPTS AS WRITTEN IN LEARNING OBJECTIVES IN PARTNERSHIP WITH THE EMPLOYER WORK SITE SUPERVISOR.(SLO 3)
- Identify how continual learning increases career success.

PLTS 499 Experimental Offering in Plant Science

| Units: | 0.5 - 4 |
| Prerequisite: | None. |
| Transferable: | CSU |
| Catalog Date: | June 1, 2020 |