



Course Outline

BASIC COURSE INFORMATION

Course Number: AGPS 242
Course Title: INTRODUCTION TO PLANT SCIENCE
C-ID Number: C-ID AG 106L AND C-ID PS 106L

Total Student Hours and Credit			
		Hours/Week	Hours/Term
Lecture Hours	in-class	2.00	36.00
	out-of-class	4.00	72
Lab Hours	in-class	4.00	72.00
	out-of-class	0	0
Activity Hours	in-class	0	0
	out-of-class	0	0
TBA Hours Per Term			0
Total Student Hours Per Term:			180.00
Hours-per-unit Divisor			54.00
Units of Credit:			3.00

Fall semester term is 18 weeks. Spring semester term is 17 weeks. The term length multiplier is 17.5 weeks.
 Curriculum is calculated based on 18 weeks.

Catalog Description:

Provides 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. Scientific research, exploration of plant growth, and identification of economical crops will be included.

Schedule Description:

Provides 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. Scientific research, exploration of plant growth, and identification of economical crops will be included. Transfer: CSU, UC.

Division: Business Education

Department: Agriculture
Minimal Qualification
Discipline Designation Agriculture OR Agricultural Production
(MQDD):
Degree Applicability: Credit - Degree Applicable
Methods of Instruction:

- Lecture and/or discussion
- Laboratory/Studio/Activity
- Distance Education
- Lecture/Lab

Grading Method:

- Letter Grade or P/NP

Repeatability:

Course Cap: 30

Face-to-Face Modality 30

Limit:

DE Modality Limit: 30

STUDENT LEARNING OUTCOMES

1. Examine the basic functions of plant processes
2. Analyze how crops grow while demonstrating knowledge of environmental and managerial conditions
3. Demonstrate proper management and care of crops, vegetables, and ornamental plants
4. Explain crop genetics and research development of crop or ornamental improvements

COURSE CONTENT

Objectives:

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

1. Categorize the roles of higher plants in the living world.
 - Lab Reports
 - Quizzes/Exams
 - Written/Typed Homework
2. Describe the structural components of higher plants.
 - Lab Reports
 - Quizzes/Exams
 - Written/Typed Homework
3. Explain and identify plants based on Botanical Nomenclature.
 - Field Work
 - Lab Reports
 - Quizzes/Exams

- Written/Typed Homework
4. Explain improvements of cultivated plants.
 - Lab Reports
 - Quizzes/Exams
 - Written/Typed Homework
 5. Describe sexual and asexual reproduction in higher plants.
 - Lab Reports
 - Quizzes/Exams
 - Written/Typed Homework
 6. Explain photosynthesis, respiration, and translocation in higher plants.
 - Lab Reports
 - Quizzes/Exams
 - Written/Typed Homework
 7. Describe the physical and chemical properties of soils, water and fertilizer.
 - Lab Reports
 - Quizzes/Exams
 - Written/Typed Homework
 8. Describe the climate influences on plant growth and development.
 - Lab Reports
 - Quizzes/Exams
 - Term or Other Papers
 - Written/Typed Homework
 9. Demonstrate harvest practices.
 - Field Work
 - Lab Reports
 - Performance Exams
 10. Categorize the biological competitors of higher plants.
 - Lab Reports
 - Quizzes/Exams
 - Written/Typed Homework
 11. Describe the scientific method and explain its application in solving problems in plant and soil science.
 - Lab Reports
 - Quizzes/Exams
 - Written/Typed Homework

Topics & Scope:

1. The role of higher plants in the living world
 - A. Fossil fuels
 - B. Food chains
 - C. Industrial products
 - D. Lower forms of plant life
 (Obj 1)
2. Structure of higher plants
 - A. The life cycle of a plant
 - B. The cell
 - C. Cell structure

- D. The plant body
(Obj 2)
- 3. Naming and classifying plants
 - A. Climate
 - B. Botanical names
 - C. Botanical classifications
 - D. Plant taxonomy

(Obj 3)
- 4. Origin, domestication, and improvement of cultivated plants
 - A. Origin of cultivated plants
 - B. Domestication of plants
 - C. Crop plants
 - D. Germplasm
 - E. Genetic concepts in plant improvement

(Obj 4)
- 5. Propagation of plants
 - A. Propagation methods
 - B. Sexual propagation
 - C. Vegetative propagation

(Obj 5)
- 6. Vegetative and reproductive growth and development
 - A. Vegetative growth and development
 - B. Reproductive growth and development
 - C. Plant growth regulators

(Obj 5)
- 7. Photosynthesis, respiration, and translocation
 - A. Photosynthesis
 - B. Plant respiration
 - C. Electron transport system
 - D. Assimilation

(Obj 6)
- 8. Soil and soil water
 - A. Factors involved in soil formation
 - B. Physical properties of soil
 - C. Chemical properties of soil
 - D. Soil organisms
 - E. Soil organic matter
 - F. Soil water
 - G. Water quality

(Obj 7)
- 9. Soil and water management and mineral nutrition
 - A. Land preparation
 - B. Irrigation
 - C. Mineral nutrition
 - D. Soil conservation

(Obj 7)
- 10. Climatic influences on crop production
 - A. Climatic factors affecting plant growth

- B. Climatic requirements of some crop plants
- C. Weather and climate
- D. Climatic influences on plant diseases and pests

(Obj 8)

11. Crops/ Harvest Practices

- A. Crops grown in region
- B. Harvest practices
- C. Post-harvest practices

(Obj 9)

12. Biological competitors of useful plants

- A. Weeds
- B. Plant diseases
- C. Plant pests
- D. Nematodes
- E. Rodents
- F. Pesticide impacts on the environment

(Obj 10)

13. The scientific method

- A. Developing a hypothesis
- B. Scientific design
- C. Application to plant/soil problems

(Obj 11)

Assignments:

Examples of independent assignments to fulfill 72 total hours of required out-of-class work:

1. Students will read 10 plant science related articles from various sources (magazine, newspaper, scientific journal, blogs) and write a summary and analysis response each article utilizing plant science knowledge. (Obj 1, 2, 4, 5, 6, 7, 8, 10, 11)
2. Students will plan, grow and harvest a variety of crops on a small scale. (Obj 4, 7, 8, 9)

Class participation and assignments require and develop critical thinking.

1. Students will develop a plant collection of 5 weeds, 5 trees, 5 perennials and 5 annuals. These items will be pressed and provide documentation of requirements such as: Identification of botanical structures, zones, function in the landscape, life cycle., etc. (Obj 1, 2, 3, 8, 10, 11)
2. Students will keep a laboratory journal up to date which will include hypothesis, observations, and raw data. (Obj 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11)

Methods of Evaluation:

- Written/Typed Homework
- Field Work
- Quizzes/Exams
- Lab Reports

Texts, Readings, and Materials:

- **Textbooks**

McMahon, M., Kofranek, A., Rubatzky, V. *Plant Science: Growth, Development, and Utilization of Cultivated Plants* (5th/e). Pearson, (2011). Rationale: This book is designed specifically for Agricultural Introduction to Plant Science and is the most current edition.

- **Manuals**

Exploring the World of Plants: General Botany Lab Manual Kendal Hunt Publishing, , 01-01-2015.

Cuesta General Education

Area A - Physical and Life Sciences

Plant Science discusses scientific method in lecture and applies it in a lab setting. Students grow plants from asexual and sexual methods and then document their progress. They apply variables to the living equations such as biotic and abiotic problems. They diagnose insect problems and beneficials. They apply and observe the effects of fertilizer and different growing conditions (light, no light, different temperatures, different soil etc). Genetics and GMO's are also discussed with the impacts on social, economic and environmental impacts on the world production of food.

IGETC Area 5: Physical Science and Biological Science

5B - Life Science

course approved by the IGETC review committee effective F 19

5C - Laboratory Activity

course approved by the IGETC review committee effective F 19

CSU GE Area B: Physical Universe and its Life Forms

B2 - Life Science

B3 - Laboratory Activity

UC Transfer Course

University of California, Davis

This course will be submitted to UC in June 2017

CSU Transfer Course

California Polytechnic State University