Lecture Contact Hours: 32-36; Outside-of-Class Hours: 64-72;
Laboratory Contact Hours: 48-54; Outside-of-Class Hours: 0;
Total Student Learning Hours: 144-162

CUYAMACA COLLEGE
COURSE OUTLINE OF RECORD

Ornamental Horticulture 140 – Soils

2 hours lecture, 2 units
3 hours laboratory, 1 unit
Total units: 3 units

Catalog Description
Study of soil formation, characteristics, and classification with an emphasis on the management of various soil types with regard to pH, salinity, texture, organic matter control and other variables. The lab will include investigation of soil conditions, problems and management solutions common to soils in Southern California.

Prerequisite
None

Course Content
1) Lecture:
   a. Concepts of soil
   b. Soil as a medium for plant growth
   c. Physical properties of soil
   d. Soil water
   e. Soil water management
   f. Soil organic matter
   g. Soil pH
   h. Soil genesis and the soil survey
   i. Soils and mineral nutrition of plants
2) Lab:
   a. Soil texture
   b. Soil structure
   c. Soil pH
   d. Saline and sodic soils
   e. Soil compaction
   f. Soil management in the landscape

Course Objectives
Students will be able to:
1) Describe various methods and results of soil evolution.
2) Determine soil textural class and structure.
3) Summarize various methods of soil-water management.
4) Compare and contrast the causes, significance and alteration of soil pH and salinity.
5) Determine the proper mineral nutrition of plants.

Method of Evaluation
A grading system will be established by the instructor and implemented uniformly. Grades will be based on demonstrated proficient in subject matter determined by multiple measurements for

evaluation, one of which must be essay exams, skills demonstration or, where appropriate, the symbol system.

1) Assignments, quizzes, and/or exams including final exam which measure students' ability to describe and classify soil formation and to recommend management strategies for various soil types with regard to pH, salinity, texture, organic matter control and other variables.
2) Group projects and lab assignments which measure students' ability to investigate soil conditions, identify problems, and propose and implement management solutions.

Special Materials Required of Student
None

Minimum Instructional Facilities
1) Classroom
2) Laboratory with sinks
3) Soil blenders, pH meters, salinity meters, triple beam balances, mortars and pestles, sieves, soil samples, hydrometers, graduated cylinders, soil color charts, tape measures, water bottles, pH test kits

Method of Instruction
1) Lecture and laboratory
2) Field trips

Out-of-Class Assignments
1) **Reading:** course material; other course related multimedia.
2) **Writing:** lab write-ups.
3) **Other:** preparation for lab assignments.

Texts and References
1) Required (representative examples):
   a. Pier and Barlow. *Western Fertilizer Handbook,* 10thedition. Waveland Press, 2023.
   b. Parker. *Plant Soil & Science: Fundamentals and Applications,* 2nd edition. Cengage, 2023.
2) Supplemental: None

Student Learning Outcomes
Upon successful completion of this course, students will be able to:
1) Describe soil physical characteristics including texture, structure and morphology.
2) Describe soil chemical properties and how to manage soil chemical problems. Including soil pH and salinity.
3) Determine the proper mineral nutrition of plants and the proper calibration and application of fertilizers.