

CUYAMACA COLLEGE
COURSE OUTLINE OF RECORD

ORNAMENTAL HORTICULTURE 120 – FUNDAMENTALS OF ORNAMENTAL HORTICULTURE

2 hours lecture, 3 hours laboratory, 3 units

Catalog Description

Study of plant structure and function. Topics include basic principles of soil science and fertilizer requirements, and the growth of plants in regard to the environmental factors of water, light and temperature. The lab provides an overview of various skills needed in all fields of ornamental horticulture including pruning, basic equipment operation, fertilizer application and general nursery skills.

Prerequisite

None

Course Content

- 1) Lecture:
 - a. Basic plant tissues
 - b. Plant structure and function
 - c. Soil texture and structure
 - d. Soil chemistry
 - e. Plant mineral nutrition
 - f. Soil-plant-water relationships
 - g. Nutrient deficiency symptoms
- 2) Lab:
 - a. Pruning
 - b. Use of the skip steer loader
 - c. Fertilizing
 - d. Propagation
 - e. Transplanting
 - f. Planting layout and installation
 - g. Container plant care
 - h. Staking and guying
 - i. Irrigation methods
 - j. Small horticultural equipment use

Course Objectives

Students will be able to:

- 1) Compare and contrast monocots, dicots and gymnosperms based on observable characteristics of vascular systems, root and stem tissues, and leaf and flower structures.
- 2) Describe major plant tissues including xylem, phloem, meristematic, and supporting tissues, and explain each tissues physiological function within the larger plant system.
- 3) Differentiate between various soil types based on texture and structure.
- 4) Utilize soil properties learned in class to distinguish between A, B, C & R soil horizons.
- 5) Compare and contrast the effect on plants from high and low levels of soil pH, soluble salts (total dissolved salts) and sodium, and specify correction or management activities for adverse soil conditions including alkaline and acid soils, saline soils, sodic soils, calcareous soils.
- 6) Compare and contrast hygroscopic, capillary and gravitational water and explain how each behaves within the soil profile.

- 7) Describe the movement of water through the soil profile and analyze the effects of irrigation practices on soil moisture content.
- 8) Based on the system learned in class, classify the essential mineral nutrients as macronutrients, micronutrients, and evaluate plant characteristics to determine if symptoms are due to mineral nutrient deficiencies.
- 9) Based on established horticultural practices, analyze tree structure and demonstrate appropriate pruning for structure and form.
- 10) Operate a skid steer loader based on prescribed safety standards.
- 11) Using techniques established in class, apply proper planting and transplanting techniques on seedlings and container plants, and demonstrate how to propagate plants by cutting and division.

Method of Evaluation

A grading system will be established by the instructor and implemented uniformly. Grades will be based on demonstrated proficiency 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) Quizzes and exams that measure students' ability to:
 - a. Utilize observable characteristics to identify and describe plant structures and tissues and their associated physiological functions.
 - b. Classify plants based on vascular systems, root and stem tissues, and leaf and flower structures.
 - c. Utilize soil property characteristics to classify soil types and horizons, and explain how water behaves within the soil profile.
 - d. Identify typical soil problems based on criteria learned in class, and specify the appropriate corrective or management practices.
 - e. Classify the essential mineral nutrients and recommend corrective action for mineral nutrient deficiencies.
- 2) Practical exams that measure students' ability to:
 - a. Demonstrate proper and safe operation horticultural tools and equipment.
 - b. Establish systematic pruning of young trees for structure and form.
 - c. Demonstrate horticultural practices for planting, transplanting, and propagation.
- 3) Exercises that require students to demonstrate horticultural practices for planting, transplanting and propagation.
- 4) Exercises that require students to demonstrate proper and safe operation of horticultural tools and equipment.

Special Materials Required of Student

Sturdy closed toe shoes

Minimum Instructional Facilities

- 1) Skid steer loader
- 2) Pruning tools: shears, loppers, extension pruner, saws, sharpening stone
- 3) Transplanting material: soil, containers, plants, stakes, hose
- 4) Tree training tools including orchard ladders
- 5) Maintenance equipment: shovels, hoes, rakes, picks
- 6) Basic construction equipment: hammers, saws, nails, etc.
- 7) Stereoscopic microscopes (12)
- 8) Basic masonry tools: trowels, concrete mixer, levels

Method of Instruction

- 1) Lecture and demonstration
- 2) Group and individual laboratory activities
- 3) Assignments
- 4) Field trips

Out-of-Class Assignments

- 1) Reading assignments
- 2) Soil collection from off-campus locations

Texts and References

- 1) Required (representative example): Capon, Brian. *Botany for Gardeners*. 3rd edition. Workman, 2010.
- 2) Supplemental: Pittenger, Dennis. *California Master Gardener Handbook*. 2nd edition. UC ANR, 2014.

Exit Skills

Students having successfully completed this course exit with the following skills, competencies and/or knowledge:

- 1) Identify and describe the function of the following plants: xylem, phloem, vascular cambium.
- 2) Describe the tissues and their functions in the following plant organs: leaves, roots, stems, and fruit.
- 3) Describe soil textural class, soil horizons and common soil series.
- 4) Compare and contrast the effect on plants from high and low levels of pH, soluble salts and sodium in soils.
- 5) Describe correction or adaptation to soil conditions including alkaline and acid soils, saline soils, sodic soils, calcareous soils.
- 6) Describe soil water and plant relationships including soil moisture measurement.
- 7) List the essential elements with their deficiency and toxicity symptoms.

Student Learning Outcomes

Upon successful completion of this course, students will be able to:

- 1) Name the plant organs and describe plant tissues they contain.
- 2) Use appropriate online resources and field tools to estimate soil texture.
- 3) Prepare for field work, choosing the proper personal protective equipment for specific tasks.
- 4) Prune and plant young plants in conformance with current best horticultural practice.