Lecture Contact Hours: 32-36; Homework Hours: 64-72; Total Student Learning Hours: 96-108
Laboratory Contact Hours: 48-54; Homework Hours: 0; Total Student Learning Hours: 48-54

CUYAMACA COLLEGE
COURSE OUTLINE OF RECORD

Ornamental Horticulture 240 – Greenhouse Plant Production

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

Catalog Description
Study of greenhouse plant production. Emphasis on the programming of greenhouse crops common to Southern California. The course will cover equipment, structures, environmental control, estimation of crop production requirements, and production and sales of common greenhouse crops.

Prerequisite
None

Course Content
1) Lecture:
   a. Crop selection and programming
   b. Marketing wholesale and retail
   c. Greenhouse crop requirements
   d. Greenhouse plant pricing
   e. Labor and production management
   f. Greenhouse structure and construction
   g. Growing media
2) Laboratory:
   a. Planting methods and spacing
   b. Crop timing
   c. Greenhouse production methods
   d. Flower forcing techniques
   e. Greenhouse equipment
   f. Greenhouse benches
   g. Greenhouse design

Course Objectives
Students will be able to:
1) Program and grow a greenhouse crop based on established horticultural practices.
2) Distinguish between various substrate based on substrate composition.
3) Propagate plants using cutting methods demonstrated in class.
4) Analyze various plants and draw conclusions on environment, substrate, watering, and fertilization to determine if corrective measures apply.
5) Identify and describe the function of the structural components of a greenhouse and compare and contrast greenhouse construction styles based on established industry standards.
6) Distinguish between and demonstrate the use of greenhouse environmental controls.
7) Identify crop problems between insects, disease, environment, and watering based on observations to determine if biotic or abiotic disturbances are present.
8) Prepare a basic business and marketing plan for a specific crop from production to market including the principles of plant branding.
9) Demonstrate proper planting, transplanting of liners, and production of cuttings.
10) Predict appropriate cutting methods, select quality propagation stock, and produce viable cuttings

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. Classify greenhouse styles and compare and contrast various greenhouses including suitability to differing greenhouse crops.
   b. Identify functions and describe the use of various greenhouse components.
   c. Identify typical biotic and abiotic problems associated with greenhouse crops and specify the appropriate corrective management or cultural practices.
   d. Demonstrate horticultural practices for programming and growing a greenhouse crop.
2) Exercises that require students to:
   a. Observe, analyze, program, grow and market a crop.
   b. Observe and analyze changes in growth of a single plant and give your opinion and reasons for actual plant growth as compared to expected plant growth.
   c. Analyze and interpret articles on the concept of plant branding and devise a model to apply the branding to crops produced in class.
3) Practical exams that measure students' ability to:
   a. Select appropriate cutting stock.
   b. Produce cuttings.
   c. Operate greenhouse controls.
   d. Properly transplant cuttings and liners.

Special Materials Required of Student
None

Minimum Instructional Facilities
1) 2,500 square foot greenhouse
2) 5,000 square foot shadehouse
3) One-half acre growing area
4) Containers, shears, labels
5) Smart classroom

Method of Instruction
1) Lecture and demonstration
2) Laboratory
3) Field trips
4) Research projects

Out-of-Class Assignments
Reading assignments
Preparation of business marketing plan

Texts and References
1) Required (representative examples):
   a. Nelson, *Greenhouse Operation and Management*. 7th edition, Prentice Hall, 2011.
   b. McMahon, *An Introduction to Greenhouse Production*. 2nd ed. Curriculum Materials Service, The Ohio State University, 2000.
2) Supplemental: Taylor, *Secrets to a Successful Greenhouse and Business*. Greenearth Pub., 2010.

Student Learning Outcomes
Upon successful completion of this course, students will be able to:
1) Program and grow a greenhouse crop based on established horticultural practices.
2) Distinguish between various substrate based on substrate composition.
3) Propagate plants using cutting methods demonstrated in class.
4) Analyze various plants and draw conclusions on environment, substrate, watering, and fertilization to determine if corrective measures apply.

5) Identify and describe the function of the structural components of a greenhouse and compare and contrast greenhouse construction styles based on established industry standards.
6) Distinguish between and demonstrate the use of greenhouse environmental controls.
7) Identify crop problems between insects, disease, environment, and watering based on observations to determine if biotic or abiotic disturbances are present.
8) Prepare a basic business and marketing plan for a specific crop from production to market including the principles of plant branding.
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