

Virginia Western Community College

HRT 226

Greenhouse Management

Prerequisites

None

VCCS Course Description

Discusses the theoretical and applied practices of managing a greenhouse facility. Emphasizes greenhouse construction and design, environmental control, energy conservation, and related topics.

VWCC Discipline Specific Course Description

Discusses the theoretical and applied practices of managing a greenhouse facility. Emphasizes greenhouse construction and design, environmental control, energy conservation, and related topics. Discusses fertilization and soils as it relates to greenhouse crop production.

Semester Credits: 3

Lecture Hours: 2

Required Materials

None

Textbook

Nelson, Paul V.: Greenhouse Operation and Management, Seventh Edition, Pearson Prentice Hall, Upper Saddle River, NJ, 2012, ISBN: 13:978-0-13-243936-7.

Other Required Materials:

None

VCCS COURSE OUTCOMES

- Not Available

Note to Instructors

- Utilize trade periodicals and vendor catalogs to enhance course content.
- Utilize field trips to local greenhouse operations.
- Utilize the Virginia Western Greenhouse facility for course instruction and lab sessions.
- Crop production of mums or other plants for course lab session.
- Crop production business creation project for student completion.

VWCC AND DISCIPLINE SPECIFIC OUTCOMES

At the completion of this course, the student should be able to:

- Understand basic classification and nomenclature of plants
- Understand basic plant morphology
- Read and understand the USDA Plant Hardiness Zone Map
- Identify 160 designated trees and shrubs (deciduous and evergreen), and herbaceous plants (annuals, perennials, and bulbs) using common names and botanical names
- Characterize these trees, shrubs, and herbaceous plants using physical qualities such as size, cold hardiness and seasonal interest
- Describe the cultural requirements (soil and light conditions) for these trees, shrubs, and herbaceous plants
- List the uses and limitations of these trees, shrubs, and herbaceous plants
- Use a plant key to identify unknown plants

VCCS TOPICAL DESCRIPTIONS

- Not Available

VWCC AND DISCIPLINE SPECIFIC TOPICAL DESCRIPTIONS

- I. The Industry --- Scope and Development
 - a. Origins
 - b. U.S. Production
 - c. World Production
 - d. Careers
- II. Greenhouse Construction
 - a. Location
 - b. Floor Plan
 - c. Greenhouse materials
 - d. Benches and Beds
 - e. Cost of construction
- III. Greenhouse Heating
 - a. Heat Loss
 - b. Heating Systems
 - c. Temperature Sensing
 - d. Calculating Heat Requirements
 - e. Heat Conservation
- IV. Greenhouse Cooling
 - a. Summer
 - b. Winter
 - c. Integration of Heating and Cooling Systems

- V. Environmental Control Systems
 - a. Control Types
- VI. Root Substrate
 - a. Functions
 - b. Properties
 - c. Components
 - d. Soil vs. Soilless
 - e. Economics
 - f. Preparation and Handling
- VII. Root Substrate Pasteurization
 - a. Steam
 - b. Chemical
 - c. Reinoculation
- VIII. Watering
 - a. Effects on Plants
 - b. Rules of Watering
 - c. Water Quality
 - d. Watering Systems
 - e. Water Source
- IX. Fertilization
 - a. Programs
 - b. Nutritional Monitoring and Diagnostics
- X. Carbon Dioxide Fertilization
 - a. Role
 - b. Carbon Deficiency
 - c. Carbon Dioxide Injection
 - d. Economics
- XI. Light and Temperature
 - a. Light
 - b. Temperature
- XII. Regulation of Plant Growth
 - a. Nonchemical Control
 - b. Chemical Height Control
 - c. Application of Growth Regulators
- XIII. Insect and Mite Management
 - a. Pests
 - b. Biological Control
 - c. Pesticide Control
- XIV. Disease Management
 - a. Plant Diseases
 - b. Detection and Diagnosis
 - c. Management
 - d. Control Materials
- XV. Maintaining Production Quality

- a. General Maintenance
- b. Preharvest
- c. Harvest
- d. Storage and Shipping
- e. Retail
- f. Plant Unit – containerized, cut, cutting
- XVI. Marketing
 - a. Packaging
 - b. Grades and Standards
 - c. Market System
 - d. Labels
 - e. Promotion, Advertising, Branding
 - f. Marketing Strategies
- XVII. Business Management
 - a. Business Plan
 - b. Business description
 - c. Strategic Plan
 - d. Production and Operation Plan
 - e. Market Analysis
 - f. Management Plan

Other topics may include growing requirements and production plans for specific greenhouse crops.

[TITLE IX STATEMENT](#)

[ADA STATEMENT](#)