Common Course Outline
HORT 115
Soils and Fertilizers
3 credits

Community College of Baltimore County

Description

HORT 115 – 3 credits - Soils and Fertilizers explores soils and fertilizers from a management point of view; emphasis is placed on intensive horticultural practices; studies soil structure, porosity, pH and their relationship to good cultural practices; practical application of soil/media testing and analysis; nutrient content and soil/media management will be explored.

One Saturday class practical lab.

3 credits; 2 lecture hours and 2 laboratory hours per week.

Prerequisites: ACLT 052 and MATH 081

Overall Course Objectives

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

1. explain soil structure and determine it by mechanical means, showing how it is effected by mineral and organic colloids;
2. examine root structures and explain the plant/root relationship;
3. explain soil texture and determine it by mechanical means;
4. discuss the effect of soil texture and soil water holding capacities on permeability and infiltration;
5. examine the origin of organic soils and determine their effects on plant root systems;
6. explain how to adapt plants indigenous to organic soils to mineral soils;
7. demonstrate the ability to make a soil test and then make accurate recommendations based upon the results;
8. discuss the effects of sandy, silty and clay soils in plant management;
9. examine the effect of manures, peats, wood chips and sawdust on mineral soils;
10. define artificial soil mixes, identify their components and discuss their effects on plant root systems, plant culture and horticultural plant management;
11. demonstrate how to properly prepare artificial soil mixes for various plant growing situations;
12. discuss the value of plants grown in artificial soil mixes as compared with plants grown in mineral soils;
13. define soil pH, explain the pH scale and the effects that pH has on soils & their nutrients;
14. take accurate soil pH tests, make accurate soil pH amendment recommendations and demonstrate how to alter soil pH values;
15. determine plant tolerance to soil acidity/alkalinity and explain how to acidify soils;
16. explain the difference between the different kinds of lime;

17. discuss the role of the major and minor plant nutrients, their entry into plants and how they are measured in the soil;
18. identify the components of organic and inorganic fertilizer, and discuss their importance in plant production
19. make fertilizer recommendations on the basis of soil tests and plant needs;
20. identify various methods of fertilizer applications and calculate their attendant costs;

Major Topics

I. Soil formation
II. Soil texture and its effect on plant root systems
    a. Soil separation
    b. Value of porosity for soil air content
    c. Soil water /moisture
    d. Mineral soils and modifications
    e. Soil test
III. Organic soils and their effects on plant root systems
IV. Artificial soil mixes
V. Soil pH and its effect on plant life
VI. Plant nutrients and their effects on plant development
VII. Fertilizers

Course Requirements

Grading/exams: Grading procedures will be determined by the individual faculty member, but will include the following:

1. Three (3) Written Exams
2. 10-15 Quizzes
3. 10-12 Lab Exercises
4. Student Project
5. One (1) Saturday Class Practical
6. Participation

Other Course Requirements

This course is a Horticulture Program core course required for the Horticulture A.A. S. Degree.

It is also a required course for the following Horticulture Certificates:

Greenhouse Production
Turf and Landscape Management
Landscape Design and Installation