Virginia Western Community College
HRT 115
Plant Propagation

Prerequisites
None

Course Description
Teaches principles and practices of plant propagation methods. Examines commercial and home practices. Provides experience in techniques using seeds, spores, cuttings, grafting, budding, layering, and division.

Semester Credits: 3 Lecture Hours: 2 Lab/Clinical/Internship Hours: 2

Required Materials

Textbook:
Plant Propagation: Principles and Practices. Ninth edition. ISBN: 9780135014493

Other Required Materials:
None

Course Outcomes

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

1. Describe the evolution of plant propagation during human history.
2. Describe aspects of modern plant propagation activities.
3. Identify the environment factors affecting propagation.
4. Describe the physical structures for managing the propagation environment.
5. Describe the containers for propagating and growing younger liner pots.
6. Describe the different types of cuttings.
7. Explain how stock plants can be manipulated to maximize adventitious root formation.
8. Explain how cuttings are prepared for propagation.
9. Explain the requirements for successful graftage.
10. Describe the techniques of detached scion graftage, approach graftage, and repair graftage.
11. Discuss the preparation for grafting—tools, accessories, machines, automation, and processing scion wood.
12. Discuss the importance and utilization of budding.
13. Describe the different types of rootstocks utilized for budding.
14. Explain the management practices of summer, spring, and June budding.
15. Discuss the uses of layering in propagation.

16. Understand the physiological characteristics of layering.
17. Describe soil conditions for field layering.
18. Define structure.
19. Characterize growth and development patterns.
20. Describe propagation systems for each of the main classes of geophytes: bulbs, corms, tubers, tuberous roots and stems, rhizomes, and pseudo bulbs.
21. Define the uses of micro propagation.
22. Compare advantages and disadvantages of multiplying plants by micro propagation.
23. Describe the procedure used for micro propagation.
24. Describe the process of germination.
25. Compare methods for measuring germination.
26. Define the environmental and disease factors influencing germination.
27. Define the major systems for seeding production.
28. Describe the procedures for seedling production in temporary nursery beds.

Topical Description

1. General aspects of propagation **Week 1**
    a. Introduction/History of Plant Propagation (chapter 1)
    b. Biology of Plant Propagation (chapter 2)
2. Vegetative propagation **Week 2**
    a. Principles of Propagation by Cuttings (chapter 10)
3. Vegetative propagation **Week 3**
    a. Techniques of Propagation by Cuttings (chapter 11)
        i. Types of cuttings
        ii. Treatment of cuttings
        iii. Environmental considerations
        iv. Handling cuttings after rooting
4. The Propagation Environment **Week 4**
    a. Environmental factors
    b. Physical structures
    c. Container and Growing Media
    d. Biotic Factors
5. Vegetative propagation **Week 5**
    a. Layering and It's Natural Modifications (Chapter 15)
        i. Procedures in layering
        ii. Natural layering
    b. Propagation of Specialized Stems and Roots (chapter 16)
        i. Separation and division techniques
        ii. Examples of specialized stems and roots
6. Vegetative Propagation **Week 6**
    a. Principles of Grafting and Budding (chapter 12)
7. Vegetative propagation **Week 7**
    a. Techniques of Grafting (chapter 13)

i. Requirements for successful grafting
ii. Types of grafts
iii. Tools and accessories

b. Techniques of Budding (chapter 14)
i. Rootstock considerations
ii. Time of budding
iii. Types of budding

8. Principles and Practices of Clonal Propagation (chapter 9) **Week 8**
9. **Midterm Exam Week 9**
10. Seed propagation **Week 10**
    a. Seed Development (chapter 4)
11. Seed propagation **Week 11**
    a. Principles and Practices of Seed Selection (chapter 5)
    b. Techniques of Seed Production (chapter 6)
12. Seed propagation **Week 12**
    a. Principles of Propagation from Seeds (chapter 7)
    b. Techniques of Propagation from Seed (chapter 8)
13. Cell and Tissue Culture Propagation **Week 13**
    a. Principles and Techniques of Micropropagation from Meristematic Tissue (chapter 17)
    b. Principles and Techniques of Plant Tissue Culture from Nonmeristematic Tissue (chapter 18)
14. Field Trip **Week 14**
15. Course and project review **Week 15**
16. Final Exam **Week 16**

Weeks listed subject to change

Notes to Instructors

Additional topics to cover

1. Career opportunities

2. New Plants from Micro propagation