



**Statewide Dual Credit Introduction to Plant Science Learning Objectives (AGRI 1030)  
(Greenhouse Management #5954)**

**Subjects Covered:**

1. Plant Anatomy and Physiology
2. Plant Reproduction/Propagation
3. Plant Injuries and Their Control/Integrated Pest Management
4. Plant Nutrition and Culture
5. Plant Classifications (Forage/Food)
6. Cropping/Growing Systems
7. Greenhouse Growing Structures/Production Techniques
8. Beginning and Promoting an Ornamental Horticulture Business/Career
9. Human Relations/Personnel Management

**1. Plant Anatomy and Physiology**

- a. Summarize the role of each cell structure in plant development
- b. Evaluate the importance of various plant tissues in plant development
- c. Summarize the contribution of each organ within the plant body
- d. Evaluate the stages of plant growth and development
- e. Compare the various stages of plant reproduction
- f. Recommend appropriate plant growth regulators for various plants



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**2. Soil and Climate**

- a. Assess the significance of Solar Radiation to plant growth
- b. Illustrate the hydrological cycle and discuss its significance to plant growth and development
- c. Analyze the contributions of temperature and air movement to the total atmospheric composition
- d. Discuss the factors involved in soil formation
- e. Examine the physical and chemical properties of the soil
- f. Appraise the importance of organic substances to soil health
- g. Identify factors that lead to soil degradation

**3. Plant Reproduction/Propagation**

- a. Develop an understanding of plant genetic
- b. Contrast mitosis and meiosis and explain the significance of each
- c. Explain the importance of plant breeding
- d. Hypothesize the future influence of biotechnology on the plant industry
- e. Evaluate the significance of sexual propagation of plants
- f. Assess the effectiveness of various types of asexual propagation of plants
- g. Defend the need for Germplasm



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**4. Plant Injuries and Their Control/Integrated Pest Management**

- a. Discuss the effects of pesticides on the environment and human health
- b. Evaluate the significance of Integrated Pest Management
- c. Properly identify various weeds, insects, mites, and plant diseases
- d. Compare the various methods of injury control
- e. Suggest appropriate control measures for plant injuries
- f. Align the stages of the disease cycle
- g. Demonstrate proper use of Personal Protective Equipment (PPE)

**5. Plant Nutrition and Culture**

- a. Summarize the role of water in maintaining plant health
- b. Identify the essential nutrients needed for plant growth
- c. Distinguish the difference in major and minor plant nutrients
- d. Discuss the influence of soil/media pH on nutrient availability
- e. Choose an appropriate fertilizer and application method

**6. Plant Classifications (Forage/Food)**

- a. Identify examples of field crops, forage crops, vegetable crops and fruit crops
- b. Identify common uses of field crops, forage crops, vegetable crops and fruit crops
- c. Describe common production practices for field crops, forage crops, vegetable crops and fruit crops
- d. Evaluate the economic impact of field crops, forage crops, vegetable crops and fruit crops



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**7. Cropping/Growing Systems**

- a. Evaluate the factors that influence site selection of a nursery
- b. Compare various growing methods for nursery production
- c. Identify various environmental factors that influence landscape plant selection
- d. Choose appropriate irrigation systems for a variety of plant production systems

**8. Greenhouse Growing Structures/Production Techniques**

- a. Evaluate the factors that influence site selection of a greenhouse
- b. Identify strengths and weaknesses of various greenhouse structures
- c. Discuss the advantage of automated environmental controls in a greenhouse
- d. Create a greenhouse growing schedule
- e. Calculate the economic value of a variety of greenhouse crops
- f. Design a layout for a greenhouse structure
- g. Defend the benefits of hydroponic production in comparison to soil-based production
- h. Formulate a list of materials needed for the construction of a hydroponic system

**9. Beginning and Promoting an Ornamental Horticulture Business/Career**

- a. Evaluate the factors in choosing a horticultural production system
- b. Maintain adequate records that support sound, business decisions
- c. Develop a post-harvest handling plan for a horticultural crop
- d. Present a marketing plan for a horticultural business
- e. Design an effective transportation plan for a horticultural business



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**10. Human Relations/Personnel Management**

- a. Identify leadership skills necessary for effective management
- b. Demonstrate adequate communication skills
- c. Role-Play a sale that illustrates good salesmanship