Western Technical College

10001148 Greenhouse Production

Course Outcome Summary

Course Information

Description	Cultural needs, equipment selection and operation, techniques and application of production will be emphasized on a nursery and fruit and vegetable operation. Students will be exposed to the requirements for labor, equipment, pest management, and cultural needs for the plants in these operations. Scheduling and budgeting will be explored.
Career Cluster	Agriculture, Food and Natural Resources
Instructional Level	Associate Degree Courses
Total Credits	3
Total Hours	72

Textbooks

Ball Redbook-Volume 2. 19th Edition. Copyright 2021. Nau, Jim. Publisher: George J. Ball, Inc. **ISBN-13**: 978-1-77325-412-0. Required.

Learner Supplies

Safety glass that meet Z87 OSHA guidelines. **Vendor:** Campus Shop. Required.

Course Competencies

1. Identify crop production equipment used within a greenhouse facility.

Assessment Strategies

1.1. Presentation

Criteria

You will know you are successful when

1.1. you show the correct function of items essential to greenhouse crop production.

Learning Objectives

1.a. Contrast the positive and negative features of greenhouse equipment.
1.b. Explore venting methods for greenhouse production.
1.c. Characterize heating methods for greenhouse production.
1.d. Discover various computer controls for greenhouse production.
1.e. Differentiate lighting systems for greenhouse production.

2. Design a greenhouse crop production plan.

Assessment Strategies

2.1. Crop Production Plan

Criteria

You will know you are successful when

2.1. you manage a sequence of procedures to produce a crop of plants.

Learning Objectives

2.a. Examine annual flower plants utilized in a garden center.
2.b. Identify herbs utilized in a garden center.
2.c. Explore vegetables utilized in a garden center.
2.d. Create a timeline for plant propagation activities.
2.e. Implement a plan to grow a crop.
2.f. Analyze the production outcome of the plan.

3. Propagate plants by seeds and cuttings.

Assessment Strategies

3.1. Crop production plan
3.2. Demonstration

Criteria

You will know you are successful when

3.1. you track germination rates of crops.
3.2. you follow the crop production plan timeline.
3.3. you achieve 70% or better germination rate.
3.4. you identify the growth nodes on a cutting.
3.5. you practice plant grafting.
3.6. you maintain the health of the plug transplant.

Learning Objectives

3.a. Identify characteristics of plants that need to be propagated by seeds.
3.b. Identify characteristics of plants that need to be propagated by cuttings.
3.c. Identify plants that need to be propagated by plugs.
3.d. Match the crops to the greenhouse environment setup / programming.

4. Transplant plants at appropriate growth stage.

Assessment Strategies

4.1. Crop Production Plan
4.2. Demonstration

Learning Objectives

4.a. Determine when to transplant plants when growing from seeds.
4.b. Determine when to transplant plants when growing from cuttings.
4.c. Determine when to transplant plants when growing from plugs.
4.d. Identify the size or type of tray and/or containers needed for transplants.
4.e. Identify nutrient needs of plants when transplanting.
4.f. Label plants in accordance with crop production plan.

5. Apply fertilizer according to manufacture's recommendations and plant needs.

Assessment Strategies

5.1. Crop Production Plan
5.2. Demonstration

Learning Objectives

5.a. Investigate the difference between synthetic and natural fertilizers.
5.b. Investigate the difference between liquid and granular fertilizers.
5.c. Interpret manufacturer's labels and application instructions.
5.d. Calibrate fertilizer equipment.
5.e. Follow manufacturer's safety requirements.
5.f. Determine best fertilizer options for each crop and growth stage.

6. Identify various watering methods and irrigation systems.

Assessment Strategies

6.1. Crop Production Plan
6.2. Demonstration

Criteria

You will know you are successful when

6.1. you demonstrate the proper method for watering a plant.
6.2. you show how to determine the correct amount of water has been given to a plant.

Learning Objectives

6.a. Explore various methods for watering crops.
6.b. Compare watering effectiveness for different crops at different growth stages.
6.c. Correlate irrigation systems to health of particular crops.

7. Select various types of media for plant propagation and crop production.

Assessment Strategies

7.1. Crop Production Plan
7.2. Demonstration

Criteria

You will know you are successful when

7.1. you explain why different types of media is used for plant production.
7.2. you mix the correct proportions of media needed for plant propagation and production.
7.3. you demonstrate the correct amount of water needed for each specific plant growing media.

Learning Objectives

7.a. Mix media for optimum plant production.
7.b. Defend media used for different types of plant growth.
7.c. Demonstrate the water retention ability for various media.
7.d. Experiment with alternative growing media.

8. Troubleshoot insect and/or disease problems in greenhouse production.

Assessment Strategies

8.1. Demonstration

Criteria

You will know you are successful when

8.1. you identify plant insect issues and provide control options.
8.2. you identify plant disease issues and provide control options.

Learning Objectives

8.a. Examine plant treatment methods for problematic insects.
8.b. Discuss plant diseases and their treatments.
8.c. Provide integrated pest management solutions for greenhouse growing.

9. Facilitate a community plant sale.

Assessment Strategies

9.1. Greenhouse Sale Project

Criteria

You will know you are successful when

9.1. you develop a crop production plan for a plant category in the greenhouse sale.
9.2. you work in a cooperative group to complete the plant selection for the sale.
9.3. you self-assess your participation in the group activity.
9.4. your timeline for ordering plants/seeds is met.
9.5. your group recaps the process.

Learning Objectives

9.a. Order plant/seeds to build required inventory.
9.b. Review data to determine timeline for sale and product needs.
9.c. Determine greenhouse roles and schedule of work.
9.d. Prepare plant products for client use.

10. Coordinate with community partners to meet their growing needs.

Assessment Strategies

10.1. Crop Production Plan
10.2. Demonstration
10.3. Presentation

Learning Objectives

10.a. Identify ways the community addresses food insecurity.
10.b. Identify ways the community promotes horticulture.
10.c. Identify ways the community promotes education and lifelong learning.
10.d. Communicate with client and the general public basic plant care needs and activities.