

DESE Model Curriculum

GRADE LEVEL/UNIT TITLE: 11-12/Plant Growth

Course Code:

COURSE INTRODUCTION:

The Greenhouse Operation and Management course develops a basic understanding of greenhouse techniques. The production of greenhouse crops will be used to demonstrate procedures such as plants started from cuttings, seeds, grafts, and layering. Students will manage their own crop as a greenhouse project. (CD 016765, CIP 01.0604)

Course Rationale – Agriculture encompasses the food, fiber, conservation and natural resource systems, employing over 20% of the nation’s workforce. Cutting, seeding, grafting, layering, and management of a greenhouse provide entry level and entrepreneurial opportunities for students with an interest in horticulture.

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UNIT DESCRIPTION: Students will learn about the factors that affect plant growth.		SUGGESTED UNIT TIMELINE: 3 WEEKS CLASS PERIOD (min.): 50 MINUTES				
ESSENTIAL QUESTIONS: 1. What environmental factors affect plant growth?						
ESSENTIAL MEASURABLE LEARNING OBJECTIVES	CCSS LEARNING GOALS (Anchor Standards/Clusters)	CROSSWALK TO STANDARDS				
		GLEs/CLEs	PS	CCSS	AFNR Standards	DOK
1. Describe environment necessary for optimal plant growth.				SL11-12.1 SL11-12.4	PS.02.01.01.a PS.02.02.01.a PS.02.02.02.b PS.02.03.01.b PS.02.03.04.a PS.01.02.02.b PS.01.02.04.c PS.01.02.04.b PS.01.03.01.b PS.02.01.02.b PS.02.03.03.b	1
2. Distinguish components of growing media, their uses, and basic types and sizes of containers.				RI11-12.7 RH11-12.7 RST11-12.9	PS.02.02.01.a	2
3. Explain factors involved in proper greenhouse irrigation.				SL11-12.4	PS.02.02.02.b	3
4. Identify nutrients essential for plant growth and development and signs of deficiency or toxicity.				RI11-12.7 RH11-12.7 RST11-12.9	PS.02.03.01.b	2
5. Identify the need for fertilizer.				SL11-12.1	PS.02.03.04.a	2

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				RH11-12.7 RST11-12.9		
6. Unit: Demonstrate an understanding of the basic plant processes of germination and photosynthesis by conducting a seed germination experiment and writing a summary of their findings.				RI11-12.7 RH11-12.7 RST11-12.9 RST11-12.2 W11-12.7 8.SP.1 AREI.4	PS.01.02.02.b PS.01.02.04.c PS.01.02.04.b PS.01.03.01.b PS.02.01.02.b PS.02.03.03.b	4
<p>ASSESSMENT DESCRIPTIONS*: (Write a brief overview here. Identify Formative/Summative. Actual assessments will be accessed by a link to PDF file or Word doc.)</p> <p>Students will work individually to conduct a seed germination experiment comparing the differences in growth patterns based on the variable to which the seeds are exposed. Each student will plant and care for approximately 10 seeds (e.g., corn or beans) to the instructor’s specifications. Students will examine the plants each class period and record the differences (i.e., the height and appearance of the plant) in a chart that they design. Before the students plant their seeds, they must hypothesize what will happen to their seeds. At the end of the experiment, students will write a short summary of their findings.</p> <p>Assessment will be based on the overall content and presentation of the chart and summary. Spelling, grammar, punctuation, and capitalization will also be factors in the assessment.</p> <p>*Attach Unit Summative Assessment, including Scoring Guides/Scoring Keys/Alignment Codes and DOK Levels for all items. Label each assessment according to the unit descriptions above (i.e., Grade Level/Course Title/Course Code, Unit #.)</p>						
Obj. #	INSTRUCTIONAL STRATEGIES (research-based): (Teacher Methods)					
1-5	1. Lecture, discussion					
6	2. Demonstration					
Obj. #	INSTRUCTIONAL ACTIVITIES: (What Students Do)					
1-5	1. Students will respond to study questions in lessons 1 through 5.					
6	2. Students will complete “AS 4.2, Effects of Light on Plants”; “AS 4.5, Growing Media and Containers”; and “AS 4.8, Over-,					

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	Under-, and Proper Watering.”
	3. Additional activities that relate to the unit objective can be found under the headings “Other Activities and Strategies” and “Unit IV Activity” in the following locations: p. 180, p. 203, and p. 279.
UNIT RESOURCES: (include internet addresses for linking) <ul style="list-style-type: none">• <i>Greenhouse Operation and Management</i>. University of Missouri-Columbia, Instructional Materials Laboratory, 2002.• The National Arbor Day Foundation. Accessed January 17, 2012, from http://www.arborday.org/.• Reiley, H. E., & Shry, C. L., Jr. <i>Introductory Horticulture</i>, 6th ed., Delmar Learning, 2000.	