

Ornamental Horticulture

COURSE OUTLINE

1. **Course Title:** Ornamental Horticulture
2. **CBEDS Title:** Horticulture and the environment
3. **CBEDS Number:** 4050
4. **Job Titles:**

Greenhouse Management	Greenhouse Worker, Foreman Maintenance, Propagator, Tissue Culture
Nursery & Turf Operator	Nursery Worker, Salesman, Plant Propagator, Gardener, Golf Course Maintenance
Landscape	Grounds Worker, Gardening Business, Garden Store Sales

5. Course Description:

This competency-based course is designed to give goal-oriented students training for future employment. Students spend much of their class time in the greenhouse or outside working on projects, learning, and practicing the skills for a rewarding career in horticulture. This course is designed to provide the student with theories and principles related to Plant & Soil Science. In this class students will learn about the structure, growth processes, propagation, physiology, growth media, biological competitors, and post-harvest factors of food, fiber, and plants. Employable skills in the sciences, mathematics, and communications are developed. *This course incorporates classroom instruction, practical lab work both in class and in a greenhouse.*

Student Outcomes and Objectives:

Students will:

- A. The course objectives are as follows:
 1. Categorize the roles of higher plants in the living world.
 2. Describe the structural components of higher plants.
 3. Recognizes the standard plant propagation methods.
 4. Describe sexual and asexual reproduction in higher plants.
 5. Explain photosynthesis, respiration, and translocation in higher plants.
 6. Describe the physical and chemical properties of soils.
 7. Hypothesize solutions for soil erosion problems.
 8. Describe the climatic influences on plant growth and development.
 9. Categorize the biological competitors of higher plants.
 10. Develop theories for the harvest, preservation, transportation, storage, and marketing of an economic plant.
 11. Incorporate scientific methods and biological principles with modern Plant & Soil Science practices.
 12. Prepare students for college level entry in the various disciplines of Plant & Soil Science.
 13. Be familiar with cell theory and its application to the organization of all plant organisms.

14. To recognize plant physiology, growth requirements, and nutrients needed for optimum plant growth.

Integrated throughout the course are career preparation standards, which include basic academic skills, communication, interpersonal skills, problem solving, workplace safety, technology, and employment literacy.

Pathway

Recommended Sequence	Courses
Introductory	Agriculture Science Basic Core
Skill Building	Floriculture or Ornamental Horticulture
Advanced Skill	Supervised Agricultural Experience Project

6. Hours: *Students receive up to 180 hours of classroom instruction.*

7. Prerequisites: Agriculture Science Core & Biology or Algebra I.

8. Date (of creation/revision): **July 2009**

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Upon successful completion of this course, students will be able to demonstrate the following skills necessary for entry-level employment.				
Instructional Units and Competencies	Course Hours	Model Curr. Standards	CA Academic Content Standards	CAHSEE
<p>I. CAREER PREPARATION</p> <p>A. Career Planning and Management.</p> <ol style="list-style-type: none"> 1. Know the personal qualifications, interests, aptitudes, knowledge, and skills necessary to succeed in careers. <ol style="list-style-type: none"> a. Students will identify skills needed for job success b. Students will identify the education and experience required for moving along a career ladder. 2. Understand the scope of career opportunities and know the requirements for education, training, and licensure. <ol style="list-style-type: none"> a. Students will describe how to find a job. b. Students will select two jobs in the field and map out a timeline for completing education and/or licensing requirements. 3. Know the main strategies for self-promotion in the hiring process, such as completing job applications, resume writing, interviewing skills, and preparing a portfolio. <ol style="list-style-type: none"> a. Students will write and use word processing software to create a resume, cover letters, thank you letters, and job applications. b. Students will participate in mock job interviews. 4. <i>Develop a career plan that is designed to reflect career interests, pathways, and postsecondary options.</i> <ol style="list-style-type: none"> a. <i>Students will conduct a self—assessment and explain how professional qualifications affect career choices.</i> 5. <i>Understand the role and function of professional organizations, industry associations, and organized labor in a productive society.</i> <ol style="list-style-type: none"> a. <i>Contact two professional organization and identify the steps to become a member.</i> 6. <i>Understand the past, present and future trends that affect careers, such as technological developments and societal trends, and the resulting need for lifelong learning.</i> <ol style="list-style-type: none"> a. <i>Students will describe careers in the agriculture industry sector.</i> b. <i>Students will identify work-related cultural differences to prepare for a global workplace.</i> <p>B. Technology.</p> <ol style="list-style-type: none"> 1. Understand past, present and future technological advances as they relate to a chosen pathway and on selected segments of the economy. 2. Understand the use of technological resources to gain access to, manipulate, and produce information, products and services. 3. Use appropriate technology in the chosen career pathway. <p>C. Problem solving and Critical Thinking.</p> <ol style="list-style-type: none"> 1. Understand the systematic problem-solving models that incorporate input, process, outcome and feedback components, and apply appropriate problem-solving strategies and critical thinking to work-related issues and tasks. 	<p>10</p> <p>Additional hours are integrated throughout the course.</p>	<p>Transportation Industry Sector, Model Curriculum Standards</p> <p>3.0, 4.0, 5.0, 6.0, 7.0, 8.0, 9.0, 10.0</p>	<p><u>Language Arts</u> (8) R 1.3, 2.6 W1.3, 2.5. LC 1.4,1.5 1.6 LS1.2, 1.3, (9/10) R2.1,2.3,2 W2.5 LC1.4 LS 1.1, 2.3 (11/12) R2.3 W2.5 LC1.2 <u>Math</u> (7) NS1.2, 1.7 MR 1.1,1.3 2.7,2.8, 3.1</p>	<p>Lang. Arts R 8.2.1 (9/10) R 2.1, 2.3 W2.5 Math (7) NS 1.2, 1.3, 1.7 MR 1.1, 2.1, 3.1</p>

<p>2. Use and apply critical thinking and decision making skills to make informed decisions, solve problems, and achieve balance in the multiple roles of personal, home, work and community life.</p> <p>D. Health and Safety.</p> <ol style="list-style-type: none"> 1. Know policies, procedures, and regulations regarding health and safety in the workplace, including employers' and employees' responsibilities. 2. Understand critical elements of health and safety practices related to a variety of business environments. <p>E. Responsibility & Flexibility.</p> <ol style="list-style-type: none"> 1. Understand the qualities and behaviors that constitute a positive and professional work demeanor. 2. Understand the importance of accountability and responsibility in fulfilling personal, community, and workplace roles and how individual actions can affect the larger community. 3. Understand the need to adapt to varied roles and responsibilities. <p>F. Ethics and Legal Responsibilities</p> <ol style="list-style-type: none"> 1. Know the major local, district, state, and federal regulatory agencies and entities that affect the industry and how they enforce laws and regulations. 2. Understand the concept and application of ethical and legal behavior consistent with workplace standards. <ol style="list-style-type: none"> a. <i>Contact a business and obtain a copy of their rules for employment.</i> b. <i>Role play difference ethical scenarios.</i> 3. Understand the role of personal integrity and ethical behavior in the workplace. <p>G. Leadership and Teamwork.</p> <ol style="list-style-type: none"> 1. Understand the characteristics and benefits of teamwork, leadership, citizenship in the school, community, and workplace settings for effective performance and attainment of goals. 2. Understand the ways in which professional associations, such as FFA, and competitive career development activities enhance academic skills, career choices, and contribute to promote employability. 3. Know multiple approaches to personal conflict resolution and understand how to interact with others in ways that demonstrate respect for individual and cultural differences and for the attitudes and feelings of others. 				
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Instructional Units and Competencies	Hours	Model Curr. Standards.	CA Academic Standards	CAHSEE
A. The Role of Higher Plants in the Living World 1. Fossil fuels 2. Food chains 3. Industrial products and environmental concerns 4. Lower forms of plant life	5	Agriculture & Natural Resources Industry Sector Ornamental Horticulture Pathway F1.0, 1.1,1.3, 1.4 F2.1, 2.2, 2.6 F3.0,3.1,F3.2 F5.0,5.1,5.4 F8.0,8.3	1.2Sci (9-12) (1.a), (1.c) (1.d),(1.f) (1.j),(1.m) 2.0Com (9-12) (2.3),(2.4)	(10)WA 1.1 (10)R2. 5, 2.7, 2.8
B. Structure of Higher Plants 1. The life cycle of a plant 2. The cell 3. Cell structure 4. The plant body	15	Plant & Soil Science Pathway G2.0,2.6 G3.0,3.4, G5.0,5.1,5.2, 5.4	2.2W (11-12) (1.3),(1.6) 2.3WO (11-12) (1.1),(1.2)	(10)WS 1.1,1.2, 1.3,1.6 (6)P2.5, P3.5
C. Naming and Classifying Plants 1. Climate 2. Botanical names 3. Botanical Classifications 4. Plant taxonomy	7	Foundation Standards 9.0, 10.2	2.4L&S (9-10) (1.1)	(7)AF1. 5
D. Origin, Domestication, and Improvement of Cultivated Plants 1. Origin of cultivated plants 2. Domestication of plants 3. Crop plants 4. Germplasm 5. Genetic concepts in plant improvement	3			
E. Propagation of Plants 1. Propagation methods 2. Sexual propagation 3. Asexual propagation	10			
F. Vegetative and Reproductive Growth and Development 1. Vegetative growth and development 2. Reproductive growth and development 3. Plant growth hormones and regulators	10			
G. Photosynthesis, Respiration, and Translocation 1. Photosynthesis 2. Plant respiration 3. Electron transport system 4. Assimilation	20			
H. Soil and Soil Water 1. Factors involved in soil formation 2. Physical properties of soil 3. Chemical properties of soil 4. Soil organisms 5. Soil organic matter 6. Soil water 7. Water quality	15			

Instructional Units and Competencies	Hours	Model Curr. Standards.	CA Academic Standards	CAHSEE
I. Soil and Water Management and Mineral Nutrition 1. Land preparation 2. Irrigation 3. Mineral nutrition 4. Soil Conservation	10			
J. Climate Influences on Crop Production 1. Climate factors affecting plant growth 2. Climatic requirements of some crop plants 3. Weather and climate 4. Climatic influences on plant diseases and pests	5			
K. Biological Competitors of Useful Plants 1. Weeds 2. Plant diseases 3. Plant pests 4. Nematodes 5. Rodents 6. Pesticide impacts on the environment	15			
L. Theories of Harvest, Preservation, and Marketing 1. Harvesting 2. Post-harvest preservation 3. Marketing of agricultural products a. Market Research b. Research new & popular vegetation	10			
M. Plant Research Project 1. Development of environmental plant & soil science projects 2. Statistical management of project via Record Book 3. Instructional coordination and supervision 4. Analysis of project results	20			
N. Professional Opportunities in Plant & Soil Science 1. Biotechnology & research fields 2. Other related plant & soil science fields	3			
O. Agricultural Inter-Personal & Leadership Development 1. Completion of a Supervised Agricultural Experience Program and data collection 2. Development of listening, speaking, writing & reading skill activities 3. Critical thinking & group team building activities 4. Agriculture presentations	22			

10. Additional recommended/optional items

a. Articulation: Formalized articulation agreements should be mentioned.

b. Academic credit: Science Elective Credit (Meets “g” requirement)

c. Instructional strategies:

Methods of Instruction:

a. Lecture

b. Audio Visual Materials

c. Research Readings and Written Presentations

d. Homework Assignments

e. Group & Individual Activities

f. Laboratory Investigation – 1 per week (20% of grade)

g. Discussion & Group Dynamics

h. Quizzes, Tests & Final Exam

i. Guest Speakers

j. Field Trips

k. Internet Exploration

l. Seminar Presentation

d. Instructional materials: Text: Stern, K (1998). Plant Biology – 5th Edition, Wm. C. Brown Publishing, NY, NY. Biondo & Lee (2003).

Plant & Soil Science and Technology, 2nd Edition, Prentice Hall-Interstate, New Jersey.

Arms, K (1996).

Environmental Science, Harcourt Brace & Company, Orlando, Florida.

University of California, Davis & California Department of Education (1991). Agriculture

Model Curriculum Lesson Plans for Plant & Soil Science. CDE Press. Sacramento, CA.

e. Certificates: None