

Course Outline

Agriculture and Natural Resources

REVISED: August/2017

Job Title:
Landscaper

Career Pathway:
Ornamental Horticulture

Industry Sector:
Agriculture and Natural
Resources

O*NET-SOC CODE:
37-3011.00

CBEDS Title:
Introduction to Ornamental
Horticulture

CBEDS No.:
4051

70-25-80

Landscaping/3

Credits: 40

Hours: 600

Course Description:

This competency-based course is the last in a sequence of three designed for landscaping. It provides students with technical instruction and practical experience in workplace safety, handling and caring for power equipment, part three of plant identification, techniques in landscape construction and design, soil amendments, turf maintenance, plant fertilization techniques, pest management, greenhouse operations, water management review, employability skills and entrepreneurship. The competencies in this course are aligned with the California High School Academic Content Standards and the California Career Technical Education Model Curriculum Standards.

Prerequisites:

Enrollment requires completion of the Landscaping/2 (70-25-75) course.

NOTE: For Perkins purposes this course has been designated as a **capstone** course.

This course cannot be repeated once a student receives a Certificate of Completion.



COURSE OUTLINE COMPETENCY-BASED COMPONENTS

A course outline reflects the essential intent and content of the course described. Acceptable course outlines have six components. (Education Code Section 52506). Course outlines for all apportionment classes, including those in jails, state hospitals, and convalescent hospitals, contain the six required elements:

(EC 52504; 5CCR 10508 [b]; Adult Education Handbook for California [1977], Section 100)

COURSE OUTLINE COMPONENTS

LOCATION

GOALS AND PURPOSES

Cover

The educational goals or purposes of every course are clearly stated and the class periods are devoted to instruction. The course should be broad enough in scope and should have sufficient educational worth to justify the expenditure of public funds.

The goals and purpose of a course are stated in the COURSE DESCRIPTION. Course descriptions state the major emphasis and content of a course, and are written to be understandable by a prospective student.

PERFORMANCE OBJECTIVES OR COMPETENCIES

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Objectives should be delineated and described in terms of measurable results for the student and include the possible ways in which the objectives contribute to the student's acquisition of skills and competencies.

Performance Objectives are sequentially listed in the COMPETENCY-BASED COMPONENTS section of the course outline. Competency Areas are units of instruction based on related competencies. Competency Statements are competency area goals that together define the framework and purpose of a course. Competencies fall on a continuum between goals and performance objectives and denote the outcome of instruction.

Competency-based instruction tells a student before instruction what skills or knowledge they will demonstrate after instruction. Competency-based education provides instruction which enables each student to attain individual goals as measured against pre-stated standards.

Competency-based instruction provides immediate and continual repetition and In competency-based education the curriculum, instruction, and assessment share common characteristics based on clearly stated competencies. Curriculum, instruction and assessment in competency-based education are: explicit, known, agreed upon, integrated, performance oriented, and adaptive.

COURSE OUTLINE COMPETENCY-BASED COMPONENTS
(continued)

COURSE OUTLINE COMPONENTS

LOCATION

INSTRUCTIONAL STRATEGIES

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Instructional techniques or methods could include laboratory techniques, lecture method, small-group discussion, grouping plans, and other strategies used in the classroom.

Instructional strategies for this course are listed in the TEACHING STRATEGIES AND EVALUATION section of the course outline. Instructional strategies and activities for a course should be selected so that the overall teaching approach takes into account the instructional standards of a particular program, i.e., English as a Second Language, Programs for Adults with Disabilities.

UNITS OF STUDY, WITH APPROXIMATE HOURS ALLOTTED FOR EACH UNIT

Cover

The approximate time devoted to each instructional unit within the course, as well as the total hours for the course, is indicated. The time in class is consistent with the needs of the student, and the length of the class should be that it ensures the student will learn at an optimum level.

pp. 7-11

Units of study, with approximate hours allotted for each unit are listed in the COMPETENCY AREA STATEMENT(S) of the course outline. The total hours of the course, including work-based learning hours (community classroom and cooperative vocational education) is listed on the cover of every CBE course outline. Each Competency Area listed within a CBE outline is assigned hours of instruction per unit.

EVALUATION PROCEDURES

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The evaluation describes measurable evaluation criteria clearly within the reach of the student. The evaluation indicates anticipated improvement in performances as well as anticipated skills and competencies to be achieved.

Evaluation procedures are detailed in the TEACHING STRATEGIES AND EVALUATION section of the course outline. Instructors monitor students' progress on a continuing basis, assessing students on attainment of objectives identified in the course outline through a variety of formal and informal tests (applied performance procedures, observations, and simulations), paper and pencil exams, and standardized tests.

REPETITION POLICY THAT PREVENTS PERPETUATION OF STUDENT ENROLLMENT

Cover

After a student has completed all the objectives of the course, he or she should not be allowed to reenroll in the course. There is, therefore, a need for a statement about the conditions for possible repetition of a course to prevent perpetuation of students in a particular program for an indefinite period of time.

ACKNOWLEDGMENTS

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CALIFORNIA CAREER TECHNICAL EDUCATION MODEL CURRICULUM STANDARDS
Agriculture and Natural Resources Industry Sector
Knowledge and Performance Anchor Standards

1.0 Academics

Analyze and apply appropriate academic standards required for successful industry sector pathway completion leading to postsecondary education and employment. Refer to the Agriculture and Natural Resources academic alignment matrix for identification of standards.

2.0 Communications

Acquire and accurately use Agriculture and Natural Resources sector terminology and protocols at the career and college readiness level for communicating effectively in oral, written, and multimedia formats.

3.0 Career Planning and Management

Integrate multiple sources of career information from diverse formats to make informed career decisions, solve problems, and manage personal career plans.

4.0 Technology

Use existing and emerging technology to investigate, research, and produce products and services, including new information, as required in the Agriculture and Natural Resources sector workplace environment.

5.0 Problem Solving and Critical Thinking

Conduct short as well as more sustained research to create alternative solutions to answer a question or solve a problem unique to the Agriculture and Natural Resources sector, using critical and creative thinking, logical reasoning, analysis, inquiry, and problem-solving techniques.

6.0 Health and Safety

Demonstrate health and safety procedures, regulations, and personal health practices and determine the meaning of symbols, key terms, and domain-specific words and phrases as related to the Agriculture and Natural Resources sector workplace environment.

7.0 Responsibility and Flexibility

Initiate, and participate in, a range of collaborations demonstrating behaviors that reflect personal and professional responsibility, flexibility, and respect in the Agriculture and Natural Resources sector workplace environment and community settings.

8.0 Ethics and Legal Responsibilities

Practice professional, ethical, and legal behavior, responding thoughtfully to diverse perspectives and resolving contradictions when possible, consistent with applicable laws, regulations, and organizational norms.

9.0 Leadership and Teamwork

Work with peers to promote divergent and creative perspectives, effective leadership, group dynamics, team and individual decision making, benefits of workforce diversity, and conflict resolution as practiced in the Future Farmers of America (FFA) career technical student organization.

10.0 Technical Knowledge and Skills

Apply essential technical knowledge and skills common to all pathways in the Agriculture and Natural Resources sector, following procedures when carrying out experiments or performing technical tasks.

11.0 Demonstration and Application

Demonstrate and apply the knowledge and skills contained in the Agriculture and Natural Resources anchor standards, pathway standards, and performance indicators in classroom, laboratory, and workplace settings, and through the FFA career technical student organization.

Agriculture and Natural Resources Pathway Standards

F. Ornamental Horticulture Pathway

The Ornamental Horticulture pathway prepares students for careers in the nursery, landscaping, and floral industries. Topics include plant identification, plant physiology, soil science, plant reproduction, nursery production, and floriculture, as well as landscaping design, installation, and maintenance.

Sample occupations associated with this pathway:

- ◆ Florist/Floral Designer
- ◆ Landscape Design/Architect
- ◆ Hydroponics Grower
- ◆ Botanical Specialist
- ◆ Nursery/Greenhouse Manager

- F1.0 Compare and contrast the hierarchical classification of plants.
- F2.0 Summarize plant physiology and growth principles.
- F3.0 Demonstrate plant propagation techniques.
- F4.0 Develop and implement a plan for basic integrated pest management.
- F5.0 Summarize water and soil (media) management practices.
- F6.0 Apply ornamental plant nutrition practices.
- F7.0 Develop a plan for the selection, installation, and maintenance of turf.
- F8.0 Employ nursery production principles.
- F9.0 Demonstrate the proper use of containers and horticultural tools, equipment, and facilities.
- F10.0 Understand basic landscape planning, design, construction, and maintenance.
- F11.0 Understand basic floral design principles.

CBE
Competency-Based Education

COMPETENCY-BASED COMPONENTS
for the Landscaping/3 Course

COMPETENCY AREAS AND STATEMENTS	MINIMAL COMPETENCIES	STANDARDS
<p>A. WORKPLACE SAFETY</p> <p>Review classroom and workplace safety policies and procedures.</p> <p>(8 hours)</p>	<ol style="list-style-type: none"> 1. Review the scope and purpose of the course. 2. Review classroom policies and procedures. 3. Review job safety requirements. 4. Review various first aid techniques. 5. Review the safe use and care of various landscape tools. 6. Review the California Occupational Safety and Health Administration (Cal/OSHA) workplace requirements for landscapers. 7. Differentiate between the safety requirements for each of the following types of careers: <ol style="list-style-type: none"> a. nursery persons b. landscape persons c. designers d. installers 8. Pass the safety test with 100% accuracy. 	<p>Career Ready Practice: 1, 5</p> <p>CTE Anchor: Problem Solving and Critical Thinking: 5.4 Health and Safety: 6.3, 6.4, 6.7</p> <p>CTE Pathway: F9.2</p>
<p>B. POWER AND SAFETY EQUIPMENT</p> <p>Know the features and functions of power and safety equipment used in landscaping.</p> <p>(50 hours)</p>	<ol style="list-style-type: none"> 1. Describe the specific safety rules and regulations related to power equipment. 2. Identify the different types of safety equipment used in landscape installation. 3. Identify the situations involving power equipment that require personal safety equipment. 4. Describe and demonstrate each of the following as it applies to the use of personal safety equipment with power equipment: <ol style="list-style-type: none"> a. proper use b. maintenance c. storage 5. Describe the features and functions of the different types of power equipment used by landscape maintenance people. 6. Describe and demonstrate each of the following as it applies to power equipment: <ol style="list-style-type: none"> a. proper use b. maintenance c. storage 	<p>Career Ready Practice: 2</p> <p>CTE Anchor: Communications: 2.5 Demonstration and Application: 11.1</p> <p>CTE Pathway: F9.3, F11.1</p>

COMPETENCY AREAS AND STATEMENTS	MINIMAL COMPETENCIES	STANDARDS
<p>C. PLANT IDENTIFICATION – PART III</p> <p>Learn the botanical names, appearance, and characteristics of exotic plant materials.</p> <p>(30 hours)</p>	<ol style="list-style-type: none"> 1. Review the plant classification systems. 2. Review the binomial system of naming plants. 3. Identify exotic trees that can be used in a landscape. 4. Identify exotic shrubs that can be used in a landscape. 5. Identify exotic vines that can be used in a landscape. 6. Identify exotic perennials that can be used in a landscape. 7. Identify exotic biennials that can be used in a landscape. 8. Identify exotic annuals that can be used in a landscape. 9. Identify exotic grasses and broad leaves that can be used as a lawn. 	<p>Career Ready Practice: 2, 5</p> <p>CTE Anchor: Technical Knowledge and Skills: 10.1</p> <p>CTE Pathway: F1.1, 51.2, F1.3, F1.4, F1.5, F8.2, F10.1</p>
<p>D. LANDSCAPE DESIGN AND CONSTRUCTION</p> <p>Understand the features and functions of the different types of landscape construction equipment and the techniques used in masonry, brick-on-sand installation, and carpentry.</p> <p>(300 hours)</p>	<ol style="list-style-type: none"> 1. Identify the different parts of an irrigation plan. 2. Describe the steps used in reading an irrigation plan. 3. Describe and demonstrate the correct use of irrigation installation tools and equipment. 4. Describe and demonstrate the correct use of technologically advanced irrigation products. 5. Describe and demonstrate the following fundamentals of concrete installation: <ol style="list-style-type: none"> a. construction of forms b. mixing c. pouring d. tamping e. broom finish 6. Describe and demonstrate proper laying of brick on sand. 7. Describe and demonstrate the fundamentals of sand box construction, including: <ol style="list-style-type: none"> a. framing the box b. setting posts c. installation of sand box cap 8. Identify the different parts of a planting plan. 9. Describe the steps in reading a planting plan. 	<p>Career Ready Practice: 2</p> <p>CTE Anchor: Communications: 2.5 Demonstration and Application: 11.1</p> <p>CTE Pathway: F8.1, F8.2, F10.1</p>
<p>E. SOIL AMENDMENTS</p> <p>Know the features and functions of the different types of soil amendments and the techniques used to solve soil problems.</p>	<ol style="list-style-type: none"> 1. Review the different types of soils. 2. Review the features of each type of soil. 3. Review the procedures used in soil sampling. 4. Review the different types of soil problems. 5. Review the appropriate remedies for each type of soil problem. 6. Review the procedures used in analyzing soil problems. 7. Review the procedures used applying the appropriate remedies. 	<p>Career Ready Practice: 2</p> <p>CTE Anchor: Communications: 2.5</p>

COMPETENCY AREAS AND STATEMENTS	MINIMAL COMPETENCIES	STANDARDS
(30 hours)	<ol style="list-style-type: none"> 8. Define soil amendments. 9. Describe the features of the following soil amendments: <ol style="list-style-type: none"> a. organic b. inorganic 10. Describe the effects of soil drainage on soil amendments. 	Technical Knowledge and Skills: 10.1 CTE Pathway: F8.2, F10.1
F. TURF MAINTENANCE Learn the features and functions of turf maintenance equipment and the techniques used in the production and maintenance of turf.	<ol style="list-style-type: none"> 1. Define turf. 2. Identify the four different types of turf. 3. Describe fertilizer requirements for different types of turf. 4. Differentiate warm-season grasses from cool-season grasses. 5. Describe the effects of fertilizer on turf. 6. Describe and demonstrate the proper grading of a property, paying special attention to drainage. 7. Describe and demonstrate the proper use of a builder's level. 8. Describe and demonstrate the proper operation of tractors. 9. Describe and demonstrate the proper operation of roto-tillers. 10. Describe and demonstrate the techniques in seeding of a lawn. 11. Describe and demonstrate the techniques in laying sod. 12. Describe and demonstrate the proper operation of various lawn mowers. 13. Describe and demonstrate the proper operation of a blade edger. 14. Describe and demonstrate the proper operation of a string weed eater. 15. Describe and demonstrate the proper operation of a blower. 16. Describe and demonstrate proper mowing techniques. 17. Describe and demonstrate the proper operation of a lawn edger. 18. Describe and demonstrate the application of fertilizer to turf. 19. Describe and demonstrate turf irrigation practices that promote water conservation. 	Career Ready Practice: 2 CTE Anchor: Communications: 2.5 Technical Knowledge and Skills: 10.1 Demonstration and Application: 11.1 CTE Pathway: F5.2, F7.2, F9.2, F9.3, F10.1
G. FERTILIZATION Understand the techniques used in plant fertilization.	<ol style="list-style-type: none"> 1. Define fertilization. 2. Identify the following and their role in fertilization: <ol style="list-style-type: none"> a. pollen b. stigma c. pistil 3. Identify the different techniques used in plant fertilization. 4. Describe and demonstrate safety procedures related to plant fertilization. 5. Describe and demonstrate methods of plant fertilization. 	Career Ready Practice: 2 CTE Anchor: Communications: 2.5 Technical Knowledge and Skills: 10.1 Demonstration and Application: 11.1

COMPETENCY AREAS AND STATEMENTS	MINIMAL COMPETENCIES	STANDARDS
(30 hours)		CTE Pathway: F10.1
<p>H. PEST MANAGEMENT</p> <p>Know the techniques used in pest management in landscaping.</p> <p>(30 hours)</p>	<ol style="list-style-type: none"> 1. Define pest management. 2. Identify the different types of pests that populate the landscaping areas. 3. Identify different types of beneficial insects. 4. Describe the role of local and state pest management regulatory agencies in the landscaping industry. 5. Describe and demonstrate safety procedures related to pest management. 6. Describe and demonstrate methods of pest management. 	<p>Career Ready Practice: 2</p> <p>CTE Anchor: Communications: 2.5</p> <p>CTE Pathway: F4.1, F4.4, F10.1</p>
<p>I. GREENHOUSE OPERATIONS</p> <p>Learn the greenhouse operations that support the landscaping industry.</p> <p>(10 hours)</p>	<ol style="list-style-type: none"> 1. Define greenhouse. 2. Compare a greenhouse to a cold frame on the basis of: <ol style="list-style-type: none"> a. application b. insulation quality of the components c. cost of construction d. cost of maintenance 3. Compare a glass-paned greenhouse to a plastic-paned greenhouse on the basis of: <ol style="list-style-type: none"> a. durability of the components b. insulation quality of the components c. cost of construction d. cost of maintenance 4. Identify the different types of pests and diseases that thrive in greenhouses. 5. Describe and demonstrate basic greenhouse procedures for landscapers. 	<p>Career Ready Practice: 1, 2, 11</p> <p>CTE Anchor: Technical Knowledge and Skills: 10.1 Demonstration and Application: 11.1</p> <p>CTE Pathway: F10.1</p>
<p>J. WATER MANAGEMENT REVIEW</p> <p>Review the importance of water management in landscaping.</p>	<ol style="list-style-type: none"> 1. Review the definition of the following: <ol style="list-style-type: none"> a. water resources b. water management c. water sustainability 2. Review the importance of managing the following resources and the role they play in water management: <ol style="list-style-type: none"> a. time b. materials c. personnel 3. Review the specific examples of effective management of the following in landscaping: <ol style="list-style-type: none"> a. time b. materials c. personnel 	<p>Career Ready Practice: 1, 2</p> <p>CTE Anchor: Technical Knowledge and Skills: 10.1</p> <p>CTE Pathway: F10.1</p>

SUGGESTED INSTRUCTIONAL MATERIALS and OTHER RESOURCES

TEXTS AND SUPPLEMENTAL BOOKS

Hannebaum, Leroy G. Landscape Operations: Management, Methods, and Materials 3rd Edition. Prentice Hall, 1999.

Ingels, Jack, Landscaping: Principles and Practices, 7th Edition. Cengage Learning, 2009.

Johnson, Hugh. The Principles of Gardening: The Practice of the Gardener's Art. Simon & Schuster, 1997.

Melby, Pete. Simplified Irrigation Design, 2nd Edition. Wiley, John & Sons, Inc., 1995.

Naylor, Robert, E.L. Weed Management Handbook, 9th Edition. Wiley, John & Sons, Inc., 2002.

Schrock, Denny. Scott's Landscaping. Meredith Books, 2004.

Smith, Miranda. The Plant Propagator's Bible. St. Martin's Press, 2007.

Symonds, George W. and Stephen V. Chelminski. Tree Identification. Harper Collins Publisher, 1973.

RESOURCES

Employer Advisory Board members

CTE Model Curriculum Standards for Agriculture and Natural Resources:

<http://www.cde.ca.gov/ci/ct/sf/documents/agnatural.pdf>

COMPETENCY CHECKLIST

TEACHING STRATEGIES and EVALUATION

METHODS AND PROCEDURES

- A. Lecture and discussion
- B. Visual aids
- C. Projects
- D. Demonstration/participation
- E. Guest lecturers

EVALUATION

SECTION A – Workplace Safety - Pass the safety test with 100% accuracy.

SECTION B – Power and Safety Equipment – Pass all assignments and exams on power and safety equipment with a minimum score of 80% or higher.

SECTION C – Plant Identification – Part III – Pass all assignments and exams on plant identification – part III with a minimum score of 80% or higher.

SECTION D – Landscape Design and Construction – Pass all assignments and exams on landscape design and construction with a minimum score of 80% or higher.

SECTION E – Soil Amendments – Pass all assignments and exams on soil amendments with a minimum score of 80% or higher.

SECTION F – Turf Maintenance – Pass all assignments and exams on turf maintenance with a minimum score of 80% or higher.

SECTION G – Fertilization – Pass all assignments and exams on fertilization with a minimum score of 80% or higher.

SECTION H – Pest Management – Pass all assignments and exams on pest management with a minimum score of 80% or higher.

SECTION I – Greenhouse Operations – Pass all assignments and exams on greenhouse operations with a minimum score of 80% or higher.

SECTION J – Water Management Review – Pass all assignments and exams on water management review with a minimum score of 80% or higher.

SECTION K – Employability Skills/Entrepreneurship – Pass all assignments and exams on employability skills/entrepreneurship with a minimum score of 80% or higher.

Statement for Civil Rights

All educational and vocational opportunities are offered without regard to race, color, national origin, gender, or physical disability.
