

# 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

**70-25-70**

## Landscaping/1

**Credits:** 5

**Hours:** 90

### Course Description:

This competency-based course is the first in a sequence of three designed for landscaping. It provides students with technical instruction and practical experience in workplace safety, handling and caring for basic landscaping tools, part one of plant identification, types of soil, planning and maintaining an ornamental garden, basic landscape design and water management. 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:

Ability to bend over, lift and carry heavy items as required in the industry.

**NOTE:** For Perkins purposes this course has been designated as an **introductory** 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.

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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**

Thanks to ALEJANDRA SALCEDO and NAZELI ZELYAN for developing and editing this curriculum. Acknowledgment is also given to ERICA ROSARIO for designing the original artwork for the course covers.

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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/1 Course**

COMPETENCY AREAS AND STATEMENTS	MINIMAL COMPETENCIES	STANDARDS
<p>A. ORIENTATION</p> <p>Understand the scope and purpose of the course.</p> <p>(3 hours)</p>	<ol style="list-style-type: none"> <li>1. Identify the scope and purpose of the course.</li> <li>2. Describe classroom policies and procedures.</li> <li>3. Describe the importance of the landscaping industry to the economy of California.</li> <li>4. Enumerate job opportunities in the industry.</li> </ol>	<p><b>Career Ready Practice:</b> 2, 5</p> <p><b>CTE Anchor:</b> Communications: 2.5</p> <p><b>CTE Pathway:</b> F2.1, F5.1, F7.3, F10.1</p>
<p>B. WORKPLACE SAFETY</p> <p>Understand and apply the basics of workplace safety.</p> <p>(5 hours)</p>	<ol style="list-style-type: none"> <li>1. Describe job and equipment safety requirements.</li> <li>2. Describe and demonstrate various first aid techniques.</li> <li>3. Describe and demonstrate the safe use and care of various landscape tools.</li> <li>4. Pass a written safety test with 100% accuracy.</li> </ol>	<p><b>Career Ready Practice:</b> 1, 2, 5, 10</p> <p><b>CTE Anchor:</b> Communications: 2.5 Problem Solving and Critical Thinking: 5.4 Health and Safety: 6.3, 6.4, 6.5, 6.6 Technical Knowledge and Skills: 10.3 Demonstration and Application: 11.1</p> <p><b>CTE Pathway:</b> F4.1, F9.2</p>

COMPETENCY AREAS AND STATEMENTS	MINIMAL COMPETENCIES	STANDARDS
<p>C. GENERAL TOOLS</p> <p>Understand and apply the basic general tools used in landscaping.</p> <p>(5 hours)</p>	<ol style="list-style-type: none"> <li>1. Identify the different types of hand tools used by the landscaping crew.</li> <li>2. Describe and demonstrate proper use of hand tools.</li> <li>3. Describe and demonstrate the proper maintenance and storage of hand tools.</li> </ol>	<p><b>Career Ready Practice:</b> 1, 2, 10</p> <p><b>CTE Anchor:</b> Communications: 2.5 Health and Safety: 6.3, 6.4 Technical Knowledge and Skills: 10.3 Demonstration and Application: 11.1</p> <p><b>CTE Pathway:</b> F8.2, F9.2, F9.3, F10.1</p>
<p>D. PLANT IDENTIFICATION – PART I</p> <p>Understand the basic parts of a plant; identify the botanical names, appearance, and evaluate the characteristics of 25 commonly used plant materials.</p> <p>(15 hours)</p>	<ol style="list-style-type: none"> <li>1. Identify the botanical parts on specimen plants.</li> <li>2. Explain the functions of leaves.</li> <li>3. Explain the functions of roots.</li> <li>4. Explain the functions of stems.</li> <li>5. Explain the functions of flowers and fruits.</li> <li>6. Describe the process of photosynthesis.</li> <li>7. Describe the movement of water and nutrients in plants.</li> <li>8. Explain the binomial system of naming plants.</li> </ol>	<p><b>Career Ready Practice:</b> 2</p> <p><b>CTE Anchor:</b> Communications: 2.5</p> <p><b>CTE Pathway:</b> F8.2, F10.1</p>
<p>E. SOIL TYPES</p> <p>Understand and apply techniques for different types of soil.</p>	<ol style="list-style-type: none"> <li>1. Identify the different types of soils.</li> <li>2. Describe the features of each type of soil.</li> <li>3. Describe and demonstrate the procedures used in soil sampling.</li> </ol>	<p><b>Career Ready Practice:</b> 1, 2, 10</p> <p><b>CTE Anchor:</b> Communications: 2.5 Technical Knowledge and Skills: 10.1, 10.3 Demonstration and Application: 11.1</p>



COMPETENCY AREAS AND STATEMENTS	MINIMAL COMPETENCIES	STANDARDS
(5 hours)		<b>CTE Pathway:</b> F5.1
<p>F. ORNAMENTAL GARDENING</p> <p>Understand, plan, implement, and maintain an ornamental garden.</p> <p>(10 hours)</p>	<ol style="list-style-type: none"> <li>1. Lay out a plot.</li> <li>2. Describe and demonstrate ground preparation procedures.</li> <li>3. Describe and demonstrate the following:               <ol style="list-style-type: none"> <li>a. planting</li> <li>b. irrigation</li> <li>c. fertilizing</li> <li>d. pest control</li> </ol> </li> </ol>	<p><b>Career Ready Practice:</b> 1, 2, 10</p> <p><b>CTE Anchor:</b> Communications: 2.5 Technical Knowledge and Skills: 10.1, 10.3 Demonstration and Application: 11.1</p> <p><b>CTE Pathway:</b> F4.1, F4.3, F4.4, F5.2, F6.4,</p>
<p>G. LANDSCAPE DESIGN</p> <p>Understand and apply the basics of landscape design.</p> <p>(45 hours)</p>	<ol style="list-style-type: none"> <li>1. Identify factors that affect a planting plan.</li> <li>2. Determine area dimensions with the use of a measuring tape.</li> <li>3. Draw areas, including structures, to scale.</li> <li>4. Use landscape symbols for various types of plants.</li> <li>5. For a given job, estimate the following:               <ol style="list-style-type: none"> <li>a. quantity of plant materials</li> <li>b. container size</li> <li>c. cost of plant materials</li> </ol> </li> </ol>	<p><b>Career Ready Practice:</b> 1, 2</p> <p><b>CTE Anchor:</b> Academics: 1.0 Communications: 2.5 Technical Knowledge and Skills: 10.3</p> <p><b>CTE Pathway:</b> F9.1, F10.1, F11.1</p>
<p>H. WATER MANAGEMENT</p> <p>Understand the basics of water management in landscaping.</p>	<ol style="list-style-type: none"> <li>1. Define the following:               <ol style="list-style-type: none"> <li>a. water resources</li> <li>b. water management</li> <li>c. water sustainability</li> </ol> </li> <li>2. Describe the management of the following resources and the role they play in water management:               <ol style="list-style-type: none"> <li>a. time</li> </ol> </li> </ol>	<p><b>Career Ready Practice:</b> 2</p> <p><b>CTE Anchor:</b> Communications: 2.5</p>

COMPETENCY AREAS AND STATEMENTS	MINIMAL COMPETENCIES	STANDARDS
(2 hours)	<ul style="list-style-type: none"> <li>b. materials</li> <li>c. personnel</li> </ul> <p>3. List specific examples of effective management of the following in landscaping:</p> <ul style="list-style-type: none"> <li>a. time</li> <li>b. materials</li> <li>c. personnel</li> </ul> <p>4. Describe the benefits of effective water management in landscaping:</p> <ul style="list-style-type: none"> <li>a. profitability</li> <li>b. sustainability</li> <li>c. company growth</li> </ul>	<p>Technical Knowledge and Skills: 10.1</p> <p><b>CTE Pathway:</b> F5.1, F5.3</p>

## SUGGESTED INSTRUCTIONAL MATERIALS and OTHER RESOURCES

### **TEXTS AND SUPPLEMENTAL BOOKS**

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

Ingels, Jack, Landscaping: Principles and Practices, 7<sup>th</sup> 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, 2<sup>nd</sup> Edition. Wiley, John & Sons, Inc., 1995.

Naylor, Robert, E.L. Weed Management Handbook, 9<sup>th</sup> 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 Agricultural and Natural Resources:

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

## ***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 – Orientation – Pass all assignments and exams on orientation with a minimum score of 80% or higher.

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

SECTION C – General Tools – Pass all assignments and exams on general tools with a minimum score of 80% or higher.

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

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

SECTION F – Ornamental Gardening – Pass all assignments and exams on ornamental gardening with a minimum score of 80% or higher.

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

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

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### Statement for Civil Rights

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

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