Course Outline

Agriculture and Natural Resources

REVISED: August/2019

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: 15 **Hours: 180**

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, part three of plant identification, techniques in landscape construction and design, turf maintenance, fertilization, pest management, greenhouse operations, water management review, and entrepreneurship/legal aspects of landscaping business. 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

pp. 7-12

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 p. 14

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. 7-12

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 p. 14

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
Α.	WORKPLACE SAFETY Review classroom and workplace safety policies and procedures.	 Pass the safety test with 100% accuracy. OSHA 10 Certification 	Career Ready Practice: 1, 2, 5, 10 CTE Anchor: Communications: 2.5 Career Planning and Management: 3.4 Problem Solving and Critical Thinking: 5.4 Health and Safety: 6.3, 6.4, 6.5, 6.6 Ethics and Legal Responsibilities: 8.2 Technical Knowledge and Skills: 10.3 Demonstration and Application: 11.1, 11.3 CTE Pathway: F6.3, F6.4, F6.5, F6.6, F9.2, F10.3, F11.1
В.	PLANT IDENTIFICATION – PART III Learn the botanical names, appearance, and characteristics of exotic plant materials.	 Review the plant classification systems. Identify exotic trees that can be used in a landscape. Identify exotic shrubs that can be used in a landscape. Identify exotic vines that can be used in a landscape. Identify exotic perennials that can be used in a landscape. Identify exotic biennials that can be used in a landscape. 	Career Ready Practice: 2, 5, 10 CTE Anchor: Communications: 2.5

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COMPETENCY AREAS AND STATEMENTS	MINIMAL COMPETENCIES	STANDARDS
(14 hours)	 Identify exotic annuals that can be used in a landscape. Identify exotic grasses and broad leaves that can be used as a lawn. 	Technology: 4.1, 4.2, 4.7 Problem Solving and Critical Thinking: 5.4 Technical Knowledge and Skills: 10.3 Demonstration and Application: 11.1, 11.3 CTE Pathway: F1.1, 51.2, F1.3, F1.4, F1.5, F8.2, F10.1
C. LANDSCAPE DESIGN Understand the features and functions of the different types of landscape construction equipment and the techniques used in masonry, brick-onsand installation, and carpentry.	 Identify the different parts of an irrigation plan. Describe the steps used in reading an irrigation plan. Describe and demonstrate the correct use of irrigation installation tools and equipment. Describe and demonstrate the correct use of technologically advanced irrigation products. 	Career Ready Practice: 2, 5, 10 CTE Anchor: Communications: 2.1, 2.5 Technology: 4.1, 4.2, 4.7 Problem Solving and Critical Thinking: 5.4 Demonstration and Application: 11.1, 11.3 CTE Pathway: E8 1 E8 2 E10 1
(45 hours)		F8.1, F8.2, F10.1
D. LANDSCAPE DESIGN AND CONSTRUCTION Understand the features and functions of the different types of landscape construction equipment and the techniques used in masonry, brick-onsand installation, and carpentry.	 Describe and demonstrate the following fundamentals of concrete installation: a. construction of forms b. mixing c. pouring d. tamping e. broom finish Describe and demonstrate proper laying of brick on sand. a. Describe and demonstrate the fundamentals of sand box construction, including: 	Career Ready Practice: 2, 5, 11 CTE Anchor: Communications: 2.5 Technology: 4.1, 4.2, 4.7

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	COMPETENCY AREAS AND STATEMENTS	MINIMAL COMPETENCIES	STANDARDS
	(50 hours)	b. Identify the different parts of a planting plan. c. Describe the steps in reading a planting plan.	Problem Solving and Critical Thinking: 5.4 Technical Knowledge and Skills: 10.1 Demonstration and Application: 11.1, 11.3 CTE Pathway: F5.2, F7.2, F9.2, F9.3, F10.1
E.	TURF MAINTENANCE Learn the features and functions of turf maintenance equipment and the techniques used in the production and maintenance of turf.	 Define turf. Identify the four different types of turf. Describe fertilizer requirements for different types of turf. Differentiate warm-season grasses from cool-season grasses. Describe the effects of fertilizer on turf. Describe and demonstrate the proper grading of a property, paying special attention to drainage. Describe and demonstrate the proper use of a builder's level. Describe and demonstrate the techniques in seeding of a lawn. Describe and demonstrate the techniques in laying sod. Describe and demonstrate the proper operation of various lawn mowers. Describe and demonstrate the proper operation of a blade edger. Describe and demonstrate the proper operation of a string weed eater. Describe and demonstrate the proper operation of a blower. Describe and demonstrate the proper operation of a lawn edger. Describe and demonstrate the proper operation of a lawn edger. Describe and demonstrate the application of fertilizer to turf. 	Career Ready Practice: 2, 5, 10 CTE Anchor: Communications: 2.5 Problem Solving and Critical Thinking: 5.4 Technical Knowledge and Skills: 10.1 Demonstration and Application: 11.1 CTE Pathway: F5.2, F7.2, F9.2, F9.3, F10.1
	(40 hours)		F9.3, F10.1
F.	FERTILIZATION Understand the techniques used in plant fertilization.	 Define fertilization. Identify the following and their role in fertilization: a. pollen b. stigma c. pistil Identify the different techniques used in plant fertilization. Describe and demonstrate safety procedures related to plant fertilization. Describe and demonstrate methods of plant fertilization. 	Career Ready Practice: 2, 4, 10 CTE Anchor: Communications: 2.5 Technical Knowledge and Skills: 10.1

	COMPETENCY AREAS AND STATEMENTS	MINIMAL COMPETENCIES	STANDARDS
	(2 hours)		Demonstration and Application: 11.1 CTE Pathway: F10.1
G.	PEST MANAGEMENT Know the techniques used in pest management in landscaping.	 Define pest management. Identify the different types of pests that populate the landscaping areas. Identify different types of beneficial insects. Describe the role of local and state pest management regulatory agencies in the landscaping industry. Describe and demonstrate safety procedures related to pest management. Describe and demonstrate methods of pest management. 	Career Ready Practice: 1, 2, 5, 10 CTE Anchor: Communications: 2.5 Career Planning and Management: 3.4 Technology: 4.1, 4.2, 4.7 Problem Solving and Critical Thinking: 5.4 Technical Knowledge and Skills: 10.1 Demonstration and Application: 11.1 CTE Pathway: F4.1, F4.4, F8.4, F10.1, F11.4
н.	GREENHOUSE OPERATIONS Learn the greenhouse operations that support the landscaping industry.	 Define greenhouse. Compare a greenhouse to a cold frame on the basis of: a. application b. insulation quality of the components c. cost of construction d. cost of maintenance Compare a glass-paned greenhouse to a plastic-paned greenhouse on the basis of: a. durability of the components b. insulation quality of the components c. cost of construction d. cost of maintenance 	Career Ready Practice: 1, 2, 11 CTE Anchor: Technical Knowledge and Skills: 10.1 Demonstration and Application: 11.1

	COMPETENCY AREAS AND STATEMENTS	MINIMAL COMPETENCIES	STANDARDS
	(5 hours)	 Identify the different types of pests and diseases that thrive in greenhouses. Describe and demonstrate basic greenhouse procedures for landscapers. 	CTE Pathway: F10.1
I.	WATER MANAGEMENT REVIEW Review the importance of water management in landscaping.	 Review the definition of the following: a. water resources b. water management c. water sustainability Review the importance of managing the following resources and the role they play in water management: a. time b. materials c. personnel Review the specific examples of effective management of the following in landscaping: a. time b. materials c. personnel 	Career Ready Practice: 1, 2, 5, 10 CTE Anchor: Communications: 2.5 Career Planning and Management: 3.4 Technology: 4.1, 4.2, 4.7 Problem Solving and Critical Thinking: 5.4 Technical Knowledge and Skills: 10.1 CTE Pathway: F4.1, F4.4, F8.4, F10.1, F11.4
J.	ENTREPRENEURSHIP/LEGAL ASPECTS OF LANDSCAPING BUSINESS Understand employment and entrepreneurial skills and legal aspects in the landscaping industry.	 Describe employment preparation. Demonstrate skills in: a. completing a job application b. preparing for an interview Develop a résumé. Demonstrate personal and physical characteristics desirable in a job interview. Business Contracts Describe the ethical conduct essentials for opening up a business Identify each of the following as it relates to landscaping:	Career Ready Practice: 2, 4, 5, 10 CTE Anchor: Communications: 2.5 Career Planning and Management: 3.4 Problem Solving and Critical Thinking: 5.4 Ethics and Legal Responsibilities: 8.2, 8.3, 8.4

COMPETENCY AREAS AND STATEMENTS	MINIMAL COMPETENCIES	STANDARDS
	11. Visit and evaluate at least three landscaping business operations.	Knowledge and Skills: 10.9 Demonstration and Application: 11.1, 11.3, 11.4 CTE Pathway:
(10 hours)		F8.4, F11.4

SUGGESTED INSTRUCTIONAL MATERIALS and OTHER RESOURCES

TEXTS AND SUPPLEMENTAL BOOKS

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

Ingels, Jack, <u>Landscaping: Principles and Practices</u>, 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.

Wiley, John & Sons, Inc., 1995. Naylor, Robert, E.L. Weed Management Handbook, 9th Edition. ISBN 9780632057320

Sunset Editors, <u>The New Sunset Western Garden Book: The Ultimate Gardening Guide.</u> ISBN-13: 978-0376039217, 2012

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

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

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

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

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

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

SECTION J – Entrepreneurship/Legal Aspects of Landscaping Business – Pass all assignments and exams on employability skills/entrepreneurship with a minimum score of 80% or higher

Standards for Career Ready Practice

1. Apply appropriate technical skills and academic knowledge.

Career-ready individuals readily access and use the knowledge and skills acquired through experience and education. They make connections between abstract concepts with real-world applications and recognize the value of academic preparation for solving problems, communicating with others, calculating measures, and performing other work-related practices.

2. Communicate clearly, effectively, and with reason.

Career-ready individuals communicate thoughts, ideas, and action plans with clarity, using written, verbal, electronic, and/or visual methods. They are skilled at interacting with others: they are active listeners who speak clearly and with purpose, and they are comfortable with terminology that is common to workplace environments. Career-ready individuals consider the audience for their communication and prepare accordingly to ensure the desired outcome.

3. Develop an education and career plan aligned with personal goals.

Career-ready individuals take personal ownership of their educational and career goals and manage their individual plan to attain these goals. They recognize the value of each step in the educational and experiential process, and they understand that nearly all career paths require ongoing education and experience to adapt to practices, procedures, and expectations of an ever-changing work environment. They seek counselors, mentors, and other experts to assist in the planning and execution of education and career plans.

4. Apply technology to enhance productivity.

Career-ready individuals find and maximize the productive value of existing and new technology to accomplish workplace tasks and solve workplace problems. They are flexible and adaptive in acquiring and using new technology. They understand the inherent risks—personal and organizational—of technology applications, and they take actions to prevent or mitigate these risks.

5. Utilize critical thinking to make sense of problems and persevere in solving them

Career-ready individuals recognize problems in the workplace, understand the nature of the problems, and devise effective plans to solve the problems. They thoughtfully investigate the root cause of a problem prior to introducing solutions. They carefully consider options to solve a problem and, once agreed upon, follow through to ensure the problem is resolved.

6. Practice personal health and understand financial literacy.

Career-ready individuals understand the relationship between personal health and workplace performance. They contribute to their personal well-being through a healthy diet, regular exercise, and mental health activities. Career-ready individuals also understand that financial literacy leads to a secure future that enables career success.

7. Act as a responsible citizen in the workplace and the community.

Career-ready individuals understand the obligations and responsibilities of being a member of a community and demonstrate this understanding every day through their interactions with others. They are aware of the impacts of their decisions on others and the environment around them, and they think about the short-term and long-term consequences of their actions. They are reliable and consistent in going beyond minimum expectations and in participating in activities that serve the greater good.

8. Model integrity, ethical leadership, and effective management.

Career-ready individuals consistently act in ways that align with personal and community-held ideals and principles. They employ ethical behaviors and actions that positively influence others. They have a clear understanding of integrity and act on this understanding in every decision. They use a variety of means to positively impact the direction and actions of a team or organization, and they recognize the short-term and long-term effects that management's actions and attitudes can have on productivity, morale, and organizational culture.

9. Work productively in teams while integrating cultural and global competence.

Career-ready individuals contribute positively to every team, as both team leaders and team members. To avoid barriers to productive and positive interaction, they apply an awareness of cultural differences. They interact effectively and sensitively with all members of the team and find ways to increase the engagement and contribution of other members.

10. Demonstrate creativity and innovation.

Career-ready individuals recommend ideas that solve problems in new and different ways and contribute to the improvement of the organization. They consider unconventional ideas and suggestions by others as solutions to issues, tasks, or problems. They discern which ideas and suggestions may have the greatest value. They seek new methods, practices, and ideas from a variety of sources and apply those ideas to their own workplace practices.

11. Employ valid and reliable research strategies.

Career-ready individuals employ research practices to plan and carry out investigations, create solutions, and keep abreast of the most current findings related to workplace environments and practices. They use a reliable research process to search for new information and confirm the validity of sources when considering the use and adoption of external information or practices.

12. Understand the environmental, societal, and economic impacts of decisions.

Career-ready individuals understand the interrelated nature of their actions and regularly make decisions that positively impact other people, organizations, the workplace, and the environment. They are aware of and utilize new technologies, understandings, procedures, and materials and adhere to regulations affecting the nature of their work. They are cognizant of impacts on the social condition, environment, workplace, and profitability of the organization.

Statement for Civil Rights

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