

Horticulture

**HORTICULTURE – HORT**

Charles Ramos, Dean  
 Sciences Division  
 Physical Sciences Building, Room 263

**Possible career opportunities**

The horticulture program prepares students for numerous state licenses and industry certificates. State licenses include landscape contractor and pest control operator. Industry certifications include: nursery person, arborist, landscape technician, maintenance technician, and irrigation designer. Career choices in horticulture include: nursery technician, propagator, plant breeder, nursery manager, greenhouse grower, greenhouse manager, garden center manager, arborist/tree worker, landscape architect, landscape designer, grounds manager/municipal, landscape contractor, landscape maintenance contractor, golf course manager, and pest controller/advisor. Some career options may require more than two year of college work.

**Associate in science in agriculture plant science for transfer**

Students completing this program will be able to...

- A. recognize and remediate soil properties in terms of chemistry, plant growth requirements, erosion, organic content, pore space and carbon sequestration.
- B. produce plants using sexual and asexual methods of propagation, identifying water, nutrient, light, pH and temperature requirements per crop to produce crop production cost estimates.
- C. evaluate, formulate, and apply needed nutrients for specific crops grown on given soils on a seasonal basis.
- D. demonstrate pest problem solving skills through data analysis of biological and environmental factors influencing pest populations and application of integrated pest management options.
- E. describe how markets function as applied to plant science.

The associate in science in agriculture plant science for transfer degree (AS-T in Agriculture Plant Science) provides students with courses aligned for transfer to the California State University plant science baccalaureate majors and courses in agriculture plant sciences. Potential careers include: Pest Control Advisor (PCA), farm management positions, landscape design, greenhouse manager, quality control manager, county and governmental compliance inspector, sales and marketing of seed and crop related materials. Courses include soils, plant propagation, plant identification, plant pest control, and water management.

Students transferring to a CSU campus that accepts this degree will be required to complete no more than 60 units after transfer to earn a bachelor’s degree. Students should consult with a counselor for more information on specific university admission and transfer requirements.

In order to earn the degree, students must:

- Complete 60 semester CSU-transferable units.
- Complete the California State University-General Education-Breadth pattern (CSU GE-Breadth); or the Intersegmental General Education Transfer Curriculum (IGETC) pattern, including the Area 1C requirement for Oral Communication.
- Complete a minimum of 18 semester units in the major.
- Obtain of a minimum grade point average (GPA) of 2.0.
- Earn a grade of “C” or higher in all courses required for the major.

Students transferring to a CSU campus that accepts the degree will be required to complete no more than 60 units after transfer to earn a bachelor’s degree. This degree may not be the best option for students intending to transfer to a particular CSU campus or to university or college that is not part of the CSU system, or those students who do not intend to transfer.

Some courses in the major satisfy both major and CSUGE/IGETC general education requirements; however, the units are only counted once toward the 60-unit requirement for an associate’s degree. Some variations in requirements may exist at certain four-year institutions; therefore, students who intend to transfer are advised to refer to the catalog of the prospective transfer institution and consult a counselor.

<i>major requirements:</i>	<i>units</i>
HORT-110 Introduction to Horticulture and Plant Science .....	4
HORT-120 Soil Science and Management .....	3
HORT-121 Soil Science and Management Laboratory .....	1
CHEM-108 Introductory Chemistry .....	4
or	
CHEM-120 General College Chemistry I .....	5
ECON-221 Principles of Microeconomics .....	3
BUS-240 Business Statistics .....	3
or	
MATH-142 Elementary Statistics with Probability .....	4
or	
MATH-144 Statway II .....	4

*plus at least 3 units from:*

HORT-111* Plant Propagation and Production: Winter and Spring .....	3
and	
HORT-112* Plant Propagation and Production: Summer and Fall .....	3
HORT-113 Plant Materials and their Uses: Winter and Spring .....	3
HORT-114 Plant Materials and their Uses: Summer and Fall .....	3
CHEM-226 Organic Chemistry I .....	5

**total minimum required units 21**

*\*must take both as equivalent to C-ID AG-EH 116 L*

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**Certificate of achievement  
Arboriculture**

Students completing the program will be able to...

- A. identify commonly planted trees in local landscapes.
- B. use dichotomous keys to correctly identify tree species.
- C. use site analysis data to determine appropriate tree species.
- D. explain how trees should be planted, staked, pruned, and irrigated.
- E. identify common insect pests and disease pathogens of common trees.
- F. assess tree health and recognize potential hazards.
- G. interpret local tree ordinance regulations for county residents.
- H. describe tree selection mistakes.
- I. demonstrate techniques to mitigate tree pruning errors.

This certificate of achievement prepares students for employment as arborists in a variety of settings including public and private gardens, parks, golf courses, institutions, municipalities, utilities, government agencies, and commercial and residential tree care services. It includes classroom, laboratory, and work experience/internships. Completion of the certificate requirements will also prepare students to sit for the International Society of Arboriculture (ISA) certification.

To earn a certificate of achievement, students must complete each course used to meet a certificate requirement with a "C" grade or higher. Required courses are available in the evening and/or on weekends.

<i>required courses:</i>	<i>units</i>
HORT-110 Introduction to Horticulture.....	4
HORT-120 Soil Science and Management.....	3
HORT-125 Integrated Pest Management.....	3.5
HORT-170 Woody Plants: Identification and Maintenance.....	4
HORT-171 Pruning Laboratory.....	1
HORT-179 Arboriculture.....	4
HORT 185 Site Analysis.....	1.5
HORT-187 Sustainable Water Practices.....	3

*plus at least 2 units from:*

HORT-296 Internship Occupational Work Experience Education in HORT.....	2-4
<b>total minimum required units</b>	<b>26</b>

**Certificate of achievement  
Arboriculture entrepreneurship**

Students completing this program will be able to...

- A. implement tree trimming safety procedures.
- B. use field examinations to determine tree problems.
- C. diagnose woody plant suitability for given sites.
- D. recognize species and the characteristics of a given species.
- E. construct a business plan and essential financial documents for a small business.
- F. describe basic accounting and marketing knowledge to support a business.

This certificate of achievement adds business courses to the Tree Technician Certificate of Accomplishment. The additional coursework provides the business skills needed to start and run arboriculture businesses or enhance employability in local arboriculture businesses.

To earn a certificate of achievement, students must complete each course used to meet a certificate requirement with a "C" grade or higher. Required courses are available in the evening and/or on weekends.

<i>required courses:</i>	<i>units</i>
HORT-110 Introduction to Horticulture and Plant Science.....	4
HORT-170 Woody Plants: Identification and Maintenance.....	4
HORT-171 Pruning Laboratory.....	1
HORT-179 Arboriculture.....	4

*plus at least 3 units from:*

BUSMG-191 Small Business Management.....	3
BUSMG-192 Entrepreneurship and Venture Management ...	3

*plus at least 3 units from:*

BUSAC-185 QuickBooks Accounting for Business I.....	1.5
BUSAC-188 QuickBooks Accounting for Business II.....	1.5
BUSMK-259 Digital Marketing Fundamentals.....	3
BUSMK-260 Social Media Marketing.....	3

**total minimum required units..... 19**

**Certificate of achievement  
Landscape design**

Students completing the program will be able to...

- A. develop fundamental designer and client communication techniques.
- B. perform a site analysis and inventory.
- C. recognize and develop a personal landscape design process.
- D. create presentations through graphic sketching and drafting.
- E. identify plant and non-plant material suitable for specific site design.
- F. produce a portfolio and related documents necessary to enter the marketplace

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This certificate presents the fundamental skills used by landscape designers. Using hand-drawing and digital tools, students will develop designs based upon environments typical of residential and small commercial landscape sites. Through portfolio development and presentations, students will emulate the industry practice of designer/client interaction.

To earn a certificate of achievement, students must complete each course used to meet a certificate requirement with a "C" grade or higher. Required courses are available in the evening and/or on weekends.

<i>required courses:</i>	<i>units</i>
ARCLA-120 Introduction to Landscape Architecture and Environmental Design .....	3
ARCLA-121 Landscape Design .....	3
ARCLA-130 Landscape Design and Graphics .....	3
HORT-110 Introduction to Horticulture and Plant Science .....	4
HORT-120 Soil Science and Management .....	3
HORT-185 Site Analysis .....	1.5
HORT-187 Sustainable Water Management .....	3

*plus at least 3 units from:*

HORT-113 Plant Materials and their Uses: Winter and Spring .....	3
HORT-114 Plant Materials and their Uses: Summer and Fall .....	3

*plus at least 3 units from:*

ARCHI-135 Digital Tools for Design .....	3
ARCHI-136 Digital Tools for Architecture .....	3
<b>total minimum required units</b>	<b>26.5</b>

### Certificate of achievement Landscape design entrepreneurship

Students completing this program will be able to...

- A. apply principles of planting design theory to landscape design projects.
- B. prepare rendered documents for presentation.
- C. prepare professional level planting plans and schedules, estimating quantity and sizes of plants required.
- D. construct a business plan and essential financial documents for a small business.
- E. describe basic accounting and marketing knowledge to support a business.

This certificate of achievement adds business courses to the Landscape Design Fundamentals Certificate of Accomplishment. The additional coursework provides the business skills needed to start and run landscape design businesses or to enhance employability in local landscaping businesses.

To earn a certificate of achievement, students must complete each course used to meet a certificate requirement with a "C" grade or higher. Required courses are available in the evening and/or on weekends.

<i>required courses:</i>	<i>units</i>
ARCLA-130 Landscape Drafting and Graphics .....	3
HORT-110 Introduction to Horticulture and Plant Science .....	4
HORT-185 Site Analysis .....	1.5

*plus at least 3 units from:*

HORT-113 Plant Materials and their Uses: Winter and Spring .....	3
HORT-114 Plant Materials and their Uses: Summer and Fall .....	3

*plus at least 3 units from:*

BUSMG-191 Small Business Management .....	3
BUSMG-192 Entrepreneurship and Venture Management ...	3

*plus at least 3 units from:*

BUSAC-185 QuickBooks Accounting for Business I .....	1.5
BUSAC-188 QuickBooks Accounting for Business II .....	1.5
BUSMK-259 Digital Marketing Fundamentals .....	3
BUSMK-260 Social Media Marketing .....	3

**total minimum required units .....**  
**17.5**

### Certificate of achievement Master grower

Students completing this program will be able to...

- A. describe specific environmental and cultural requirements to grow common plants.
- B. describe the pests and control methods for pests common to controlled environment plant production
- C. identify the requirements for successful seed and vegetative propagation of cannabis.
- D. construct a business plan and essential financial documents for a small business.
- E. describe basic accounting and marketing knowledge to support a business.

This certificate of achievement will allow students who are interested in becoming Master Growers to develop the business skills needed to start and run their own nurseries and greenhouses as Master Growers or to increase their employability in local businesses.

To earn a certificate of achievement, students must complete each course used to meet a certificate requirement with a "C" grade or higher. Required courses are available in the evening and/or on weekends.

<i>required courses:</i>	<i>units</i>
HORT-110 Introduction to Horticulture and Plant Science .....	4
HORT-125 Integrated Pest Management .....	3.5
HORT-151 Controlled Environment Growing (CEG): Methods of Plant Production .....	3

*plus at least 3 units from:*

HORT-163 Nursery and Greenhouse Practices: Summer/Fall .....	3
HORT-168 Nursery and Greenhouse Practices: Winter/Spring .....	3

*plus at least 3 units from:*

BUSMG-191 Small Business Management .....	3
BUSMG-192 Entrepreneurship and Venture Management ...	3

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plus at least 3 units from:

BUSAC-185	QuickBooks Accounting for Business I	1.5
BUSAC-188	QuickBooks Accounting for Business II	1.5
BUSMK-259	Digital Marketing Fundamentals	3
BUSMK-260	Social Media Marketing	3

**total minimum required units**..... 19.5

**Certificate of achievement  
Nursery and greenhouse**

Students completing the program will be able to...

- A. identify, alleviate, and recommend treatment for diseases and pathogens.
- B. describe specific environmental and cultural requirements to grow seasonal common plants.
- C. select plants based on analysis of a specific landscape setting.
- D. maintain and support nursery operations.
- E. describe and differentiate among physical and growth characteristics of common seasonal plants.
- F. group plants according to water needs (zoning).
- G. implement safety and procedures.

This certificate provides the skills needed to work in the local nursery industry including plant identification, plant propagation, labeling, nursery sales, marketing and nursery management. The program includes lectures, laboratory, and work experience.

To earn a certificate of achievement, students must complete each course used to meet a certificate requirement with a "C" grade or higher. Required courses are available in the evening and/or on weekends.

<i>required courses:</i>		<i>units</i>
HORT-110	Introduction to Horticulture and Plant Science	4
HORT-113	Plant Materials and their Uses: Winter and Spring	3
HORT-114	Plant Materials and their Uses: Summer and Fall	3
HORT-163	Nursery and Greenhouse Practices: Summer/Fall	3
HORT-183	Garden Design	1.5
HORT-185	Site Analysis	1.5
HORT-187	Sustainable Water Management	3

plus at least 2 units from:

HORT-296	Internship in Occupational Work Experience Education in HORT	2-4
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plus at least 3 units from:

HORT-111	Plant Propagation and Production: Winter and Spring	3
HORT-112	Plant Propagation and Production: Summer and Fall	3
<b>total minimum required units</b>		<b>24</b>

**Certificate of achievement – Nursery and greenhouse entrepreneurship**

Students completing this program will be able to...

- A. identify, alleviate and recommend treatment for diseases and pathogens.
- B. describe specific environmental and cultural requirements to grow seasonal common plants.
- C. maintain and support nursery operations.
- D. construct a business plan and essential financial documents for a small business.
- E. describe basic accounting and marketing knowledge to support a business.

This certificate of achievement adds business courses to the Nursery Technician Certificate of Accomplishment. The additional coursework provides the business skills needed to start and run nurseries and greenhouses or to enhance employability in local nursery and greenhouse businesses.

To earn a certificate of achievement, students must complete each course used to meet a certificate requirement with a "C" grade or higher. Required courses are available in the evening and/or on weekends.

<i>required courses:</i>		<i>units</i>
HORT-110	Introduction to Horticulture and Plant Science	4

plus at least 3 units from:

HORT-163	Nursery and Greenhouse Practices: Summer/Fall	3
HORT-168	Nursery and Greenhouse Practices Winter/Spring	3

plus at least 3 units from:

HORT-111	Plant Propagation and Production: Winter and Spring	3
HORT-112	Plant Propagation and Production: Summer and Fall	3

plus at least 3 units from:

BUSMG-191	Small Business Management	3
BUSMG-192	Entrepreneurship and Venture Management	3

plus at least 3 units from:

BUSAC-185	QuickBooks Accounting for Business I	1.5
BUSAC-188	QuickBooks Accounting for Business II	1.5
BUSMK-259	Digital Marketing Fundamentals	3
BUSMK-260	Social Media Marketing	3

**total minimum required units**..... 16

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**Certificate of achievement  
Plant science and horticulture**

Students completing the program will be able to...

- A. integrate the knowledge of higher plant functions with site analysis
- B. describe local geographical features and their relationship to soils.
- C. select appropriate plants for specific environmental conditions.
- D. apply appropriate plant pruning techniques.
- E. demonstrate proper use of botanical nomenclature.
- F. identify exotic and native woody plants.
- G. explain the effects of temperature, water, humidity, and fertility on winter and spring plant growth,
- H. apply learned skills to gardens.

This certificate program is designed to prepare students with the skills, knowledge, and training to enter into local green industry jobs in fields such as landscape installation, maintenance, park service, plant propagation, nursery, and remediation. The certificate provides a strong foundation for students who intend to pursue a baccalaureate degree in horticulture, plant science, and agriculture majors.

To earn a certificate of achievement, students must complete each course used to meet a certificate requirement with a "C" grade or higher. Required courses are available evenings and/or weekends.

<i>required courses:</i>	<i>units</i>
HORT-110 Introduction to Horticulture and Plant Science .....	4
HORT-120 Soil Science and Management .....	3
HORT-121 Soil Science and Management Laboratory .....	1
HORT-171 Pruning Laboratory .....	1
HORT-187 Sustainable Water Management.....	3

*plus at least 2 units from:*

HORT-296 Internship in Occupational Work Experience Education in HORT .....	2-4
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*plus at least 3 units from:*

HORT-113 Plant Materials and their Uses: Winter and Spring .....	3
HORT-114 Plant Materials and their Uses: Summer and Fall .....	3

*plus at least 4 units from:*

CONST-135 Construction Processes: Residential .....	4
HORT-170 Woody Plants: Identification and Maintenance.....	4

*plus at least 3 units from:*

HORT-111 Plant Propagation and Production: Winter and Spring .....	3
HORT-112 Plant Propagation and Production: Summer and Fall .....	3
<b>total minimum required units</b>	<b>24</b>

**Certificate of accomplishment  
Horticulture technician**

Students completing the program will be able to...

- A. integrate the knowledge of higher plant functions with site analysis.
- B. describe local geographical features and their relationship to soils.
- C. describe the relationship between plants, soil and water.
- D. evaluate plant pruning needs.

This certificate introduces students to the comprehensive field of plant science and horticulture, the green industry. Green industry professionals are responsible for nurturing and protecting our natural resources and integrating them into the built environment. This foundational certificate can lead to further study in the fields of landscape installation, maintenance, park service, plant propagation, nursery, and remediation.

To earn a certificate of accomplishment, students must complete each course used to meet a certificate requirement with a "C" grade or higher. Required courses are available evenings and/or weekends.

<i>required courses:</i>	<i>units</i>
HORT-110 Introduction to Horticulture and Plant Science .....	4
HORT-120 Soil Science and Management.....	3
HORT-171 Pruning Laboratory .....	1
HORT-187 Sustainable Water Management.....	3
<b>total minimum required units</b>	<b>11</b>

**Certificate of accomplishment  
Landscape design fundamentals**

Students completing the program will be able to...

- A. apply principles of planting design theory to landscape design projects.
- B. prepare rendered documents for presentation.
- C. prepare professional level planting plans and schedules, estimating quantity and sizes of plants required.

This certificate incorporates the basic principles of site analysis, plant science, and soil science as applied to landscape design principles. Students are prepared for entry-level positions in the landscape industry focusing on residential settings and small commercial sites.

To earn a certificate of accomplishment, students must complete each course used to meet a certificate requirement with a "C" grade or higher. Required courses are available evenings and/or weekends.

<i>required courses:</i>	<i>units</i>
ARCLA-130 Landscape Design and Graphics .....	3
HORT-110 Introduction to Horticulture and Plant Science	4
HORT-185 Site Analysis .....	1.5

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*plus at least 3 units from:*

HORT-113	Plant Materials and their Uses: Winter and Spring .....	3
HORT-114	Plant Materials and their Uses: Summer and Fall .....	3
<b>total minimum required units</b>		<b>11.5</b>

*required courses:*

HORT-110	Introduction to Horticulture and Plant Science .....	4
HORT-170	Woody Plants: Identification and Maintenance.....	4
HORT-171	Pruning Laboratory .....	1
HORT-179	Arboriculture.....	4
<b>total minimum required units</b>		<b>13</b>

**Certificate of accomplishment  
Nursery technician**

Students completing the program will be able to...

- A. identify, alleviate and recommend treatment for diseases and pathogens.
- B. describe specific environmental and cultural requirements to grow seasonal common plants.
- C. maintain and support nursery operations.

This certificate provides the fundamental skills required for entry-level employment in the nursery industry. It includes classroom and hands-on laboratory experiences.

To earn a certificate of accomplishment, students must complete each course used to meet a certificate requirement with a "C" grade or higher. Required courses are available in the evening and/or on weekends.

*required courses:*

HORT-110	Introduction to Horticulture and Plant Science .....	4
HORT-163	Nursery and Greenhouse Practices: Summer/Fall .....	3

*plus at least 3 units from:*

BUSMG-191	Small Business Management .....	3
BUSMG-192	Entrepreneurship and Venture Management ...	3
HORT-111	Plant Propagation and Production: Winter and Spring .....	3
HORT-112	Plant Propagation and Production: Summer and Fall .....	3
<b>total minimum required units</b>		<b>10</b>

**Certificate of accomplishment  
Tree technician**

Students completing the program will be able to...

- A. implement tree trimming safety procedures.
- B. use field examinations to determine tree problems.
- C. diagnose woody plant suitability for given sites.
- D. recognize species and the characteristics of a given species.

This program prepares students for employment as assistant tree trimmers, pruners, or fallers working under certified arborists

To earn a certificate of accomplishment, students must complete each course used to meet a certificate requirement with a "C" grade or higher. Required courses are available evenings and/or on weekends.

**HORT-110 Introduction to Horticulture and Plant Science**

- 4 units SC
- 54 hours lecture/54 hours laboratory per term
  - Advisory: CHEM-106, MATH-085 or MATH-085SP or beginning algebra and college-level reading and writing are expected or equivalents

This course provides an introduction to plant sciences as related to horticulture. Topics include plant morphology, growth processes, propagation, physiology, growth media, biological competitors, and post-harvest factors of food, fiber, ornamental and native plants. CID AG-PS 106L, CSU, UC

**HORT-111 Plant Propagation and Production: Winter and Spring**

- 3 units SC
- 36 hours lecture/54 hours laboratory per term
  - Prerequisite: HORT-110 (may be taken concurrently) or equivalent
  - Advisory: HORT-125 or equivalent

This course introduces plant propagation and production practices for nursery operations, with an emphasis on sexual and asexual reproduction of winter and spring plants. Topics include winter and spring planting specifications, transplanting, fertilizing, plant pest and disease control; structures and site layout; preparation and use of propagating and planting mediums; use and maintenance of common tools and equipment; regulations pertaining to plant production; and new plant introductions in the nursery industry. Students will also participate in greenhouse management, scheduling of plant production, seed-starting, vegetative propagation and the marketing of winter and spring containerized nursery stock. HORT 111 + HORT 112 = C-ID AG - EH 116L, CSU

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**HORT-112 Plant Propagation and Production:  
Summer and Fall**

3 units SC

- 36 hours lecture/54 hours laboratory per term
- Prerequisite: HORT-110 (may be taken concurrently) or equivalent
- Advisory: HORT-125 or equivalent

This course introduces plant propagation and production practices for nursery operations, with an emphasis on sexual and asexual reproduction of summer and fall plants. Topics include summer and fall planting specifications, transplanting, fertilizing, plant pest and disease control; structures and site layout; preparation and use of propagating and planting mediums; use and maintenance of common tools and equipment; regulations pertaining to plant production; and new plant introductions in the nursery industry. Students will also participate in greenhouse management, scheduling of plant production, seed-starting, vegetative propagation and the marketing of summer and fall containerized nursery stock. HORT 111 + HORT 112 = C-ID AG-EH 116L, CSU

**HORT-113 Plant Materials and their Uses: Winter  
and Spring**

3 units SC

- 36 hours lecture/54 hours laboratory per term
- Prerequisite: HORT-110 (may be taken concurrently) or equivalent

This course introduces the identification and uses of common plants in the California landscape that are of special interest in the winter or spring. Topics include native and introduced plant identification, growth habits, cultural and environmental requirements, uses in the landscape. Plants emphasized will come from the current California Association of Nurseries & Garden Centers (CANGC) and Professional Landcare Network (PLANET) Certification Tests Plant Lists. C-ID AG-EH 108L, CSU

**HORT-114 Plant Materials and their Uses:  
Summer and Fall**

3 units SC

- 36 hours lecture/54 hours laboratory per term
- Prerequisite: HORT-110 (may be taken concurrently) or equivalent

This course introduces the identification and uses of common plants in the California landscape that are of special interest in the summer or fall. Topics include native and introduced plant identification, growth habits, cultural and environmental requirements, uses in the landscape. Plants emphasized will come from the current California Association of Nurseries & Garden Centers (CANGC) and Professional Landcare Network (PLANET) Certification Tests Plant Lists. C-ID AG-EH 112 109L, CSU

**HORT-120 Soil Science and Management**

3 units SC

- 54 hours lecture per term
- Prerequisite: HORT-110 or equivalent
- Advisory: CHEM-106, MATH-085 or MATH-085SP or beginning algebra or equivalents, and college-level reading and writing are expected.

This course presents a study of soil science and management of soils. Biology, physics and chemistry are integrated with geological concepts to provide a comprehensive overview of all facets of soil science. Topics covered include soil classification, derivation, use, function and management including erosion, moisture retention, structure, cultivation, organic matter and microbiology. HORT 120 + HORT 121 = C-ID AG-PS 128L, CSU, UC

**HORT-121 Soil Science and Management  
Laboratory**

1 unit SC

- 54 hours laboratory per term
- Prerequisite: HORT-110, HORT-120 or equivalents (may be taken concurrently)
- Advisory: CHEM-106, MATH-085 or MATH-085SP or beginning algebra or equivalents, and college-level reading and writing are expected
- Formerly HORT-120L

The lab for soils will include identifying soil types, classifications, reactions, fertility and physical properties. Soil management, biology, chemistry and microbiology will be explored. Regional soils and soil quality are investigated. Laboratory required for transfer to CSU. HORT 120 + HORT 121 = C-ID AG - PS 128 128L, CSU

**HORT-125 Integrated Pest Management**

3.5 units SC

- 54 hours lecture/27 hours laboratory per term
- Prerequisite: HORT-110 (may be taken concurrently) or equivalent
- Advisory: MATH-085 or MATH-085SP or beginning algebra or equivalents, and college-level reading and writing are expected
- Note: This course meets the California State Pest Control Advisor, California Association of Nurserymen, and International Society of Arboriculture Continuing Education Units (CEU) license certification for CEUs necessary for pest control operators and advisors

This course will introduce students to plant, insect and disease pests associated in California. Key concepts in applied ecology of pest and beneficial species, insect, vertebrate and disease identification and control methodologies using Integrated Pest Management (IPM) and Plant Health Care models are emphasized. CSU

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**HORT-148L California Native Plants Laboratory**

1 unit SC

- 54 hours laboratory per term
- Advisory: HORT-110 or equivalent

This course presents a study of California plant communities and the environments that shape them. The dominant and typical plant constituents of each vegetation unit, focusing on native species currently used in the nursery industry will be covered. Habitat, soil, and climatic factors will be discussed as related to the plant species established in their natural and horticultural environment, exploring possibilities of integration into residential landscapes. Local field trips to select California vegetation environments are taken to record relevant plant and habitat data. Destinations will vary based on season and term. CSU

**HORT-150 Topics in Horticulture**

.3-4 units SC

- Variable hours

A supplemental course in horticulture to provide a study of current concepts and problems in horticulture and related subdivisions. Specific topics will be announced in the schedule of classes. CSU

**HORT-151 Controlled Environment Growing (CEG): Methods of Plant Production**

3 units SC

- 36 hours lecture/54 hours laboratory per term
- Advisory: HORT-110 or equivalent

This course presents the history, current state, and future of Controlled Environment Growing (CEG), also known as Controlled Environment Agriculture (CEA). Topics include hydroponics, aquaponics, and aeroponic systems, as well as a review of basic plant anatomy and physiology. Emphasis is placed on cultural practices, plant protection (insects and diseases), pollination/fertilization and bee management, plant nutrition and disorders, irrigation systems and nutrient solutions, transplant production, structures, control systems and energy conservation, harvesting, grading and storage, marketing and economics of CEG systems. CSU

**HORT-160 Plant Propagation**

1.5 units SC

- 18 hours lecture/27 hours laboratory per term
- Advisory: HORT-110 or equivalent and College-level reading and writing are expected.

This course will introduce students to the principles and practices of plant propagation from seed and vegetative material to marketable nursery stock. The key concepts of physiological processes, environmental requirements and techniques required for successful plant production will be covered. CSU

**HORT-163 Nursery and Greenhouse Practices: Summer/Fall**

3 units SC

- 36 hours lecture/54 hours laboratory per term
- Advisory: College-level reading and writing are expected.

This course develops the knowledge and skills needed to work as a manager or supervisor in the wholesale and retail plant nursery industry and provides advanced training in the production, staging and marketing of plants, staff management and customer care in summer and fall. Topics include office practices, business operations and management and marketing for container, hydroponics and aquaponic greenhouse systems. CSU

**HORT-168 Nursery and Greenhouse Practices: Winter/Spring**

3 units SC

- 36 hours lecture/54 hours laboratory per term
- Advisory: College-level reading and writing are expected.

This course develops the knowledge and skills needed to work as a manager or supervisor in the wholesale and retail plant nursery industry and provides advanced training in the production, staging and marketing of plants, staff management and customer care in winter and spring. Topics include office practices, business operations, and management and marketing for container, hydroponics and aquaponic greenhouse systems. CSU

**HORT-170 Woody Plants: Identification and Maintenance**

4 units SC

- 54 hours lecture/36 hours laboratory per term
- Advisory: HORT-110 or equivalents and College-level reading and writing are expected.
- Note: Field Trips Required. This course meets the plant certification for California Association of Nurserymen, California Landscape Contractor's Licensing and satisfies International Society of Arboriculture Continuing Education units.
- Formerly HORT-143 and HORT-143L

Students will learn the taxonomy, identification, growth habits, landscape values, maintenance requirements and natiivities of woody plants used in regional landscapes. Emphasis will be placed on regenerative landscape design with a focus on ecologically appropriate choices. CSU

**HORT-171 Pruning Laboratory**

1 unit SC

- 54 hours laboratory per term
- Formerly HORT-137L

This course will provide hands-on experience with winter and spring mechanical modification of common landscape plants, including roses, dormant trees and shrubs, and post-bloom pruning for spring flowering plants. Safety, tool maintenance, tool use, disease prevention and techniques that enhance plant structure will be covered. CSU



## Horticulture

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### **HORT-179 Arboriculture**

4 units SC

- 54 hours lecture/54 hours laboratory per term
- Advisory: College-level reading and writing are expected. HORT-110 or equivalents
- Note: This course meets the requirements for the California Association of Nurserypersons and International Society of Arboriculture Continuing Education Units (CEU).

This comprehensive class teaches students how to manage trees in urban and suburban landscapes. Included are the benefits that trees provide, and species profiles, form and ecological functions. Observational analysis skills will be taught in conjunction with scientific knowledge to direct assessment and diagnosis. Tree health subjects and applications include species selection, planting and establishment, pruning, safety, cabling, bracing, staking, watering, fertilizing, and pest control. The focus will be on trees appropriate for Contra Costa soils and micro-climates. CSU

### **HORT-183 Garden Design**

1.5 units SC

- 18 hours lecture/27 hours laboratory per term
- Advisory: HORT-110 or equivalent

This basic design course is intended for students in the nursery and landscape industry as well as interested laypersons and residential homeowners. Fundamental design principles, plant selection, landscape materials and planting techniques will be covered. Plant selection for seasonal color, energy efficiency and water usage will be introduced. Students will layout a rough site plan overview of a personal garden design. CSU

### **HORT-185 Site Analysis**

1.5 units SC

- 18 hours lecture/27 hours laboratory per term
- Advisory: HORT-110 and HORT-182 or equivalents

This course provides an introduction to the site analysis skills required by landscape designers, architects, contractors, maintenance technicians and gardeners. Details of specified sites are assessed, inventoried and documented including climatic, geographical, historical, legal, and infrastructural conditions. CSU

### **HORT-187 Sustainable Water Management**

3 units SC

- 36 hours lecture/54 hours laboratory per term
- Notes: Field trips may be required

This course introduces concepts and practices in landscape irrigation and sustainable water use. Topics include the relationships between plants, soils and water auditing; irrigation design; monitoring techniques; rainwater/greywater collection and delivery systems; subsurface installation; irrigation and system repair. State and local water regulations, water supply and quality are also covered. CSU

### **HORT-296 Internship in Occupational Work Experience Education in HORT**

2-4 units SC

- May be repeated eight times
- Variable hours
- Note: In order to enroll in the HORT-296 course, students must be interning or volunteering, register for the course, complete an online Employment Form, and participate in an orientation. Incomplete grades are not awarded for this course.

HORT-296 is a supervised internship in a skilled or professional level assignment in the student's major field of study or area of career interest. Under the supervision of a college instructor, students will engage in on-the-job and other learning experiences that contribute to their employability skills and occupational or educational goals. Internships may be paid, non-paid, or some partial compensation provided. Each unit represents five hours of paid work or four hours of unpaid work per week or 75 hours of paid work or 60 hours of unpaid work per term. Students may earn up to a total of 16 units in any combination of WRKX courses. Repetition allowed per Title 5, Section 55253. CSU

### **HORT-298 Independent Study**

.5-3 units SC

- Variable hours
- Note: Submission of acceptable educational contract to department and Instruction Office is required.

This course is designed for advanced students who wish to conduct additional research, a special project, or learning activities in a specific discipline/subject area and is not intended to replace an existing course. The student and instructor develop a written contract that includes objectives to be achieved, activities and procedures to accomplish the study project, and the means by which the supervising instructor may assess accomplishment. CSU

### **HORT-299 Student Instructional Assistant**

.5-3 units SC

- Variable hours
- Note: Applications must be approved through the Instruction Office. Students must be supervised by a DVC instructor.

Students work as instructional assistants, lab assistants and research assistants in this department. The instructional assistants function as group discussion leaders, meet and assist students with problems and projects, or help instructors by setting up laboratory or demonstration apparatus. Students may not assist in course sections in which they are currently enrolled. CSU