

Horticulture

| American River College

ARC's horticulture department serves professionals, students and members of the community. Horticulture seeks to improve plant culture methods, the sustainability of the environment, enriching economic vitality, and influencing the quality of life of individuals and their communities. Horticulturists have a broad knowledge of ornamental plants, turf grasses, fruit and non-fruit bearing trees, vines, and shrubs. Horticulture is producing the plants, marketing plants and landscape products, designing, installing and maintaining the outdoor and indoor environments where we live, work, and play.

California's horticulture industry is a multi-billion dollar business that provides opportunities at many different levels for qualified individuals. ARC's horticulture program prepares students for self-employment, employment, and self-improvement.

[\(/academics/arc-program-road-maps\)](/academics/arc-program-road-maps)

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Associate Degrees

A.S. in Horticulture

This degree represents several areas of study in Horticulture: arboriculture, floriculture, landscape horticulture and landscape design, olericulture, pomology, and viticulture. Horticulture is the science, art and skill of plant cultivation and the focus of the program is to prepare horticulturalists to work and do research in the many disciplines the industry has to offer. The degree program concentrates on plant identification, landscape design, construction and maintenance, soils and plant nutrition, plant production and marketing, irrigation and water conservation, integrated pest management, and sustainable horticultural practices. Work experience is required.

Degree Requirements

COURSE CODE	COURSE TITLE	UNITS
HORT 100	Integrated Pest Management in the Landscape	3
HORT 143	Horticulture Skills Development	1
HORT 298	Work Experience in Horticulture	1 -4
HORT 300	Introduction to Horticulture	3
HORT 302	Soils, Soil Management, and Plant Nutrition	3
HORT 305	Plant Identification-Fall Selections	3
HORT 306	Plant Identification-Spring Selections	3
HORT 312	Plant Propagation	3
HORT 316	Plant Production, Facilities and Sales	3
HORT 320	Sustainable Landscape Construction	3
HORT 322	Landscape and Irrigation Graphics and Design	3
HORT 324	Sustainable Landscape Maintenance	3

COURSE CODE	COURSE TITLE	UNITS
HORT 329	Landscape CAD Design	3
A minimum of 3 units from the following:		3
BUS 212	Marketing for Small Businesses (1)	
BUS 216	Essential Records for the Small Business (1)	
BUS 218	Management Skills for the Small Business (1)	
HORT 105	Pest Control Licensing or Certification (2)	
HORT 200	Introduction to Retail Floristry (2)	
HORT 308	Viticulture-Vineyard Establishment (1)	
HORT 309	Viticulture - Sustainable Vineyard Management (1)	
HORT 321	Sustainable and Ecolandscape Practices (3)	
HORT 326	Landscape Design (3)	
HORT 327	Advanced Landscape Design (3)	
HORT 330	Small Gas Engines, Outdoor Power Equipment (4)	
NATR 330	Native Trees and Shrubs of California (4)	
NATR 332	Wildflowers of California (3)	
Total Units:		38 - 41

The Horticulture Associate in Science (A.S.) degree may be obtained by completion of the required program, plus general education requirements, plus sufficient electives to meet a 60-unit total. See ARC graduation requirements.

Student Learning Outcomes

Upon completion of this program, the student will be able to:

- identify and select plant materials that are used for landscapes in the northern California regions.
- analyze a landscape site and create a complete and appropriate landscape design for that site.
- analyze a landscape design and apply the sustainable installation procedures necessary to implement the design.
- assess a landscape and apply the sustainable landscape maintenance operation techniques required.
- assess a soil analysis and apply the appropriate steps to provide for plant health and soil sustainability.
- apply the plant production options to produce landscape nursery stock by sexual and asexual methods.
- diagnose plant pest signs and symptoms.
- formulate a pest management plan using the principles of integrated pest management and recognizing the requirements for licensing or certification.
- formulate a marketing plan for a retail nursery and apply the techniques for selling plants and related products.
- utilize the sustainable methods of plant growth and production for ornamental and edible plant materials.
- identify and then apply safe operating procedures and practices to all horticultural operations.
- safely and efficiently operate pesticide application equipment.

Career Information

Horticulturalists find careers in landscape horticulture, which includes the production, marketing and maintenance of landscape plants, as well as the

landscape design/build industry, which includes design, construction, and maintenance of outdoor and interior landscapes. Graduates can find careers in the nursery industry, which includes plant production and retail garden centers, and the landscape construction and maintenance industry. Opportunities are with industry, government, education and research, and self employment.

A.S. in Landscape Design Technology

This degree is a bi-disciplinary study of horticulture resources and design fundamentals. It includes an in-depth study of plant materials, irrigation, landscape design, and site planning. Topics such as landscape computer-aided design, surveying, and construction measurement techniques, are also covered.

Degree Requirements

COURSE CODE	COURSE TITLE	UNITS
HORT 110	Irrigation Design	2
HORT 300	Introduction to Horticulture	3
HORT 305	Plant Identification-Fall Selections (3)	3
or HORT 306	Plant Identification-Spring Selections (3)	
HORT 320	Sustainable Landscape Construction	3
HORT 322	Landscape and Irrigation Graphics and Design	3
HORT 326	Landscape Design	3
HORT 329	Landscape CAD Design	3
DESGN 100	Introduction to Computer Aided Drafting and Design (CADD)	3
DESGN 302	Technical Documentation with CADD	3
DESGN 300	Introduction to Design Resources	3
DESGN 350	Surveying and Land Planning	5
Total Units:		34

The Landscape Design Technology Associate in Science (A.S.) degree may be obtained by completion of the required program, plus general education requirements, plus sufficient electives to meet a 60-unit total. See ARC graduation requirements.

Student Learning Outcomes

Upon completion of this program, the student will be able to:

- select plant materials that are used for landscapes.
- solve landscape design problems.
- analyze typical landscape design projects using the design process.
- communicate landscape design solutions effectively.

Career Information

Landscape architects and landscape architect technicians are responsible for the overall design and detailed drawings of a wide range of projects in outdoor spaces including commercial and residential developments, parks and recreation areas, as well as master plans for the management of forested lands.

Employment of landscape architects and landscape architect technicians is expected to increase as a result of the increasing emphasis on sustainability land development and design.

Certificates of Achievement

Horticulture Certificate

This certificate represents several areas of study in Horticulture: arboriculture, floriculture, landscape horticulture and landscape design, olericulture, pomology, and viticulture. Horticulture is the science, art and skill of plant cultivation and the focus of the program is to prepare horticulturalists to work and do research in the many disciplines the industry has to offer. The certificate program concentrates on plant identification, landscape design, construction and maintenance, soils and plant nutrition, plant production and marketing, irrigation and water conservation, integrated pest management, and sustainable horticultural practices.

Certificate Requirements

COURSE CODE	COURSE TITLE	UNITS
HORT 100	Integrated Pest Management in the Landscape	3
HORT 143	Horticulture Skills Development	1
HORT 300	Introduction to Horticulture	3
HORT 302	Soils, Soil Management, and Plant Nutrition	3
HORT 305	Plant Identification-Fall Selections	3
HORT 306	Plant Identification-Spring Selections	3
HORT 312	Plant Propagation	3
HORT 316	Plant Production, Facilities and Sales	3
HORT 320	Sustainable Landscape Construction	3
HORT 322	Landscape and Irrigation Graphics and Design	3
HORT 324	Sustainable Landscape Maintenance	3
HORT 329	Landscape CAD Design	3
A minimum of 3 units from the following:		3
BUS 212	Marketing for Small Businesses (1)	
BUS 216	Essential Records for the Small Business (1)	
BUS 218	Management Skills for the Small Business (1)	
HORT 105	Pest Control Licensing or Certification (2)	
HORT 200	Introduction to Retail Floristry (2)	
HORT 308	Viticulture-Vineyard Establishment (1)	
HORT 309	Viticulture - Sustainable Vineyard Management (1)	
HORT 321	Sustainable and Ecolandscape Practices (3)	
HORT 326	Landscape Design (3)	
HORT 327	Advanced Landscape Design (3)	
HORT 330	Small Gas Engines, Outdoor Power Equipment (4)	
NATR 330	Native Trees and Shrubs of California (4)	
NATR 332	Wildflowers of California (3)	
Total Units:		37

Student Learning Outcomes

Upon completion of this program, the student will be able to:

- identify and select plant materials that are used for landscapes in northern California regions.
- analyze a landscape site and create a complete landscape design for that site.

- analyze a landscape design and apply the sustainable installation procedures necessary to implement the design.
- assess a landscape and apply the sustainable maintenance operation techniques required.
- assess a soil analysis and apply the appropriate procedures for plant health and soil sustainability.
- apply the plant production options to produce landscape nursery stock by sexual and asexual methods.
- diagnose plant pest signs and symptoms.
- formulate a pest management plan using the principles of integrated pest management and recognizing the requirements for licensing or certification.
- utilize the sustainable methods of plant growth and production for ornamental and edible plant materials.
- identify and then apply safe operating procedures and practices to all horticultural operations.
- safely and efficiently operate pesticide application equipment.

Gainful Employment

The US Department of Education requires colleges to disclose a variety of information for any program that is eligible for financial aid that "prepares students for gainful employment in a recognized occupation." The following link provides Gainful Employment Disclosure information for this certificate program:

[Gainful Employment Information for Horticulture Certificate of Achievement \(https://web.losrios.edu/gainful-emp-info/arc/30490/30490.htm\)](https://web.losrios.edu/gainful-emp-info/arc/30490/30490.htm)

Career Information

Horticulturalists find careers in landscape horticulture, which includes the production, marketing and maintenance of landscape plants, as well as the landscape design/build industry, which includes design, construction, and maintenance of outdoor and interior landscapes. Graduates can find careers in the nursery industry, which includes plant production and retail garden centers, and the landscape construction and maintenance industry. Opportunities are with industry, government, education and research, and self employment.

Landscape Design Technology Certificate

This certificate is a bi-disciplinary study of horticulture resources and design fundamentals. It includes an in-depth study of plant materials, irrigation, landscape design, and site planning. Topics such as landscape computer-aided design, surveying, and construction measurement techniques, are also covered.

Certificate Requirements

COURSE CODE	COURSE TITLE	UNITS
HORT 110	Irrigation Design	2
HORT 300	Introduction to Horticulture	3
HORT 305	Plant Identification-Fall Selections (3)	3
or HORT 306	Plant Identification-Spring Selections (3)	
HORT 320	Sustainable Landscape Construction	3
HORT 322	Landscape and Irrigation Graphics and Design	3
HORT 326	Landscape Design	3
HORT 329	Landscape CAD Design	3
DESGN 100	Introduction to Computer Aided Drafting and Design (CADD)	3
DESGN 302	Technical Documentation with CADD	3
DESGN 300	Introduction to Design Resources	3

COURSE CODE	COURSE TITLE	UNITS
DESGN 350	Surveying and Land Planning	5
Total Units:		34

Student Learning Outcomes

Upon completion of this program, the student will be able to:

- select plant materials that are used for landscapes.
- solve landscape design problems.
- analyze typical landscape design projects using the design process.
- communicate landscape design solutions effectively.

Gainful Employment

The US Department of Education requires colleges to disclose a variety of information for any program that is eligible for financial aid that "prepares students for gainful employment in a recognized occupation." The following link provides Gainful Employment Disclosure information for this certificate program:

[Gainful Employment Information for Landscape Design Technology Certificate of Achievement \(https://web.losrios.edu/gainful-emp-info/arc/37116/37116.htm\)](https://web.losrios.edu/gainful-emp-info/arc/37116/37116.htm)

Career Information

Landscape architects and landscape architect technicians are responsible for the overall design and detailed drawings of a wide range of projects in outdoor spaces including commercial and residential developments, parks and recreation areas, as well as master plans for the management of forested lands.

Employment of landscape architects and landscape architect technicians is expected to increase as a result of the increasing emphasis on sustainability land development and design.

Certificates

Floristry Certificate

The Floristry certificate provides well-balanced training in the fundamentals of floral design, the identification of flowers and foliage, the care of fresh cut product and the sources of floral materials. Courses cover special event floral design such as weddings, funerals and holidays, and prepare students to participate in the varied floral enterprises.

Certificate Requirements

COURSE CODE	COURSE TITLE	UNITS
HORT 200	Introduction to Retail Floristry	2
HORT 201	Floral Design	2
HORT 202	Corsage and Wedding Floral Design	2
HORT 203	Sympathy Design and the Mass Market	2
Total Units:		8

Student Learning Outcomes

Upon completion of this program, the student will be able to:

- identify floral specimens used in commercial floristry by scientific name and availability

- assess and utilize floral materials and design to create a visually appealing and salable arrangement
- demonstrate methods in the care and merchandising of floral materials
- resource and purchase floral materials
- apply the distinctive marketing skills for both the retail and mass market in the floral industry

Career Information

Completion of the certificate provides satisfactory qualification for employment in retail and mass market floristry industries. The program also is a means to upgrade skills of those already working in the industry.

Horticulture Skills Certificate

This certificate provides individuals with a basic horticulture background and specific experience in landscape installation and plant production. Integrated Pest Management (IPM) skills can be adapted to the needs of each of these horticulture industries.

Certificate Requirements

COURSE CODE	COURSE TITLE	UNITS
HORT 100	Integrated Pest Management in the Landscape	3
HORT 143	Horticulture Skills Development	1
HORT 300	Introduction to Horticulture	3
HORT 312	Plant Propagation	3
HORT 320	Sustainable Landscape Construction	3
HORT 330	Small Gas Engines, Outdoor Power Equipment	4
Total Units:		17

Student Learning Outcomes

Upon completion of this program, the student will be able to:

- diagnose plant pest signs and symptoms
- formulate a pest management plan using the principles of Integrated Pest Management (IPM)
- recognize basic botanical structure and functions and how plants relate to the environment
- demonstrate the hands-on skills used in plant propagation including seed and vegetative techniques
- assess and implement hands-on skills of construction operations, such as using wood, pavers, irrigation components, and sustainable soil preparation and grading
- recognize and comply with the state water regulations that affect landscaping
- identify the external and internal parts of 2-cycle and 4-cycle small engines
- disassemble, inspect, repair, and assemble a single cylinder 2-cycle and 4-cycle engine

Gainful Employment

The US Department of Education requires colleges to disclose a variety of information for any program that is eligible for financial aid that "prepares students for gainful employment in a recognized occupation." The following link provides Gainful Employment Disclosure information for this certificate program:

Career Information

This certificate helps individuals, new to or already in the field, market themselves to both landscape and plant production horticulture fields.

Landscape Design Certificate

This certificate provides individuals with a basic horticulture background and a broad experience in landscape design, including landscape CADD.

Certificate Requirements

COURSE CODE	COURSE TITLE	UNITS
HORT 300	Introduction to Horticulture	3
HORT 322	Landscape and Irrigation Graphics and Design	3
HORT 326	Landscape Design	3
HORT 329	Landscape CAD Design	3
Total Units:		12

Student Learning Outcomes

Upon completion of this program, the student will be able to:

- recognize basic botanical structure and functions and how plants relate to the environment.
- develop construction drawings using the components included in a set of landscape plans.
- assess and apply the use of drafting equipment and techniques as they relate to landscape design and landscape architecture.
- assess, evaluate, and utilize supportive design techniques such as plant materials, space management, energy conservation, and elevation change and grading.
- demonstrate the various formats for design presentations.
- create a new landscape design project using the CADD software program.

Career Information

Career opportunities exist with design firms and landscape contractors.

Plant Production Certificate

This certificate provides individuals with a basic horticulture background and specific experience in landscape plant production, marketing and sales, facilities, Integrated Pest Management (IPM) skills, and license or certificates requirements.

Certificate Requirements

COURSE CODE	COURSE TITLE	UNITS
HORT 105	Pest Control Licensing or Certification	2
HORT 300	Introduction to Horticulture	3
HORT 312	Plant Propagation	3
HORT 316	Plant Production, Facilities and Sales	3

COURSE CODE	COURSE TITLE	UNITS
Total Units:		11

Student Learning Outcomes

Upon completion of this program, the student will be able to:

- recognize basic botanical structure and functions and how plants relate to the environment
- propagate plants, including seed and vegetative techniques
- diagnose plant pest signs and symptoms
- apply the basic practices involved in commercial nursery operations
- identify the different display techniques and advertising practices used in the nursery industry
- recognize the basic principles of pest control and the requirements for licensing and/or certification

Career Information

Career opportunities exist with plant researchers, wholesale nurseries, and retail nurseries.

Sustainable Landscaping Certificate

This certificate provides students with a basic horticulture background and specific experience in sustainable landscape installation and maintenance, including the use of sustainable principles and practices.

Certificate Requirements

COURSE CODE	COURSE TITLE	UNITS
HORT 110	Irrigation Design	2
HORT 143	Horticulture Skills Development	1
HORT 300	Introduction to Horticulture	3
HORT 305	Plant Identification-Fall Selections (3)	3
or HORT 306	Plant Identification-Spring Selections (3)	
HORT 308	Viticulture-Vineyard Establishment	1
HORT 309	Viticulture - Sustainable Vineyard Management	1
HORT 320	Sustainable Landscape Construction	3
HORT 324	Sustainable Landscape Maintenance	3
Total Units:		17

Student Learning Outcomes

Upon completion of this program, the student will be able to:

- recognize basic botanical structure and functions and how plants relate to the environment
- assess and implement hands-on skills of construction operations, such as using wood, pavers, irrigation components, and sustainable soil preparation and grading
- recognize and comply with the state water regulations that affect landscaping

- assess and implement the hands-on skills of sustainable landscape management and their techniques
- utilize irrigation water auditing techniques and select equipment to correctly irrigate, schedule, and conserve water in the landscape
- compare and contrast conventional and sustainable landscape methods
- evaluate existing landscapes to enable maintenance with ecologically sustainable practices
- evaluate sustainable products and methods for use in the landscape
- demonstrate proper pruning of a plant
- demonstrate proper techniques of planting and transplanting
- select a proper plant for a given situation
- recognize and identify 150 plant species and/or varieties utilizing taxonomic plant key techniques
- employ the basic principles of irrigation design

Career Information

Career opportunities include positions with landscape construction and maintenance firms, municipalities, and the state.

Horticulture (HORT)

HORT 100 Integrated Pest Management in the Landscape

Units:	3
Hours:	36 hours LEC; 54 hours LAB
Prerequisite:	None.
Corequisite:	HORT 300

This course is a study of local plant pests including weeds, diseases, invertebrates, and vertebrates. It includes recognition of symptoms and causes, life cycle of the pests, host and habitat relationships, and methods of control. Field trips may be required.

Student Learning Outcomes

Upon completion of this course, the student will be able to:

- evaluate the economic significance of plant pest problems in horticulture
- identify conventional pest control options and explain why they are no longer desirable
- diagnose plant pest signs and symptoms
- identify plant pests and beneficial organisms as evident from existing signs and symptoms
- formulate a pest management plan using the principles of integrated pest management
- calculate the accurate quantity of pest control substance to be used on a given area
- outline basic laws, regulations, and public agencies governing the use of pesticides
- explain the proper use of Personal Protective Equipment for pesticide application
- safely and efficiently operate pesticide application equipment

HORT 105 Pest Control Licensing or Certification

Units:	2
Hours:	36 hours LEC
Prerequisite:	HORT 300 with a grade of "C" or better
Advisory:	HORT 100

This course introduces the safe and proper use of horticultural chemicals, laws and regulations, and the Integrated Pest Management (IPM) principles involved. It covers the laws and regulations for operators, applicators, and advisors, including the study of weeds, diseases, insects, and accepted standards for control.

Student Learning Outcomes

Upon completion of this course, the student will be able to:

- recognize the basic principles of pest control and the requirements for licensing and/or certification.
- identify horticultural pests.
- safely use pest management equipment, materials, and supplies.
- demonstrate the skills required to pass California Department of Pesticide Regulation licensing exams.

HORT 110 Irrigation Design

Units:	2
Hours:	36 hours LEC
Prerequisite:	HORT 300 with a grade of "C" or better

This course is a study of water hydraulics and irrigation equipment including drip lines, heads, pipes, pumps, clocks, and valves. Irrigation design, which includes preparing plans, dealing with measurement, head layout, pipe sizing and specifications, is covered. Field trips may be required.

Student Learning Outcomes

Upon completion of this course, the student will be able to:

- explain and analyze California's water storage and delivery system.
- assemble landscape irrigation piping and heads to effectively distribute irrigation water.
- employ the basic principles of irrigation design.
- demonstrate skills in the design and preparation of irrigation plans.
- assess the correct identification and application of irrigation system components.
- diagnose and correct issues affecting irrigation system efficiency.

HORT 140 Advanced Student Projects

Units:	2
Hours:	108 hours LAB
Prerequisite:	HORT 300 with a grade of "C" or better

This course provides the student with an opportunity to pursue advanced projects which are selected by the department.

Student Learning Outcomes

Upon completion of this course, the student will be able to:

- Apply horticulture practices to an advanced project.
- Demonstrate the techniques of project development through research and planning.
- Employ skills in record keeping during a project and the final presentation of the project.

HORT 143 Horticulture Skills Development

Units:	1
Hours:	54 hours LAB
Prerequisite:	None.
Corequisite:	Completion or current enrollment in a college level horticulture class.

This course offers the opportunity to develop technical, creative, and business skills learned in other horticulture classes. Participation in assigned, supervised projects to expand and enhance knowledge of horticulture practices is included. Field trips may be required.

Student Learning Outcomes

Upon completion of this course, the student will be able to:

- demonstrate proper watering of plants
- identify plant pest problems and select proper methods of control
- demonstrate proper pruning of a plant
- demonstrate proper techniques of planting and transplanting
- outline and apply basic principles of container plant design
- select a proper plant for the situation
- formulate a fertilizer application plan for a given planting area
- research and apply the propagation technique correct for the plant and season
- evaluate irrigation system needs and problems and recommend a solution
- calculate the cost of plants, media, and containers used in production

HORT 200 Introduction to Retail Floristry

Units:	2
Hours:	18 hours LEC; 54 hours LAB
Prerequisite:	None.

This course presents fundamentals of design techniques and skills practiced in the floral industry. Topics include design mechanics, guides to design, identification of flower and foliage shapes and their use, cut flower care, corsage practice, and containers and designers' aids. Field trips may be required.

Student Learning Outcomes

Upon completion of this course, the student will be able to:

- identify floral specimens used in commercial floristry by scientific names and availability
- process and display cut flowers
- assess floral wholesale sources and procure floral materials for flower shop use
- assess and select appropriate mechanics for the type of vase and container arrangement
- assess and utilize floral materials to create a visually appealing and salable arrangement
- apply the principles of color theory to floral design
- demonstrate methods in merchandising floral materials

HORT 201 Floral Design

Units:	2
Hours:	18 hours LEC; 54 hours LAB
Prerequisite:	None.

This course presents the theories and techniques of basic/intermediate floral design. Identification of wholesale sources, origin of product, and seasonal price fluctuations in the industry and market are discussed. This course emphasizes design techniques including line, shape, and form. Field trips may be required.

Student Learning Outcomes

Upon completion of this course, the student will be able to:

- produce floral arrangements using line, shape, and form
- discuss color theory and its use in floral design
- create symmetrical and asymmetrical floral designs
- incorporate negative space into floral arrangements to enhance designs
- effectively integrate textures into floral designs

HORT 202 Corsage and Wedding Floral Design

Units:	2
Hours:	18 hours LEC; 54 hours LAB
Prerequisite:	None.

This course presents the history and uses of wedding and body flower designs. The principles, methods, and practices used to create wedding bouquets and arrangements are explored and practiced. The techniques for wiring, taping, and gluing corsages, and the tools and materials for creating them and other body flower designs, are taught and practiced. Field trips may be required.

Student Learning Outcomes

Upon completion of this course, the student will be able to:

- produce wedding pricing calculations
- describe the history of American wedding and body flowers
- demonstrate the proper handling of flowers and greens to preserve freshness and visual appeal

- identify the elements involved in performing a wedding consultation
- apply techniques for creating a variety of types of wedding bouquets and body flowers
- create displays for use in weddings, ceremonies, and receptions
- source and purchase flowers and accessory items for wedding designs

HORT 203 Sympathy Design and the Mass Market

Units:	2
Hours:	18 hours LEC; 54 hours LAB
Prerequisite:	None.

This course presents the theories of sympathy and tribute floral design. Design applications for standing, flat sprays, set work, and casket covers are included, as well as their delivery and setup. The mass market place in floral design is explored. Field trips may be required.

Student Learning Outcomes

Upon completion of this course, the student will be able to:

- relate the history of sympathy floral design to a specific design.
- apply design theory to the design and creation of casket covers, standing sprays, flat sprays, and set pieces.
- properly prepare arrangements for their delivery.
- develop marketing skills for working with mortuaries and cemeteries while meeting the needs of the family.
- identify distinctions between mass and retail markets in the floral industry.

HORT 208 Interior Plants

Units:	2
Hours:	18 hours LEC; 54 hours LAB
Prerequisite:	None.

This course examines the indoor plant maintenance business as well as interior plant care for retail use. It includes plant identification and selection, location and design practices, care and maintenance, as well as purchasing and sales aspects. Field trips may be required.

Student Learning Outcomes

Upon completion of this course, the student will be able to:

- demonstrate basic knowledge of the history of interior plants and careers in the interiorscape industry.
- assess the impact of plants in the interiorscape on human quality of life.
- understand the environmental requirements of common interior plants.
- identify the major interiorscape plants used in retail floral and the interior plant industry.
- demonstrate how to market interior plants for sale by selecting appropriate plant materials and accessories for use in interior landscaping and for retail purposes.

- demonstrate positive customer service skills through role play of customer contact.
- find and interpret the usefulness of interior plantscaping resources including research articles and websites.
- identify and diagnose common pest problems with interior plants.

HORT 298 Work Experience in Horticulture

Units:	1 - 4
Hours:	60 - 300 hours LAB
Prerequisite:	None.
Enrollment Limitation:	Students must be in a paid or unpaid internship, volunteer position, or job related to the the field of horticulture with a cooperating site supervisor. Students are advised to consult with the Horticulture Department faculty to review specific certificate and degree work experience requirements.
Advisory:	Eligible for ENGRD 310 or ENGRD 312 AND ENGWR 300; OR ESLR 340 AND ESLW 340.
General Education:	AA/AS Area III(b)

This course provides students with opportunities to develop marketable skills in preparation for employment or advancement within the the field of horticulture. It is designed for students interested in work experience and/or internships in associate degree level or certificate occupational programs. Course content includes understanding the application of education to the workforce, completion of Title 5 required forms which document the student's progress and hours spent at the work site, and developing workplace skills and competencies.

During the semester, the student is required to complete 75 hours of related paid work experience, or 60 hours of related unpaid work experience for one unit. An additional 75 or 60 hours of related work experience is required for each additional unit. All students are required to attend the first class meeting, a mid-semester meeting, and a final meeting. Additionally, students who have not already successfully completed a Work Experience course will be required to attend weekly orientations while returning participants may meet individually with the instructor as needed. Students may take up to 16 units total across all Work Experience course offerings. This course may be taken up to four times when there are new or expanded learning objectives. Only one Work Experience course may be taken per semester.

Student Learning Outcomes

Upon completion of this course, the student will be able to:

- demonstrate mastery of specific job skills in the field of horticulture related to an associate degree or certificate occupational program level career as written in the minimum three (3) learning objectives created by the student and his/her employer or work site supervisor at the start of the course.
- make effective decisions, use workforce information, and manage his/her personal career plans.
- behave professionally, ethically, and legally at work, consistent with applicable laws, regulations, and organizational norms.
- behave responsibly at work, exhibiting initiative and self-management in situations where it is needed.
- apply effective leadership styles at work, with consideration to group dynamics, team and individual decision making, and workforce diversity.
- communicate in oral, written, and other formats, as needed, in a variety of contexts at work.
- locate, organize, evaluate, and reference information at work.
- demonstrate originality and inventiveness at work by combining ideas or information in new ways, making connections between seemingly unrelated ideas, and reshaping goals in ways that reveal new possibilities using critical and creative thinking skills such as logical reasoning, analytical thinking, and problem-solving.

HORT 300 Introduction to Horticulture

Units:	3
Hours:	54 hours LEC
Prerequisite:	None.
Transferable:	CSU
General Education:	AA/AS Area IV

Designed to inform those seeking a career in horticulture, this course surveys sustainable principles and practices of horticulture. Emphasis is on plant growth, care and appearance, and how those are influenced by plant structure, function, and growing environment. Topics include plant naming, growing conditions and processes, cultural practices, propagation, pruning, careers in horticulture, pest problems and control, and use of references for future learning.

Student Learning Outcomes

Upon completion of this course, the student will be able to:

- research horticultural occupations and associated employment requirements and opportunities
- explain how plants are classified and given their scientific names
- label plant parts and explain the function of each part
- identify the cultural requirements of plants
- list and define environmental conditions required for successful plant growth
- diagnose growing conditions that lead to plant pest problems
- distinguish between monocotyledonous and dicotyledonous plants and explain differences in their growth
- research and choose a plant that satisfies a given set of environmental and usability criteria
- differentiate between sexual and asexual propagation
- choose and sow seed that are appropriate for the current season
- describe differences between field soil and container medium and explain reasons for these differences
- predict how water will move from container soil to field soil and vice-versa
- formulate container medium appropriate for good plant growth, identify components in the medium, and explain the purpose of each component
- chart the observed growth of a plant

HORT 302 Soils, Soil Management, and Plant Nutrition

Units:	3
Hours:	36 hours LEC; 54 hours LAB
Prerequisite:	None.
Corequisite:	HORT 300
Transferable:	CSU; UC

This course is a study of the nature and properties of soils and their relationship to plant needs. Topics include soil origins and importance, soil and water conservation, life in the soil, and soil fertility. Soil components, structure, and methods to sustain healthy soils and the populations of organisms within and on it are analyzed.

Student Learning Outcomes

Upon completion of this course, the student will be able to:

- identify the basic principles of soil management including structure, water, organic matter, pH, and salinity.
- evaluate the techniques needed to evaluate soil productivity and fertility including soil sampling and testing.
- demonstrate skills in problem solving in relationship to irrigation practices and erosion prevention.
- maintain or return soils to a healthy structure capable of supporting plant and microorganisms.
- identify the soil organisms that support soil health and plant life.
- describe the complex relationships between soils physical components, soil life and a soil's ability to support plant growth.
- promote and employ soil and water conservation methods.

HORT 305 Plant Identification-Fall Selections

Units:	3
Hours:	36 hours LEC; 54 hours LAB
Prerequisite:	None.
Corequisite:	HORT 300
Transferable:	CSU; UC (UC credit limitation: HORT 305 & 306 combined: maximum credit - one course)

This course is a study of the identification, growth habits, culturally sustainable methods, and uses of ornamental woody and herbaceous plants in the California landscape. Emphasis is on those plants best observed in the fall and winter seasons and includes both native and non-native species as well as some plants with an edible use component. Field trips may be required.

Student Learning Outcomes

Upon completion of this course, the student will be able to:

- recognize and utilize the binomial method of plant nomenclature and plant identification terminology.
- utilize a taxonomic plant key by identifying by leaf, flower, fruit, seed, bark and growth habit those plants best observed during California's fall and/or winter seasons.
- recognize and sight-identify 150 plant species and/or varieties utilizing taxonomic plant key techniques.
- identify the culturally sustainable requirements, including soils, sun exposures, water requirements, nutrients and temperature requirements of plants best observed and studied during California's fall and/or winter seasons.
- identify and select plants for specific landscape design uses for plants best observed and studied during California's fall and/or winter seasons
- assemble a herbarium.
- recognize, evaluate, and utilize plant materials software and web sites.

HORT 306 Plant Identification-Spring Selections

Units:	3
Hours:	36 hours LEC; 54 hours LAB
Prerequisite:	None.
Corequisite:	HORT 300

Transferable:

CSU; UC (UC credit limitation: HORT 305 & 306 combined: maximum credit - one course)

This course is the study of the identification, growth habits, culturally sustainable methods, and uses of ornamental woody and herbaceous plants in the California landscape. Emphasis is on those plants best observed in the spring and summer seasons and includes both native and non-native species as well as some plants with an edible use component. Field trips may be required.

Student Learning Outcomes

Upon completion of this course, the student will be able to:

- recognize and utilize the binomial method of plant nomenclature and plant identification terminology.
- utilize a taxonomic plant key by identifying by leaf, flower, fruit, seed bark and growth habit, those plants best observed during California's spring and/or summer seasons.
- recognize and sight-identify 150 plant species and/or varieties utilizing taxonomic plant key techniques.
- identify the culturally sustainable requirements, including soils, sun exposures, water requirements, nutrients and temperature requirements of plants best studied during California's spring and/or summer seasons.
- identify and select plants for specific landscape design uses for plants best observed and studied during California's spring and/or summer seasons.
- assemble a herbarium.
- recognize, evaluate, and utilize plant materials software and web sites.

HORT 308 Viticulture-Vineyard Establishment

Units:	1
Hours:	18 hours LEC
Prerequisite:	None.
Transferable:	CSU

This course is an introduction to grape crops for Sacramento and Placer counties. It covers the history and principles of the grape growing industry in California.

Topics include site preparation, vine and rootstock selection, trellis and irrigation system selection, installation procedures, and vine training. Field trips may be required.

Student Learning Outcomes

Upon completion of this course, the student will be able to:

- describe the importance and potential of the grape growing industry in the Sacramento and Placer county area and its relationship to the landscape industry
- evaluate how climate, soils, and vineyard practices affect vine selection, vine growth, and grape quality
- create a vineyard design that is based on a site evaluation and that meets a client's vineyard needs
- identify the botanical structures of a grapevine and their function, and relate them to the yearly growth cycle of grapevines
- design and implement appropriate irrigation and trellis systems for grape varieties
- analyze, recommend, and implement appropriate sustainable techniques for grape crops

HORT 309 Viticulture - Sustainable Vineyard Management

Units:	1
Hours:	18 hours LEC
Prerequisite:	None.
Transferable:	CSU

This course covers sustainable management of vineyards, large and small, to serve the needs of owners while maintaining the environment. Topics include vine growth, fruit development, irrigation, pruning systems and canopy management, grapes as a wildlife habitat, management of the vineyard floor, pest identification and control, and vineyard laws and ordinances. Field trips may be required.

Student Learning Outcomes

Upon completion of this course, the student will be able to:

- describe the growth of a grapevine, including where fruit is formed
- apply knowledge of vine growth to successfully prune vines to sustain fruit development and vine spread
- evaluate the nutritional needs of the vines, and create a plan to sustainably maintain nutrition to the plants
- analyze symptoms seen on a vine, determine the presence of pests and beneficials on the vine, and suggest sustainable pest control methods
- design a system to efficiently manage soil beneath the vines to control weeds, sustain the soil, and benefit the vines
- list laws and ordinances, including those that apply to vineyard sustainability, applicable to local growth of grapevines, production of grapes, and the organizations that disseminate this information

HORT 312 Plant Propagation

Units:	3
Hours:	36 hours LEC; 54 hours LAB
Prerequisite:	HORT 300 with a grade of "C" or better
Transferable:	CSU

This course is a study of the fundamental principles involved in propagating plants, with special emphasis on types of propagules and techniques utilized to make more plants. Topics include history of plant propagation, tools and facilities, seed and vegetative propagation, media selection, growing propagules on, and sales of plants produced. Field trips may be required.

Student Learning Outcomes

Upon completion of this course, the student will be able to:

- examine the basic principles of plant production distinguishing between sexual and asexual methods
- demonstrate how to clean and sharpen pruning tools
- make propagation and container media and explain why each component is used or not used in each mix
- describe the physical environment needed to successfully propagate plants, including temperature, light, humidity, and root zone moisture
- label a plant properly, with a tag that correctly identifies the plant, date of propagation, and person doing the propagation
- assess the need to transplant previously rooted plants, and successfully do so
- test the germination rate of old seeds and describe how to use that information when planting those seeds
- enumerate steps of and reasons for scarifying plant seed

- employ correct techniques and processes to stratify plant seed and explain why it is done
- produce plants from seed
- prepare plant material as cuttings and use cuttings to make more plants
- define the different plant parts and plant tissue types used as clones to make more plants
- employ techniques of plant grafting
- propagate plants using layering techniques
- transplant plant plugs
- compare a plant that will benefit from division to one that will not and explain the differences

HORT 316 Plant Production, Facilities and Sales

Units:	3
Hours:	36 hours LEC; 54 hours LAB
Prerequisite:	None.
Corequisite:	HORT 300
Advisory:	ENGWR 102 and ENGRD 116 with grades of "C" or better OR ESLR 320 and ESLW 320 with grades of "C" or better
Transferable:	CSU

This course is an overview of the practices and facilities used in production and sales of plants and related products and services. Topics include design and use of structures for horticultural production and sales, product selection and maintenance, marketing and sales of horticultural crops and services, employee management, vendor selection, sales area design and layout, advertising, merchandising, and customer service. Field trips may be required.

Student Learning Outcomes

Upon completion of this course, the student will be able to:

- identify horticultural occupations and evaluate how they function within the general horticultural market
- outline a basic business plan for a horticultural business
- analyze customers and suggest products and services they are most likely to purchase
- demonstrate proper care of plants in a retail and wholesale nursery
- create and maintain inventory of products for sale
- demonstrate customer service likely to lead to increased sales
- enumerate characteristics of employers likely to offer long term, satisfying employment in the horticultural industry
- evaluate characteristics of a desirable product supplier
- demonstrate marketing and merchandising techniques likely to increase sales
- identify components of a plant production facility and explain what they are used for
- design and construct an effective space for sales of horticultural services and products
- formulate realistic prices for horticultural products and services

HORT 320 Sustainable Landscape Construction

Units:	3
Hours:	36 hours LEC; 54 hours LAB
Prerequisite:	HORT 300 with a grade of "C" or better
Transferable:	CSU

This course covers the theory and skills needed in the landscape construction industry. Landscape operations include carpentry, masonry, concrete pavers, water-conserving irrigation, watershed preservation and drainage, low-voltage lighting, sustainable soil preparation and drainage, plant materials/turf, plan reading, and estimating and bidding in the landscape trades. Field trips may be required.

Student Learning Outcomes

Upon completion of this course, the student will be able to:

- employ the basic principles of landscape construction and watershed preservation.
- assess and implement hands-on skills of construction operations, such as using wood, pavers, irrigation components, and sustainable soil preparation and grading.
- read landscape plans and translate plans into the bidding and estimating process.
- determine the correct tool or tools and equipment for various landscape operations.
- demonstrate the safe handling of tools and operation of equipment.
- recognize and comply with the state water regulations that affect landscaping.

HORT 321 Sustainable and Ecolandscape Practices

Units:	3
Hours:	54 hours LEC
Prerequisite:	None.
Transferable:	CSU

This course covers the application of ecologically sustainable design, construction, and maintenance practices for urban landscapes. Topics present a holistic approach to landscaping including, but not limited to, water conservation, green waste reduction, reduced chemical and inorganic fertilizer use, and the enhancement of natural ecosystems. Field trips may be required.

Student Learning Outcomes

Upon completion of this course, the student will be able to:

- compare and contrast conventional and sustainable landscape methods
- evaluate existing landscapes to enable maintenance with ecologically sustainable practices
- apply ecologically sustainable principles and methods to the design and construction of landscapes
- evaluate sustainable products and methods for use in the landscape
- interface with other green building disciplines in an effort to create integrated buildings and landscapes

HORT 322 Landscape and Irrigation Graphics and Design

Units:	3
Hours:	36 hours LEC; 54 hours LAB
Prerequisite:	HORT 300 with a grade of "C" or better
Transferable:	CSU; UC

This course is the study of technical drafting skills and freehand graphics, including line quality, lettering, and organization of the design space as it relates to landscape and irrigation design. It includes 'hand drafting techniques', plant database software, introduction to CADD for landscape, and the use of a variety of graphics skills and media. Irrigation design for landscapes studies water hydraulics, irrigation equipment, including irrigation heads, pipes, pumps, controllers and valves, and water conservation. The course includes preparing landscape and irrigation plans, plan presentation, and reprographics.

Student Learning Outcomes

Upon completion of this course, the student will be able to:

- assess and apply the use of drafting equipment and techniques as they relate to landscape design and landscape architecture.
- develop the components included in a set of landscape plans and construction drawings.
- create an elevation view of a landscape design.
- assess and evaluate plant data software, plant materials web sites, and landscape CADD programs.
- employ the basic principles of irrigation design.
- identify and correctly apply sprinkler components for a landscape irrigation design.
- comply with water conservation regulations for our industry.
- create a full set of landscape drawings and present them to a client.
- create a portfolio of design work.

HORT 324 Sustainable Landscape Maintenance

Units:	3
Hours:	36 hours LEC; 54 hours LAB
Prerequisite:	HORT 300 with a grade of "C" or better
Transferable:	CSU

This course is a study of sustainable landscape maintenance and management of exterior and interior residential and commercial landscapes, parks, highways, and public buildings. Topics include planting and transplanting, pruning, water conservation and use, sustainable plant nutrition and soils management, integrated pest management, and the safe operation and maintenance of power equipment for the trade. Field trips may be required.

Student Learning Outcomes

Upon completion of this course, the student will be able to:

- apply the basic skills and principles of sustainable landscape maintenance.
- assess and implement the hands-on skills and techniques of sustainable landscape management.
- evaluate and demonstrate methods of safe and proper use and maintenance of related tools and equipment.
- recognize and evaluate exterior and interior plant maintenance needs.
- evaluate software and websites available for the commercial landscape maintenance industry.
- utilize irrigation water auditing techniques and select equipment to correctly irrigate, schedule, and conserve water in the landscape.

- recognize and comply with the state water regulations that affect landscaping.

HORT 326 Landscape Design

Units:	3
Hours:	36 hours LEC; 54 hours LAB
Prerequisite:	HORT 322 with a grade of "C" or better
Advisory:	HORT 110, 305, and 306
Transferable:	CSU

This course is a study of the basic principles and elements of landscape design related to the problem-solving process, design theory and composition, functional and design uses of landscape materials, and client and maintenance criteria.

Student Learning Outcomes

Upon completion of this course, the student will be able to:

- assess, evaluate, and implement the principles of landscape design.
- employ the hands-on skills utilized for the development of a residential landscape plan/design.
- assess, evaluate, and utilize supportive design techniques such as plant materials, space management, energy conservation, and elevation change and grading.
- demonstrate the various formats for design presentations.

HORT 327 Advanced Landscape Design

Units:	3
Hours:	36 hours LEC; 54 hours LAB
Prerequisite:	HORT 322 with a grade of "C" or better
Transferable:	CSU

This course is the study of the advanced and in-depth principles of custom residential landscape design related to proposal writing, site analysis, design development and construction document preparation. Further exploration of design composition is studied as well as the development of spaces and the use of materials based upon a client's program desires.

Student Learning Outcomes

Upon completion of this course, the student will be able to:

- Assess, evaluate and implement the principles of custom residential landscape design
- Prepare a design proposal using landscape principles of proposal writing
- Utilize the hands-on approach to successfully create a residential landscape design
- Employ the skills to take a project from site analysis through design development and into construction documentation
- Assess and utilize the materials available to the designer

HORT 329 Landscape CAD Design

Units:	3
Hours:	36 hours LEC; 54 hours LAB
Prerequisite:	HORT 322 with a grade of "C" or better
Advisory:	DESGN 100
Transferable:	CSU

This course is an introduction to computer assisted landscape design and drafting utilizing Computer Aided Drafting and Design (CADD) software to produce professional quality landscape designs for residential and commercial sites. It emphasizes site-plan development, landscape planting and irrigation plans, and the generation of materials lists based on the design created for the site. Field trips may be required.

Student Learning Outcomes

Upon completion of this course, the student will be able to:

- create a new landscape design project using CADD.
- employ the basic principles of CADD.
- survey and draft a base plan using CADD.
- draft a demolition plan, layout plan, irrigation plan, planting plan, plant schedule, and construction details using CADD.
- create conceptual and detailed designs using 3D modeling.
- develop renderings from 3D model.
- create a portfolio of design work and construction documents.

HORT 330 Small Gas Engines, Outdoor Power Equipment

Same As:	AT 301
Units:	4
Hours:	54 hours LEC; 54 hours LAB
Prerequisite:	None.
Transferable:	CSU
C-ID:	C-ID AG - MA 120L

This course covers the basic operational theory, servicing, adjusting, and maintenance of 2-cycle and 4-cycle small gas engines as they pertain to the automotive and horticulture industries. In addition, the small engine repair skill areas included in the regional, state, and national Skills USA competitions are covered. AT 301 and/or HORT 330 may be taken two times for credit for a maximum of 8 units, using different equipment.

Student Learning Outcomes

Upon completion of this course, the student will be able to:

- demonstrate accepted safety and work procedures, including Occupational Safety and Health Administration (OSHA) and proper hazardous materials disposal.
- identify the external and internal parts of 2-cycle and 4-cycle small engines.
- determine the proper lubrication and fuel requirements for 2-cycle and 4-cycle small engines using factory maintenance data.
- service and repair the cooling and oil systems of 2-cycle and 4-cycle small engines.
- service and repair the starter systems of 2-cycle and 4-cycle small engines.
- remove, rebuild, install, adjust, and tune 2-cycle and 4-cycle small engine fuel delivery and ignition system components.

- disassemble, inspect, repair, and assemble a single cylinder 2-cycle and 4-cycle engine.
- list the Skills USA competition requirements.
- list the Skills USA competition judging criteria.
- prepare to compete in Skills USA competition.

HORT 495 Independent Studies in Horticulture

Units:	1 - 3
Hours:	54 - 162 hours LAB
Prerequisite:	None.
Transferable:	CSU

Independent Study is an opportunity for the student to extend classroom experience in this subject, while working independently of a formal classroom situation. Independent study is an extension of work offered in a specific class in the college catalog. To be eligible for independent study, students must have completed the basic regular catalog course at American River College. They must also discuss the study with a professor in this subject and secure approval. Only one independent study for each catalog course will be allowed.

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