Horticulture Degree
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 horticulturists 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.

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 Opportunities
Horticulturists 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.

Requirements for Degree 38-41 Units

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Units</th>
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<tbody>
<tr>
<td>HORT 100</td>
<td>Integrated Pest Management in the Landscape</td>
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<tr>
<td>HORT 143</td>
<td>Horticulture Skills Development</td>
<td>1</td>
</tr>
<tr>
<td>HORT 298</td>
<td>Work Experience in Horticulture</td>
<td>1 - 4</td>
</tr>
<tr>
<td>HORT 300</td>
<td>Introduction to Horticulture</td>
<td>3</td>
</tr>
<tr>
<td>HORT 302</td>
<td>Soils, Soil Management, and Plant Nutrition</td>
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</tr>
<tr>
<td>HORT 305</td>
<td>Plant Identification-Fall Selections</td>
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</tr>
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<td>HORT 306</td>
<td>Plant Identification-Spring Selections</td>
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<td>HORT 312</td>
<td>Plant Propagation</td>
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<td>HORT 316</td>
<td>Plant Production, Facilities and Sales</td>
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<td>HORT 320</td>
<td>Sustainable Landscape Construction</td>
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<tr>
<td>HORT 321</td>
<td>Sustainable Landscape Maintenance</td>
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<tr>
<td>HORT 329</td>
<td>Landscape CAD Design</td>
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A minimum of 3 units from the following: 3

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<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Units</th>
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<tbody>
<tr>
<td>BUS 212</td>
<td>Marketing for Small Businesses</td>
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<tr>
<td>BUS 216</td>
<td>Essential Records for the Small Business</td>
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<tr>
<td>BUS 218</td>
<td>Management Skills for the Small Business</td>
<td>1</td>
</tr>
<tr>
<td>ET 196</td>
<td>Sensors, Measurement, and Control</td>
<td>2</td>
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<td>HORT 105</td>
<td>Pest Control Licensing For Certification</td>
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<td>HORT 200</td>
<td>Introduction to Retail Floristry</td>
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</tr>
<tr>
<td>HORT 308</td>
<td>Viticulture-Vineyard Establishment</td>
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<td>HORT 309</td>
<td>Viticulture - Sustainable Vineyard Management</td>
<td>1</td>
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<tr>
<td>HORT 321</td>
<td>Sustainable and Ecological Practices</td>
<td>3</td>
</tr>
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<td>HORT 326</td>
<td>Landscape Design</td>
<td>3</td>
</tr>
<tr>
<td>HORT 327</td>
<td>Advanced Landscape Design</td>
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<tr>
<td>HORT 330</td>
<td>Small Gas Engines, Outdoor Power Equipment</td>
<td>4</td>
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<tr>
<td>NATR 330</td>
<td>Native trees and shrubs of California</td>
<td>4</td>
</tr>
<tr>
<td>NATR 332</td>
<td>Wildflowers of California</td>
<td>3</td>
</tr>
</tbody>
</table>

Associate Degree Requirements: 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.
Horticulture Certificate

This certificate represents several areas of study in Horticulture: arboriculture, floriculture, landscape horticulture and landscape design, olcericulture, pomology, and viticulture. Horticulture is the science, art and skill of plant cultivation and the focus of the program is to prepare horticulturists 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.

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.

Career Opportunities

Horticulturists 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.

See losrios.edu/gainful-emp-info/gedt.php?major=011152C01 for Gainful Employment Disclosure.

Requirements for Certificate......................................................... 37 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)
ET 196 Sensors, Measurement, and Control (2)
HORT 105 Pest Control Licensing For 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)

Landscape Design Technology

Degree and Certificate

This program 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.

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 Opportunities

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.

See losrios.edu/gainful-emp-info/gedt.php?major=011152C01 for Gainful Employment Disclosure.

Requirements for Degree and Certificate............................. 34 Units

HORT 110 Irrigation Design......................................................2
HORT 300 Introduction to Horticulture..............................3
HORT 305 Plant Identification-Fall Selections (3)..............3
HORT 306 Plant Identification-Spring Selections (3)..........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
DESIGN 100 Introduction to Computer Aided Drafting and Design (CADD) ...................................................3
DESIGN 302 Technical Documentation with CADD..........3
DESIGN 300 Introduction to Design Resources................3
DESIGN 350 Surveying and Land Planning.....................5

Associate Degree Requirements: The Landscape Design 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.
DEPARTMENT CERTIFICATES

Horticulture Skills Certificate

This 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 prepares students to participate in the varied floral enterprises.

Student Learning Outcomes

Upon completion of this program, the student will be able to:
- identify basic botanical structure and functions and how plants relate to the environment
- formulate a pest management plan using the principles of Integrated Pest Management (IPM)
- assess and implement hands-on skills of construction operations, such as using wood, pavers, irrigation components, and sustainable soil preparation and grading
- utilize and evaluate 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 Opportunities

Career opportunities exist with design firms and landscape contractors.

Requirements for Certificate 12 Units

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>HORT 300</td>
<td>Introduction to Horticulture</td>
<td>3</td>
</tr>
<tr>
<td>HORT 322</td>
<td>Landscape and Irrigation Graphics and Design</td>
<td>3</td>
</tr>
<tr>
<td>HORT 326</td>
<td>Landscape Design</td>
<td>3</td>
</tr>
<tr>
<td>HORT 329</td>
<td>Landscape CAD Design</td>
<td>3</td>
</tr>
</tbody>
</table>

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.

Student Learning Outcomes

Upon completion of this program, the student will be able to:
- diagnose plant pest signs and symptoms
- propagate plants, including seed and vegetative techniques
- 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

(continued on next page)
Requirements for Certificate  11 Units
HORT 105 Pest Control Licensing For Certification 2 Units
HORT 300 Introduction to Horticulture 3 Units
HORT 312 Plant Propagation 3 Units
HORT 316 Plant Production, Facilities and Sales 3 Units

Sustainable Landscape Certificate
This certificate provides individuals with a basic horticulture background and specific experience in sustainable landscape installation and maintenance, including the use of eco-Landscape principles and practices.

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

Career Opportunities
Career opportunities exist with landscape construction and maintenance firms, municipalities and the state.

Requirements for Certificate  14 Units
HORT 300 Introduction to Horticulture 3 Units
HORT 308 Viticulture-Vineyard Establishment 1 Unit
HORT 309 Viticulture - Sustainable Vineyard Management 1 Unit
HORT 320 Sustainable Landscape Construction 3 Units
HORT 321 Sustainable and EcoLandscape Practices 3 Units
HORT 324 Sustainable Landscape Maintenance 3 Units
HORT 202  Corsage and Wedding Floral Design  2 Units

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 corsages, tools and materials for creating them, and other body flower designs are taught and experienced. Field trips may be required.

HORT 203  Multi Occasion, Sympathy Design and the Mass Market  2 Units

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

HORT 298  Work Experience in Horticulture  1-4 Units

Advisory: Eligible for ENGRD 310 or ENGRD 312 AND ENGW 300; OR ESLR 340 AND ESLR 340.
Enrollment Limitation: Students must be in a paid or unpaid internship, volunteer position, or job related to 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.
General Education: AA/AS Area III(b)
Hours: 60-300 hours LAB

This course provides students with opportunities to develop marketable skills in preparation for employment or advancement within 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 attend a weekly orientation and 75 hours of related paid work experience, or 60 hours of unpaid work experience for one unit. An additional 75 or 60 hours of related work experience is required for each additional unit. First-time participants are required to attend a weekly orientation and a final meeting. Returning participants are required to attend the first class meeting, a mid-semester meeting, a weekly orientation and a final meeting. Returning participants are advised to consult with the cooperating site supervisor. Students are advised to consult with the Horticulture Department faculty to review specific certificate and degree work experience requirements.

HORT 300  Introduction to Horticulture  3 Units

General Education: AA/AS Area IV
Course Transferable to CSU
Hours: 54 hours LEC

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 these 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.

HORT 302  Soils, Soil Management, and Plant Nutrition  3 Units

Corequisite: HORT 300
Course Transferable to UC/CSU
Hours: 36 hours LEC; 54 hours LAB

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.

HORT 305  Plant Identification - Fall Selections  3 Units

Corequisite: HORT 300
Course Transferable to UC/CSU
Hours: 36 hours LEC; 54 hours LAB

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.

HORT 306  Plant Identification - Spring Selections  3 Units

Corequisite: HORT 300
Course Transferable to UC/CSU
Hours: 36 hours LEC; 54 hours LAB

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.

HORT 308  Viticulture - Vineyard Establishment  1 Unit

Course Transferable to CSU
Hours: 18 hours LEC

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.

HORT 309  Viticulture - Sustainable Vineyard Management  1 Unit

Course Transferable to CSU
Hours: 18 hours LEC

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.

HORT 312  Plant Propagation  3 Units

Prerequisite: HORT 300 with a grade of “C” or better
Course Transferable to CSU
Hours: 36 hours LEC; 54 hours LAB

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.
HORT 316  Plant Production, Facilities and Sales  3 Units
Corequisite: HORT 300
Advisory: ENGW 102 and ENGRD 116 with grades of “C” or better OR ESLR 320 and ESLW 320 with grades of “C” or better
Course Transferable to CSU
Hours: 36 hours LEC; 54 hours LAB
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.

HORT 320  Sustainable Landscape Construction  3 Units
Prerequisite: HORT 300 with a grade of “C” or better
Course Transferable to CSU
Hours: 36 hours LEC; 54 hours LAB
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.

HORT 321  Sustainable and Ecological Practices  3 Units
Course Transferable to CSU
Hours: 54 hours LEC
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.

HORT 322  Landscape and Irrigation Graphics and Design  3 Units
Prerequisite: HORT 300 with a grade of “C” or better
Course Transferable to UC/CSU
Hours: 36 hours LEC; 54 hours LAB
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.

HORT 324  Sustainable Landscape Maintenance  3 Units
Prerequisite: HORT 300 with a grade of “C” or better
Course Transferable to CSU
Hours: 36 hours LEC; 54 hours LAB
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.

HORT 326  Landscape Design  3 Units
Prerequisite: HORT 322 with a grade of “C” or better.
Course Transferable to CSU
Hours: 36 hours LEC; 54 hours LAB
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.

HORT 327  Advanced Landscape Design  3 Units
Prerequisite: HORT 322 with a grade of “C” or better
Course Transferable to CSU
Hours: 36 hours LEC; 54 hours LAB
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.

HORT 329  Landscape CAD Design  3 Units
Prerequisite: HORT 322 with a grade of “C” or better
Advisory: DESGN 100
Course Transferable to CSU
Hours: 36 hours LEC; 54 hours LAB
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. Design emphasis includes site plan development and landscape planting and landscape irrigation plans, with the generation of materials lists based on the design created for the site.

HORT 330  Small Gas Engines, Outdoor Power Equipment  4 Units
Same As: AT 301
Course Transferable to CSU
Hours: 54 hours LEC; 54 hours LAB
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. (C-1D AG - MA 120L)

HORT 495  Independent Studies in Horticulture  1-3 Units
Course Transferable to CSU
Hours: 54-162 hours LAB
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.