

HORTICULTURE AND LANDSCAPE ARCHITECTURE

Horticulture is the science, business and art associated with the culture, production, preservation and processing of flowers, trees, shrubs, turfgrass, vegetables, fruits, and nuts. It also includes the proper environmental use and maintenance of plants in the landscape. Horticulture is involved with the production and processing of a significant part of the world's food supply. It provides a major source of beauty in and around homes, cities, parks, highways, golf courses and other public areas. Educational opportunities for study in horticulture cover a wide variety of plants and subjects and range from the cellular to the whole plant level. Factors such as plant nutrition, irrigation, genetics, propagation, control of flowering, and fruit and seed production are considered in their relationship to culture, production, conservation of resources, harvesting, processing and storage. Students can prepare themselves for careers in public garden management (arboreta, parks, and zoos), turf (sports and golf course management), horticulture business, small farm production, controlled environment production (ornamentals or vegetables), environment and sustainability practices, sales, and marketing, along with teaching, extension, and research experience.

Landscape Architecture is the study of artistic, scientific, and technical principles as they are applied to landscape planning, design, and management services. It applies artistic and scientific principles to the design, planning, and management of both natural and built environments. Landscape architects work on a wide variety of projects including garden design, residential design, community planning, urban design, parks and recreation, commercial/campus design, and sustainable site design. The design process involves creative expression that comes from an understanding of the context of site (or landscape), natural systems, cultural systems, and social dynamics. It requires one to interpret, imagine, draw, conceptualize, synthesize, and construct project ideas that transform both the landscapes and the users of those landscapes. As issues of sustainability are becoming more critical, Landscape Architects are poised to address them, as they design the interface between humankind and the urban, suburban, and natural environment.

The Department of Horticulture and Landscape Architecture offers undergraduate programs leading to the following degrees:

- BS in Horticulture
- BLA in Landscape Architecture

The BS in Horticulture

For the BS degree in Horticulture, students can choose from seven options.

Horticulture Business features the opportunity to combine horticulture with the principles of running a business. A built-in requirement for a formal academic minor in a business area is included in this option.

Horticulture Food Safety offers classes that train students in the principles and practices of minimizing potential food safety risks in growing, handling, and processing fruits and vegetables. This option allows students to become certified in Good Agricultural Practices (GAPs), Good Handling Practices (GHPs) and Preventive Controls for

Human Foods. It also features the opportunity to become trained in Global Food Safety Initiative (GFSI) recognized food safety programs.

Horticulture Science emphasizes preparing students for science-based careers, including laboratory science or graduate study. This option provides training and expertise for production, maintenance and preservation of fruits, nuts, vegetables, nursery crops, flower crops, etc. Training can be general or be chosen to emphasize a particular commodity area of horticulture. Students learn plant care techniques and the role plants and landscape applications play in sustaining the environment.

Landscape Management emphasizes the construction and management phases of landscape development, including plants, environmental applications, and structures. Courses include basic landscape architectural design, construction technology, business, and horticulture. Students may emphasize either landscape design or business management. Students emphasizing business management may complete a minor in Management through the OSU Spears School of Business. Graduates are employed by landscape contracting companies, design-build firms, landscape maintenance companies, landscape nurseries and governmental agencies.

Public Horticulture focuses on the people-plant interface, particularly in urban settings. Students may choose to specialize in either garden management or urban horticulture. The program is appropriate for those interested in careers in arboreta, botanic gardens, zoos, horticultural societies, park systems, museums, habitat creation and restoration (especially disturbed areas and/or wetlands) civic garden centers, and specialty crop production in developed areas. This option can also lead to graduate study. Students have the opportunity to be involved in The Botanic Garden at OSU and the department's television show, Oklahoma Gardening.

Turf Management provides training for turfgrass production and for management of turfgrass in golf courses, parks, athletic fields, home landscapes, airports and along highways.

Urban Horticulture focuses on the production, processing and marketing of horticultural food and ornamental crops in the urban environment. It provides training for broad practices including small scale crop production, vertical farming, hydroponics, container production, greenhouse production, roof-top, and organic production.

The BLA in Landscape Architecture

The Bachelor of Landscape Architecture (BLA) degree focuses on professional practice. This degree is nationally accredited by the Landscape Architectural Accreditation Board (LAAB). Students will experience a strong landscape design curriculum that is supported with courses in art, construction, horticulture, ecology, environmental science, and social science. Students will gain professional practice experience through short-term or long-term internships with Landscape Architecture firms. Typical employers of landscape architects include landscape architecture firms, architectural/engineering firms and government agencies dealing with land planning, environmental and conservation applications, urban planning, and parks/recreation.

Minor in Horticulture

Additional formal training in horticulture can benefit students in career areas as diverse as education, interior design, or entrepreneurship. The Horticulture minor includes 15 hours of core courses in soil science, plant biology and horticultural science, along with advanced cross-

commodity applications in plant propagation. The core provides the basic prerequisites for further study. Students then select at least eight hours of controlled electives in horticulture according to their areas of interest. A total of 23 hours is required for the minor.

Courses

HORT 1013 Principles of Horticultural Science (LN)

Description: Basic physical and physiological processes responsible for plant dormancy, growth, flowering, fruiting, and senescence with respect to the science and art of production, cultivation, utilization, and/or storage of horticultural plants. Current research associated with various horticultural commodity groups.

Credit hours: 3

Contact hours: Lecture: 2 Lab: 2 Contact: 4

Levels: Undergraduate

Schedule types: Lab, Lecture, Combined lecture and lab

Department/School: Hort & Landscape Arch

General Education and other Course Attributes: Scientific Investigation, Natural Sciences

Additional Fees: HORT/LA Facil, Equip, Lab fee of \$12 per credit hour applies.

HORT 2010 Internship in Horticulture or Landscape Management

Prerequisites: 24 credit hours and consent of adviser.

Description: Supervised work experience with approved public and private employers in horticulture, landscape management, or related fields. Credit will not substitute for required courses. Graded on a pass-fail basis. Offered for variable credit, 1-6 credit hours, maximum of 6 credit hours.

Credit hours: 1-6

Contact hours: Contact: 1-6 Other: 1-6

Levels: Undergraduate

Schedule types: Independent Study

Department/School: Hort & Landscape Arch

Additional Fees: HORT/LA Facil, Equip, Lab fee of \$12 per credit hour and HORT/LA Facil, Equip, Lab fee of \$12 per credit hour apply.

HORT 2513 Herbaceous Plant Materials

Description: Identification, cultural requirements, and use of ornamental garden and indoor herbaceous plants.

Credit hours: 3

Contact hours: Lecture: 2 Lab: 2 Contact: 4

Levels: Undergraduate

Schedule types: Lab, Lecture, Combined lecture and lab

Department/School: Hort & Landscape Arch

HORT 2613 Woody Plant Materials

Description: Identification, cultural requirements, and use of ornamental woody plants including deciduous and evergreen trees, shrubs and vines.00 per credit hour applies

Credit hours: 3

Contact hours: Lecture: 2 Lab: 2 Contact: 4

Levels: Undergraduate

Schedule types: Lab, Lecture, Combined lecture and lab

Department/School: Hort & Landscape Arch

Additional Fees: HORT/LA Facil, Equip, Lab fee of \$12 per credit hour applies.

HORT 3013 Arboriculture

Prerequisites: HORT 2613 or NREM 2134 and SOIL 2124.

Description: Theory and practice of selecting, planting and maintaining trees, shrubs and vines in the landscape. Previously offered as HORT 3014.

Credit hours: 3

Contact hours: Lecture: 2 Lab: 2 Contact: 4

Levels: Undergraduate

Schedule types: Lab, Lecture, Combined lecture and lab

Department/School: Hort & Landscape Arch

HORT 3084 Plant Propagation

Prerequisites: HORT 1013 or PLNT 1213, BIOL 1113 and BIOL 1111 or PBIO 1404 and SOIL 2124.

Description: Principles and practices involved in propagation of plants. Anatomical, morphological and physiological aspects of sexual and asexual methods of regeneration and their importance.

Credit hours: 4

Contact hours: Lecture: 3 Lab: 2 Contact: 5

Levels: Undergraduate

Schedule types: Lab, Lecture, Combined lecture and lab

Department/School: Hort & Landscape Arch

Additional Fees: HORT/LA Facil, Equip, Lab fee of \$12 per credit hour applies.

HORT 3113 Greenhouse Management

Prerequisites: HORT 1013 or PLNT 1213, BIOL 1113 and BIOL 1111 or PBIO 1404, and MATH 1483.

Description: Commercial greenhouse operation with emphasis on floricultural plant production aspects; environment, growing media, fertilizers and application methods, watering, pest and disease control, chemical growth regulators, production costs.

Credit hours: 3

Contact hours: Lecture: 2 Lab: 2 Contact: 4

Levels: Undergraduate

Schedule types: Lab, Lecture, Combined lecture and lab

Department/School: Hort & Landscape Arch

Additional Fees: HORT or LA Course Field Trip fee of \$20 and HORT/LA Facil, Equip, Lab fee of \$12 per credit hour apply.

HORT 3153 Turf Management

Description: Selection, establishment and maintenance of grass species and other plant materials for special use areas.

Credit hours: 3

Contact hours: Lecture: 2 Lab: 2 Contact: 4

Levels: Undergraduate

Schedule types: Lab, Lecture, Combined lecture and lab

Department/School: Hort & Landscape Arch

HORT 3213 Fruit and Nut Production

Prerequisites: BIOL 1113 and BIOL 1111 or PBIO 1404.

Description: Commercial production of fruits and nuts, with emphasis on pecan, apple, peach, strawberry, blackberry and blueberry. A two-day field trip is required.

Credit hours: 3

Contact hours: Lecture: 2 Lab: 2 Contact: 4

Levels: Undergraduate

Schedule types: Lab, Lecture, Combined lecture and lab

Department/School: Hort & Landscape Arch

HORT 3253 Personnel and Financial Management for Horticulture

Prerequisites: HORT 1013 or LA 1013 and one upper division HORT or LA course.

Description: Preparing and executing an operational budget in a horticultural service industry and methods for maintaining an effective work force.

Credit hours: 3

Contact hours: Lecture: 3 Contact: 3

Levels: Undergraduate

Schedule types: Lecture

Department/School: Hort & Landscape Arch

HORT 3433 Commercial Vegetable Production

Prerequisites: HORT 1013 or PLNT 1213, BIOL 1113 and BIOL 1111 or PBIOL 1404, and SOIL 2124.

Description: Commercial production and marketing of vegetable crops. May not be used for Degree Credit with HORT 5433.

Credit hours: 3

Contact hours: Lecture: 2 Lab: 2 Contact: 4

Levels: Undergraduate

Schedule types: Lab, Lecture, Combined lecture and lab

Department/School: Hort & Landscape Arch

Additional Fees: HORT/LA Facil, Equip, Lab fee of \$12 per credit hour applies.

HORT 3513 Landscape Irrigation

Prerequisites: HORT 1013 or LA 1013.

Description: Basics of landscape irrigation with an emphasis on residential irrigation design, maintenance and installation.

Credit hours: 3

Contact hours: Lecture: 2 Lab: 2 Contact: 4

Levels: Undergraduate

Schedule types: Lab, Lecture, Combined lecture and lab

Department/School: Hort & Landscape Arch

Additional Fees: HORT/LA Facil, Equip, Lab fee of \$12 per credit hour applies.

HORT 3613 Bidding and Estimating

Prerequisites: ACCT 2003 or ACCT 2103.

Description: Budgeting, bid preparation and job cost estimation for landscape related industries including golf course budgeting, overhead and labor budgeting, and profitable pricing. Previously offered as HORT 3612.

Credit hours: 3

Contact hours: Lecture: 3 Contact: 3

Levels: Undergraduate

Schedule types: Lecture

Department/School: Hort & Landscape Arch

HORT 3713 Urban Horticulture Production

Prerequisites: HORT 1013.

Description: Principles and production of crops for public or community practices with emphasis on production associated with hydroponics, raised beds, containers, controlled environments, roof tops, high tunnels, and farmers markets.

Credit hours: 3

Contact hours: Lecture: 2 Lab: 2 Contact: 4

Levels: Undergraduate

Schedule types: Lab, Lecture, Combined lecture and lab

Department/School: Hort & Landscape Arch

Additional Fees: HORT/LA Facil, Equip, Lab fee of \$12 per credit hour applies.

HORT 3833 Hydroponics and Soilless Crop Production

Prerequisites: HORT 1013.

Description: Basics of soilless production with emphasis on hydroponics and aquaponic production of vegetables and cut flowers.

Credit hours: 3

Contact hours: Lecture: 2 Lab: 2 Contact: 4

Levels: Undergraduate

Schedule types: Lab, Lecture, Combined lecture and lab

Department/School: Hort & Landscape Arch

HORT 4010 Special Topics in Horticulture

Description: New and emerging areas of study in Horticulture. Offered for variable credit, 1-4 credit hours, maximum of 9 credit hours.

Credit hours: 1-4

Contact hours: Lecture: 1-4 Contact: 1-4

Levels: Undergraduate

Schedule types: Lecture

Department/School: Hort & Landscape Arch

Additional Fees: HORT/LA Facil, Equip, Lab fee of \$12 per credit hour applies.

HORT 4053 International Experience in Horticulture (I)

Description: Participation in international travel to develop an understanding of different horticultural systems and technologies used outside the U.S.

Credit hours: 3

Contact hours: Lecture: 3 Contact: 3

Levels: Undergraduate

Schedule types: Lecture

Department/School: Hort & Landscape Arch

General Education and other Course Attributes: International Dimension

HORT 4133 Temperature Stress Physiology

Prerequisites: BIOC 3653 and PBIOL 4463 or HORT 4963.

Description: Effects of heat, chilling and freezing stress on plants. Responses to temperature extremes at the molecular to whole plant levels with emphasis on mechanisms of injury and resistance. Same course as PLNT 4133. May not be used for degree credit with HORT 5133 and PLNT 5133.

Credit hours: 3

Contact hours: Lecture: 3 Contact: 3

Levels: Undergraduate

Schedule types: Lecture

Department/School: Hort & Landscape Arch

HORT 4453 Turfgrass Physiology and Ecology

Prerequisites: HORT 3153, and BIOL 1113 and BIOL 1111 or PBIOL 1404.

Description: A study of the relationship between turf physiology and modern turf management practices. Concepts of stand ecology with emphasis on species dominance in stressful environments. May not be used for Degree Credit with HORT 5453.

Credit hours: 3

Contact hours: Lecture: 3 Contact: 3

Levels: Undergraduate

Schedule types: Lecture

Department/School: Hort & Landscape Arch

HORT 4493 Athletic Field Management**Prerequisites:** HORT 3153.**Description:** Principles, practices and challenges associated with natural turf- covered athletic field management; field construction, maintenance and evaluation of playing surface quality; soil physical properties influencing management and field use, construction and maintenance materials specification, and traction, hardness and ball response factors. Offered in combination with HORT 5493. No credit for both HORT 4493 and HORT 5493.**Credit hours:** 3**Contact hours:** Lecture: 3 Contact: 3**Levels:** Undergraduate**Schedule types:** Lecture**Department/School:** Hort & Landscape Arch**HORT 4543 Sustainable Nursery Production****Prerequisites:** HORT 2613 and SOIL 2124.**Description:** Sustainable commercial production of field- and container-grown woody ornamental crops. Previously offered as HORT 3544. May not be used for Degree Credit with HORT 5543.**Credit hours:** 3**Contact hours:** Lecture: 2 Lab: 2 Contact: 4**Levels:** Undergraduate**Schedule types:** Lab, Lecture, Combined lecture and lab**Department/School:** Hort & Landscape Arch**HORT 4713 Public Garden Management****Prerequisites:** HORT 1013.**Description:** Issues and methods in public garden management, including database management of collections, conservation of native species, grant writing, volunteer coordination, computerized mapping systems, master planning, and other topics pertaining to a career in public horticulture. Field trips required. May not be used for Degree Credit with HORT 5713.**Credit hours:** 3**Contact hours:** Lecture: 1 Lab: 4 Contact: 5**Levels:** Undergraduate**Schedule types:** Lab, Lecture, Combined lecture and lab**Department/School:** Hort & Landscape Arch**Additional Fees:** HORT/LA Facil, Equip, Lab fee of \$12 per credit hour applies.**HORT 4773 Applied Landscape Planning****Description:** Concepts of landscape management, design and construction including hand graphics and AutoCad with an emphasis on residential landscape. No credit for students in the landscape architecture or landscape management programs. Previously offered as HORT 4774.**Credit hours:** 3**Contact hours:** Lecture: 2 Lab: 2 Contact: 4**Levels:** Undergraduate**Schedule types:** Lab, Lecture, Combined lecture and lab**Department/School:** Hort & Landscape Arch**HORT 4901 Horticulture in Controlled Environments Laboratory****Prerequisites:** HORT 4903 or concurrent enrollment.**Description:** Hands-on experiences and virtual field trips designed to reinforce principles discussed in HORT 4903, and to develop skill sets important to successful implementation of horticultural practices in controlled environments. May not be used for Degree Credit with HORT 5901.**Credit hours:** 1**Contact hours:** Lab: 2 Contact: 2**Levels:** Undergraduate**Schedule types:** Lab**Department/School:** Hort & Landscape Arch**HORT 4903 Horticulture in Controlled Environments****Prerequisites:** CHEM 1215 and HORT 3113.**Description:** Designing, constructing, monitoring, and manipulating controlled environments for efficient horticultural production. May not be used for degree credit with HORT 5903.**Credit hours:** 3**Contact hours:** Lecture: 3 Contact: 3**Levels:** Undergraduate**Schedule types:** Lecture**Department/School:** Hort & Landscape Arch**HORT 4933 Principles of Sustainable and Organic Horticulture****Prerequisites:** HORT 1013.**Description:** Principles and practices of sustainable, organic, and alternative horticultural management systems.**Credit hours:** 3**Contact hours:** Lecture: 3 Contact: 3**Levels:** Undergraduate**Schedule types:** Lecture**Department/School:** Hort & Landscape Arch**HORT 4943 International Horticulture****Prerequisites:** HORT 1013.**Description:** Overview of the horticulture industry worldwide. Export, marketing, and international trade issues in a global horticulture context. Individual country analyses of specific fruit, vegetable and ornamental crops. May not be used for Degree Credit with HORT 5943.**Credit hours:** 3**Contact hours:** Lecture: 3 Contact: 3**Levels:** Undergraduate**Schedule types:** Lecture**Department/School:** Hort & Landscape Arch**HORT 4953 Plant Growth and Development****Prerequisites:** HORT 1013 and PBIO 1404.**Description:** Plant embryogenesis and organogenesis; growth and development of shoots and reproductive structures; plant developmental processes including shoot expansion and dormancy as influenced by temperature, light, and other environmental factors. May not be used for Degree Credit with HORT 5953.**Credit hours:** 3**Contact hours:** Lecture: 3 Contact: 3**Levels:** Undergraduate**Schedule types:** Lecture**Department/School:** Hort & Landscape Arch

HORT 4963 Horticulture Physiology

Prerequisites: CHEM 1215, and BIOL 1114 or (BIOL 1113 and BIOL 1111) or PBIO 1404.

Description: Physiology of horticultural plants, including water relations, respiration, photosynthesis, and growth and development. May not be used for degree credit with HORT 5963.

Credit hours: 3

Contact hours: Lecture: 3 Contact: 3

Levels: Undergraduate

Schedule types: Lecture

Department/School: Hort & Landscape Arch

Additional Fees: HORT/LA Facil, Equip, Lab fee of \$12 per credit hour applies.

HORT 4973 Sustainable Landscape Management

Prerequisites: HORT 1013 or LA 1013.

Description: The ecological principles and landscape resources supporting decision-making for sustainable landscape management. Retrofits of existing development for enhanced sustainability, including equipment selection, stormwater management, use of successional landscapes, permaculture, and organic methods. May not be used for Degree Credit with HORT 5973.

Credit hours: 3

Contact hours: Lecture: 3 Contact: 3

Levels: Undergraduate

Schedule types: Lecture

Department/School: Hort & Landscape Arch

HORT 4990 Horticultural Problems

Prerequisites: Consent of instructor.

Description: Study of horticultural problems under the supervision of a faculty member. Offered for variable credit, 1-6 credit hours, maximum of 6 credit hours.

Credit hours: 1-6

Contact hours: Contact: 1-6 Other: 1-6

Levels: Undergraduate

Schedule types: Independent Study

Department/School: Hort & Landscape Arch

Additional Fees: HORT/LA Facil, Equip, Lab fee of \$12 per credit hour applies.

HORT 5000 Master's Research and Thesis

Description: Research on thesis problems required of master's degree candidates. Offered for variable credit, 1-6 credit hours, maximum of 6 credit hours.

Credit hours: 1-6

Contact hours: Contact: 1-6 Other: 1-6

Levels: Graduate

Schedule types: Independent Study

Department/School: Hort & Landscape Arch

Additional Fees: HORT/LA Facil, Equip, Lab fee of \$12 per credit hour applies.

HORT 5020 Graduate Seminar

Prerequisites: Graduate standing.

Description: Proposal and results seminars for graduate programs. Offered for fixed credit, 1 credit hour, maximum of 2 credit hours.

Credit hours: 1

Contact hours: Contact: 1 Other: 1

Levels: Graduate

Schedule types: Independent Study

Department/School: Hort & Landscape Arch

Additional Fees: HORT/LA Facil, Equip, Lab fee of \$12 per credit hour applies.

HORT 5110 Advanced Horticultural Problems

Description: Selected research problems in horticulture, floriculture, landscape design; nursery production, olericulture and pomology. Offered for variable credit, 1-12 credit hours, maximum of 20 credit hours.

Credit hours: 1-12

Contact hours: Contact: 1-12 Other: 1-12

Levels: Graduate

Schedule types: Independent Study

Department/School: Hort & Landscape Arch

Additional Fees: HORT/LA Facil, Equip, Lab fee of \$12 per credit hour applies.

HORT 5133 Temperature Stress Physiology

Prerequisites: BIOC 3653 and PBIO 4463 or HORT 4963.

Description: Effects of heat, chilling and freezing stress on plants. Responses to temperature extremes at the molecular to whole plant levels with emphasis on mechanisms of injury and resistance. Same course as PLNT 5133. May not be used for degree credit with PLNT 4133 and HORT 4133.

Credit hours: 3

Contact hours: Lecture: 3 Contact: 3

Levels: Graduate

Schedule types: Lecture

Department/School: Hort & Landscape Arch

HORT 5233 Experimental Horticulture

Description: Methods of conducting research with horticultural crops, including organization and plans, field plot techniques and analysis of data.

Credit hours: 3

Contact hours: Lecture: 3 Contact: 3

Levels: Graduate

Schedule types: Lecture

Department/School: Hort & Landscape Arch

HORT 5293 Plant Response to Water Stress

Prerequisites: BIOC 3653 and PBIO 4463.

Description: Physiological ramifications of water deficit stress on cells, tissues, plants and canopies. Discussion of the soil/plant/atmosphere continuum, and avoidance and tolerance mechanisms leading to drought resistance. Photosynthesis, transpiration, and water-use efficiency and their relationship to biomass accumulation and crop yield. Same course as PLNT 5293.

Credit hours: 3

Contact hours: Lecture: 3 Contact: 3

Levels: Graduate

Schedule types: Lecture

Department/School: Hort & Landscape Arch

HORT 5403 Commercial Vegetable Production

Prerequisites: HORT 1013, SOIL 2124 and PBIO 1404.

Description: Commercial production and marketing of vegetable crops. May not be used for degree credit with HORT 3433.

Credit hours: 3

Contact hours: Lecture: 3 Contact: 3

Levels: Graduate

Schedule types: Lecture

Department/School: Hort & Landscape Arch

HORT 5423 Flowering and Fruiting in Horticultural Crops**Prerequisites:** PBIO 3463.**Description:** Environmental, chemical and cultural factors affecting the flowering and fruiting of horticultural crops. Previously offered as HORT 5422.**Credit hours:** 3**Contact hours:** Lecture: 3 Contact: 3**Levels:** Graduate**Schedule types:** Lecture**Department/School:** Hort & Landscape Arch**HORT 5433 Postharvest Physiology****Prerequisites:** BOT 3463 and BOT 3460.**Description:** Physiological causes for post-harvest changes in horticultural crops (ripening and senescence) and the basis for certain postharvest treatments (precooling at harvest, controlled atmosphere storage, refrigeration, and packaging techniques). Commodity-specific postharvest phenomena.**Credit hours:** 3**Contact hours:** Lecture: 3 Contact: 3**Levels:** Graduate**Schedule types:** Lecture**Department/School:** Hort & Landscape Arch**HORT 5443 Basic Laboratory Experimentation****Description:** Principles and theory of safe laboratory practice and experimentation. Techniques for developing and optimizing plant sample acquisition, extraction and analysis protocols. Theory of operation and maintenance of common laboratory instrumentation (pH measurement, solid and liquid analytical measurement, temperature measurement, spectrophotometry, HPLC, GC). Laboratory provides hands-on experience for integrated protocol development and instrument use.**Credit hours:** 3**Contact hours:** Lecture: 2 Lab: 3 Contact: 5**Levels:** Graduate**Schedule types:** Lab, Lecture, Combined lecture and lab**Department/School:** Hort & Landscape Arch**Additional Fees:** HORT/LA Facil, Equip, Lab fee of \$12 per credit hour applies.**HORT 5453 Turfgrass Physiology and Ecology****Prerequisites:** HORT 3153, PBIO 1404.**Description:** A study of the relationship between turf physiology and modern turf management practices. Concepts of stand ecology with emphasis on species dominance in stressful environments. May not be used for degree credit with HORT 4453.**Credit hours:** 3**Contact hours:** Lecture: 3 Contact: 3**Levels:** Graduate**Schedule types:** Lecture**Department/School:** Hort & Landscape Arch**HORT 5493 Athletic Field Management****Prerequisites:** HORT 3153.**Description:** Principles, practices and challenges associated with natural turf- covered athletic field management; field construction, maintenance and evaluation of playing surface quality; soil physical properties influencing management and field use, construction and maintenance materials specification, and traction, hardness and ball response factors. Offered in combination with HORT 4493. No credit for both HORT 4493 and HORT 5493.**Credit hours:** 3**Contact hours:** Lecture: 3 Contact: 3**Levels:** Graduate**Schedule types:** Lecture**Department/School:** Hort & Landscape Arch**HORT 5543 Sustainable Nursery Production****Prerequisites:** HORT 2613 and SOIL 2124.**Description:** Sustainable commercial production of field and container grown woody ornamental crops. No credit for both HORT 4543 and HORT 5543.**Credit hours:** 3**Contact hours:** Lecture: 3 Contact: 3**Levels:** Graduate**Schedule types:** Lecture**Department/School:** Hort & Landscape Arch**HORT 5713 Public Garden Management****Prerequisites:** HORT 1013.**Description:** Issues and methods in public garden management, including database management of collections, conservation of native species, grant writing, volunteer coordination, computerized mapping systems, master planning, and other topics pertaining to a career in public horticulture. Field trips required. May not be used for degree credit with HORT 4713.**Credit hours:** 3**Contact hours:** Lecture: 1 Lab: 4 Contact: 5**Levels:** Graduate**Schedule types:** Lab, Lecture, Combined lecture and lab**Department/School:** Hort & Landscape Arch**Additional Fees:** HORT/LA Facil, Equip, Lab fee of \$12 per credit hour applies.**HORT 5901 Horticulture in Controlled Environments Laboratory****Prerequisites:** HORT 4903 or concurrent enrollment.**Description:** Hands-on experiences and virtual field trips designed to reinforce principles discussed in HORT 4903, and to develop skill sets important to successful implementation of horticultural practices in controlled environments. May not be used for Degree Credit with HORT 4901.**Credit hours:** 1**Contact hours:** Lab: 2 Contact: 2**Levels:** Graduate**Schedule types:** Lab**Department/School:** Hort & Landscape Arch

HORT 5903 Horticulture in Controlled Environments**Prerequisites:** CHEM 1215 and HORT 3113.**Description:** Designing, constructing, monitoring, and manipulating controlled environments for efficient horticultural production. May not be used for degree credit for HORT 4903.**Credit hours:** 3**Contact hours:** Lecture: 3 Contact: 3**Levels:** Graduate**Schedule types:** Lecture**Department/School:** Hort & Landscape Arch**HORT 5943 International Horticulture****Prerequisites:** HORT 1013.**Description:** Overview of the horticulture industry worldwide. Export, marketing, and international trade issues in a global horticulture context. Individual country analyses of specific fruit, vegetable and ornamental crops. May not be used for Degree Credit with HORT 4943.**Credit hours:** 3**Contact hours:** Lecture: 3 Contact: 3**Levels:** Graduate**Schedule types:** Lecture**Department/School:** Hort & Landscape Arch**HORT 5953 Plant Growth and Development****Prerequisites:** HORT 1013 and PBIOL 1404.**Description:** Plant embryogenesis and organogenesis; growth and development of shoots and reproductive structures; plant development processes including shoot expansion and dormancy as influenced by temperature, light, and other environmental factors. May not be offered for degree credit with HORT 4953.**Credit hours:** 3**Contact hours:** Lecture: 3 Contact: 3**Levels:** Graduate**Schedule types:** Lecture**Department/School:** Hort & Landscape Arch**HORT 5963 Horticulture Physiology****Prerequisites:** CHEM 1215 and BIOL 1114 or (BIOL 1113 or BIOL 1111).**Description:** Physiology of horticultural plants, including water relations, respiration, photosynthesis, and growth and development. Offered in combination with HORT 4963. May not be used for degree credit with HORT 4963.**Credit hours:** 3**Contact hours:** Lecture: 3 Contact: 3**Levels:** Graduate**Schedule types:** Lecture**Department/School:** Hort & Landscape Arch**Additional Fees:** HORT/LA Facil, Equip, Lab fee of \$12 per credit hour applies.**HORT 5973 Sustainable Landscape Management****Prerequisites:** HORT 1013 and LA 1013.**Description:** The ecological principles and landscape resources supporting decision-making for sustainable landscape management. Retrofits of existing development for enhanced sustainability, including equipment selection, stormwater management, use of successional landscapes, permaculture, and organic methods. No credit for both HORT 4973 and HORT 5973.**Credit hours:** 3**Contact hours:** Lecture: 3 Contact: 3**Levels:** Graduate**Schedule types:** Lecture**Department/School:** Hort & Landscape Arch**HORT 6000 Doctoral Rsch & Dissertation****Description:** Research on dissertation problems required of PhD candidates in multidisciplinary programs. Offered for variable credit, 1-12 credit hours, maximum of 30 credit hours.**Credit hours:** 1-12**Contact hours:** Contact: 1-12 Other: 1-12**Levels:** Graduate**Schedule types:** Independent Study**Department/School:** Hort & Landscape Arch**Additional Fees:** HORT/LA Facil, Equip, Lab fee of \$12 per credit hour applies.**LA 1013 Introduction to Landscape Architecture****Description:** An overview of the field of landscape architecture with an emphasis on the application of artistic and scientific principles of design, planning and management of natural and built environments.**Credit hours:** 3**Contact hours:** Lecture: 3 Contact: 3**Levels:** Undergraduate**Schedule types:** Lecture**Department/School:** Hort & Landscape Arch**Additional Fees:** HORT/LA Facil, Equip, Lab fee of \$12 per credit hour applies.**LA 1213 Visual Communication I for Landscape Architecture****Description:** The practice and application of hand graphics, professional drafting, and freehand sketching skills to explore, communicate, and represent natural, designed, and built landscapes. Previously offered as LA 2002 and LA 2213.**Credit hours:** 3**Contact hours:** Lecture: 2 Lab: 3 Contact: 5**Levels:** Undergraduate**Schedule types:** Lab, Lecture, Combined lecture and lab**Department/School:** Hort & Landscape Arch**Additional Fees:** HORT/LA Facil, Equip, Lab fee of \$12 per credit hour applies.**LA 1223 Visual Communication II for Landscape Architecture****Description:** The practice and application of digital visualization in the landscape architectural design process. Introduction to computer applications used in the industry for conceptualizing, drafting, modeling, and graphic communications. Previously offered as LA 3002 and LA 2223.**Credit hours:** 3**Contact hours:** Lecture: 2 Lab: 3 Contact: 5**Levels:** Undergraduate**Schedule types:** Lab, Lecture, Combined lecture and lab**Department/School:** Hort & Landscape Arch**Additional Fees:** HORT/LA Facil, Equip, Lab fee of \$12 per credit hour applies.**LA 1323 Computer-Aided Design for Landscape Architecture****Description:** Principles and applications of computer-aided design (AutoCAD) in landscape architecture. Visual communication techniques related to technical and construction drawings. Introduction to portfolio design. Previously offered as LA 1122 and LA 2323.**Credit hours:** 3**Contact hours:** Lecture: 2 Lab: 2 Contact: 4**Levels:** Undergraduate**Schedule types:** Lab, Lecture, Combined lecture and lab**Department/School:** Hort & Landscape Arch**Additional Fees:** HORT/LA Facil, Equip, Lab fee of \$12 per credit hour applies.

LA 1525 Studio 1: Principles and Theory of Design**Prerequisites:** Concurrent enrollment in LA 1223.**Description:** Introduction to basic elements, principles, and theory of design. Exploration of design process, both 2D and 3D form, spatial organization, and temporal nature of landscape. Applied projects in small scale landscape design. Previously offered as LA 3314, LA 3315, and LA 3773.**Credit hours:** 5**Contact hours:** Lecture: 2 Lab: 9 Contact: 11**Levels:** Undergraduate**Schedule types:** Lab, Lecture, Combined lecture and lab**Department/School:** Hort & Landscape Arch**Additional Fees:** HORT/LA Facil, Equip, Lab fee of \$12 per credit hour applies.**LA 2413 Ecological Landscape Design****Description:** Introduction to principles of ecological landscape design, natural systems, and landscape performance as applied in contemporary landscape architecture. Includes the natural, cultural, and aesthetic components involved with analyzing existing space for design and planning purposes. Exposure to historical and contemporary individuals that have inspired ecological landscape design and planning.**Credit hours:** 3**Contact hours:** Lecture: 3 Contact: 3**Levels:** Undergraduate**Schedule types:** Lecture**Department/School:** Hort & Landscape Arch**LA 2513 Native American Symbolism in Landscape Design (D)****Description:** Study of cultural diversity through Native American symbolism and application of these symbols as design elements relating to functional and aesthetic qualities in landscape design.**Credit hours:** 3**Contact hours:** Lecture: 2 Lab: 3 Contact: 5**Levels:** Undergraduate**Schedule types:** Lab, Lecture, Combined lecture and lab**Department/School:** Hort & Landscape Arch**General Education and other Course Attributes:** Diversity**LA 2515 Studio 2: Site Design****Prerequisites:** LA 1223, LA 1525, and concurrent enrollment in LA 1213.**Description:** Design process, site inventory and analysis as it relates to physical and social site design. Place making, experiential, behavioral, and environmental considerations among several issues to be examined. Applied projects will focus on residential design, site design and design development. Previously offered as LA 3324, LA 3325, and LA 4013.**Credit hours:** 5**Contact hours:** Lecture: 2 Lab: 9 Contact: 11**Levels:** Undergraduate**Schedule types:** Lab, Lecture, Combined lecture and lab**Department/School:** Hort & Landscape Arch**Additional Fees:** HORT/LA Facil, Equip, Lab fee of \$12 per credit hour applies.**LA 2523 Garden Design in Harmony with Local Ecology****Description:** History, theory, and practice of creating gardens in harmony with local ecology to express aesthetic and cultural values of individuals and societies. Environmental aspects of place related to design form and expression.**Credit hours:** 3**Contact hours:** Lecture: 2 Lab: 3 Contact: 5**Levels:** Undergraduate**Schedule types:** Lab, Lecture, Combined lecture and lab**Department/School:** Hort & Landscape Arch**LA 2525 Studio 3: Recreation and Open Space Design****Prerequisites:** LA 2515.**Description:** Recreation and play, the interface of nature, human-kind and land ethic. Applied projects will address structured and nature play, active and passive parks, open space planning, and natural landscapes. Previously offered as LA 4023, LA 4414 and LA 4415.**Credit hours:** 5**Contact hours:** Lecture: 2 Lab: 9 Contact: 11**Levels:** Undergraduate**Schedule types:** Lab, Lecture, Combined lecture and lab**Department/School:** Hort & Landscape Arch**Additional Fees:** HORT/LA Facil, Equip, Lab fee of \$12 per credit hour applies.**LA 3010 Internship in Landscape Architecture****Prerequisites:** 45 credit hours and consent of internship chairperson.**Description:** Supervised work experience with approved public or private employers in landscape architecture or related fields. May not be substituted for other required courses. Graded on a pass-fail basis. Offered for variable credit, 1-7 credit hours, maximum of 10 credit hours.**Credit hours:** 1-4**Contact hours:** Contact: 1-4 Other: 1-4**Levels:** Undergraduate**Schedule types:** Independent Study**Department/School:** Hort & Landscape Arch**Additional Fees:** HORT/LA Facil, Equip, Lab fee of \$12 per credit hour applies.**LA 3020 Long-Term Internship in Landscape Architecture****Prerequisites:** LA 3515 and approval of academic advisor and faculty internship coordinator.**Description:** Supervised continuous work experience for 6 months or more with approved public or private employers in landscape architecture or related fields. Presentation required following the internship experience.**Credit hours:** 1-8**Contact hours:** Contact: 1-8 Other: 1-8**Levels:** Undergraduate**Schedule types:** Independent Study**Department/School:** Hort & Landscape Arch**LA 3112 Landscape Architecture National Survey****Prerequisites:** LA 3315.**Description:** Examination and exposure to the state of landscape architecture practice and issues critical to profession. Includes 4- to 6-day out-of-state field trip component to the city hosting the American Society of Landscape Architects National Convention, observation of nationally recognized built works, participation in the convention and networking with professionals from across the country. Includes pre-trip research and post-trip documentation. Required for third-year landscape architecture students.**Credit hours:** 2**Contact hours:** Lecture: 2 Contact: 2**Levels:** Undergraduate**Schedule types:** Lecture**Department/School:** Hort & Landscape Arch

LA 3515 Studio 4: Landscape Planting Design**Prerequisites:** LA 2525, HORT 2613.**Description:** Introduction and application of the techniques, methods, and concepts for exploring, expressing, and representing landscape planting designs. Medium to large scale landscape architectural planting design projects and the preparation of concept sketches, illustrative plans, construction documents, and specifications. Emphasis on plant selection and arrangement criteria based on ecology and horticultural practices, the principles of design, and the fundamentals of bioregionalism. Previously offered as LA 4033 and LA 4034.**Credit hours:** 5**Contact hours:** Lecture: 2 Lab: 9 Contact: 11**Levels:** Undergraduate**Schedule types:** Lab, Lecture, Combined lecture and lab**Department/School:** Hort & Landscape Arch**Additional Fees:** HORT/LA Facil, Equip, Lab fee of \$12 per credit hour applies.**LA 3525 Studio 5: Sustainable Construction and Design****Prerequisites:** LA 3515 and LA 3884 or LA 4894.**Description:** Explore sustainable issues to improve the design and implementation of natural, cultural, and built environments in the practice of landscape architecture. Applied projects will focus on and apply sustainable construction and design solutions at various scales while considering impacts on human beings and the environments. Previously offered as LA 3893 and LA 3894.**Credit hours:** 5**Contact hours:** Lecture: 2 Lab: 9 Contact: 11**Levels:** Undergraduate**Schedule types:** Lab, Lecture, Combined lecture and lab**Department/School:** Hort & Landscape Arch**LA 3673 History and Theory of Landscape Architecture (H)****Description:** Introduction to the history of the built environment from ancient to contemporary time that has created the styles of historical significance in landscape architecture. Examination of the social, philosophical, cultural, economic, political, and environmental conditions of the built environment within design theory.**Credit hours:** 3**Contact hours:** Lecture: 3 Contact: 3**Levels:** Undergraduate**Schedule types:** Lecture**Department/School:** Hort & Landscape Arch**General Education and other Course Attributes:** Humanities**Additional Fees:** HORT/LA Facil, Equip, Lab fee of \$12 per credit hour applies.**LA 3683 Professional Practice & Office Procedure****Description:** Ethics, office practice and procedure. Contract documents and specifications relating to landscape architecture. Previously offered as LA 3682.**Credit hours:** 3**Contact hours:** Lecture: 3 Contact: 3**Levels:** Undergraduate**Schedule types:** Lecture**Department/School:** Hort & Landscape Arch**LA 3884 Landscape Construction: Site Grading****Prerequisites:** LA 1323.**Description:** Review mechanical drafting and lettering techniques, understanding contours, principles of stormwater runoff, site grading and earthwork calculations, methods of managing stormwater runoff, erosion control, introduction to paving and drainage construction materials, specifications, cost estimating. Computer applications and hand graphics used for projects. Previously offered as LA 3883.**Credit hours:** 4**Contact hours:** Lecture: 2 Lab: 4 Contact: 6**Levels:** Undergraduate**Schedule types:** Lab, Lecture, Combined lecture and lab**Department/School:** Hort & Landscape Arch**Additional Fees:** HORT/LA Facil, Equip, Lab fee of \$12 per credit hour applies.**LA 4010 Special Topics in Landscape Architecture****Description:** New and emerging areas of study in Landscape Architecture. Offered for variable credit, 1-4 credit hours, maximum of 9 credit hours.**Credit hours:** 1-4**Contact hours:** Lecture: 1-4 Contact: 1-4**Levels:** Undergraduate**Schedule types:** Lecture**Department/School:** Hort & Landscape Arch**LA 4053 International Experience in Landscape Architecture - Asia (I)****Prerequisites:** Consent of appropriate faculty member.**Description:** Participation in a formal or informal educational experience related with landscape architecture in Asia.**Credit hours:** 3**Contact hours:** Lecture: 3 Contact: 3**Levels:** Undergraduate**Schedule types:** Lecture**Department/School:** Hort & Landscape Arch**General Education and other Course Attributes:** International Dimension**LA 4063 International Experience in Landscape Architecture - Peru (I)****Prerequisites:** Consent of appropriate faculty member.**Description:** Participation in a formal or informal educational experience related with landscape architecture in Peru.**Credit hours:** 3**Contact hours:** Lecture: 3 Contact: 3**Levels:** Undergraduate**Schedule types:** Lecture**Department/School:** Hort & Landscape Arch**General Education and other Course Attributes:** International Dimension**LA 4112 Landscape Architecture Career Survey****Prerequisites:** LA 2525.**Description:** Examination and exposure to built works and landscape architecture professional offices with diverse practices and market niches. Targeted networking and career exploration opportunities for students. Includes a 4- to 6-day out-of-state regional field trip component, pre-trip research, and post-trip documentation. Required for fourth-year landscape architecture students.**Credit hours:** 2**Contact hours:** Contact: 2 Other: 2**Levels:** Undergraduate**Schedule types:** Independent Study**Department/School:** Hort & Landscape Arch

LA 4423 Planning and Design for Sustainable Landscapes

Prerequisites: For LA students, LA 3894. For all other students, NREM 3013 or NREM 2013 and SOIL 2124.

Description: Explore the origins of sustainability as a basis for understanding how to improve the planning and design of natural and cultural environments in the practice of landscape architecture.

Credit hours: 3

Contact hours: Lecture: 3 Contact: 3

Levels: Undergraduate

Schedule types: Lecture

Department/School: Hort & Landscape Arch

LA 4433 Land Use and City Planning

Description: Land use and city planning within the framework of a municipality's comprehensive plan, zoning, and subdivision regulations that affect the development of city form. Origins of land use form as a basis for understanding how to improve the future of urban and suburban form through the practice of landscape architecture.

Credit hours: 3

Contact hours: Lecture: 3 Contact: 3

Levels: Undergraduate

Schedule types: Lecture

Department/School: Hort & Landscape Arch

LA 4453 Principles of Landscape Analysis for Site Design

Prerequisites: LA 3515.

Description: Analysis of landscapes for design and management decision-making using real-world projects integrating computer-aided design (CAD) and geographic information systems (GIS), aerial photography, and global positioning system (GPS) technologies. Applications will be related to landscape architecture and site design.

Credit hours: 3

Contact hours: Lecture: 1 Lab: 4 Contact: 5

Levels: Undergraduate

Schedule types: Lab, Lecture, Combined lecture and lab

Department/School: Hort & Landscape Arch

LA 4515 Studio 6: Urban Design

Prerequisites: LA 3515.

Description: Contemporary urban issues affecting the design process, site master planning, and multi-disciplinary problem solving. Applied project will address influences on urban design, from regional influences to user behavior. Previously offered as LA 4514 and LA 5024.

Credit hours: 5

Contact hours: Lecture: 2 Lab: 9 Contact: 11

Levels: Undergraduate

Schedule types: Lab, Lecture, Combined lecture and lab

Department/School: Hort & Landscape Arch

Additional Fees: HORT/LA Facil, Equip, Lab fee of \$12 per credit hour applies.

LA 4525 Studio 7: Community Development and Neighborhood Design

Prerequisites: LA 3525 or LA 4515.

Description: Exposure to contemporary issues of community development over a range of scales including landscape planning, schematic design, and design development. Projects will address issues at multiple forms and densities. Exploration of professional office dynamics, environments, and community involvement.

Credit hours: 5

Contact hours: Lecture: 2 Lab: 9 Contact: 11

Levels: Undergraduate

Schedule types: Lab, Lecture, Combined lecture and lab

Department/School: Hort & Landscape Arch

Additional Fees: HORT/LA Facil, Equip, Lab fee of \$12 per credit hour applies.

LA 4573 Recreation Planning

Prerequisites: Consent of instructor.

Description: Theory and methods for small and large scale area planning with emphasis on natural and cultural resources.

Credit hours: 3

Contact hours: Lecture: 2 Lab: 2 Contact: 4

Levels: Undergraduate

Schedule types: Lab, Lecture, Combined lecture and lab

Department/School: Hort & Landscape Arch

LA 4894 Landscape Construction: Materials and Methods

Prerequisites: LA 1323 and LA 3884.

Description: A capstone course using design techniques, computer skills, construction materials, methods and applications for the landscape industry. Detailed computerized construction drawings of pavement, fences, walls, wood structures, and water features. Comprehensive construction documents using computer drafting, design and calculation applications. Previously offered as LA 4893.

Credit hours: 4

Contact hours: Lecture: 2 Lab: 4 Contact: 6

Levels: Undergraduate

Schedule types: Lab, Lecture, Combined lecture and lab

Department/School: Hort & Landscape Arch

Additional Fees: HORT/LA Facil, Equip, Lab fee of \$12 per credit hour applies.

LA 4990 Landscape Architecture Special Problems

Prerequisites: Consent of appropriate faculty member.

Description: Landscape architectural related problems. Offered for variable credit, 1-6 credit hours, maximum of 12 credit hours.

Credit hours: 1-6

Contact hours: Contact: 1-6 Other: 1-6

Levels: Undergraduate

Schedule types: Independent Study

Department/School: Hort & Landscape Arch

Additional Fees: HORT/LA Facil, Equip, Lab fee of \$12 per credit hour applies.

LA 5110 Advanced Special Problems

Prerequisites: Consent of appropriate faculty member.

Description: Specific landscape architectural problems. Offered for variable credit, 1-12 credit hours, maximum of 20 credit hours.

Credit hours: 1-12

Contact hours: Contact: 1-12 Other: 1-12

Levels: Graduate, Undergraduate

Schedule types: Independent Study

Department/School: Hort & Landscape Arch

Additional Fees: HORT/LA Facil, Equip, Lab fee of \$12 per credit hour applies.

Undergraduate Programs

- Horticulture: Horticultural Business, BSAG (<http://catalog.okstate.edu/ferguson-college-agriculture/horticulture-landscape-architecture/horticultural-business-bsag/>)
- Horticulture: Horticultural Food Safety, BSAG (<http://catalog.okstate.edu/ferguson-college-agriculture/horticulture-landscape-architecture/horticulture-horticultural-food-safety-bsag/>)
- Horticulture: Horticultural Science, BSAG (<http://catalog.okstate.edu/ferguson-college-agriculture/horticulture-landscape-architecture/horticultural-science-bsag/>)
- Horticulture: Landscape Management, BSAG (<http://catalog.okstate.edu/ferguson-college-agriculture/horticulture-landscape-architecture/horticulture-landscape-management-bsag/>)
- Horticulture: Public Horticulture, BSAG (<http://catalog.okstate.edu/ferguson-college-agriculture/horticulture-landscape-architecture/public-horticulture-bsag/>)
- Horticulture: Turf Management, BSAG (<http://catalog.okstate.edu/ferguson-college-agriculture/horticulture-landscape-architecture/turf-management-bsag/>)
- Horticulture: Urban Horticulture, BSAG (<http://catalog.okstate.edu/ferguson-college-agriculture/horticulture-landscape-architecture/horticulture-urban-horticulture-bsag/>)
- Landscape Architecture, BLA (<http://catalog.okstate.edu/ferguson-college-agriculture/horticulture-landscape-architecture/landscape-architecture-bla/>)

Graduate Programs

The department offers programs of study leading to the Master of Science degree in Horticulture (with areas of specialization including Horticultural Science, Phytochemistry and Turfgrass Science). Doctoral students can participate in multidisciplinary PhD programs in Crop Science, Environmental Science, or Food Science. Areas of study include floriculture crops, fruit and nut crops, vegetables, ornamental nursery crops, and turfgrass science. In addition to commodity-oriented specialties, students may emphasize food processing, environmental applications, water quantity and water quality, plant extraction applications, postharvest physiology, or stress physiology disciplines. Applicants should indicate their interest area(s). Research opportunities range from whole plant production/management studies to fundamental cellular studies. Additional information on programs, application procedures and financial assistance is available at: <https://agriculture.okstate.edu/departments-programs/hla/>.

Prerequisites

Admission requires a bachelor's degree in Horticulture, Landscape Architecture, or a related field with at least a 3.00 ("B") grade-point average. Students with coursework deficiencies in fundamental areas may be required to take remedial courses to attain proficiency in accordance with the advisory committee's guidance. In addition to Graduate College requirements, applicants must submit official GRE scores, a statement of research and career interests, and three letters of reference.

Admission to the program requires approval by the graduate committee, a departmental advisor on the Graduate Faculty, the department head, and Graduate College. The program of study and research will be directed by the student's graduate advisor and advisory committee.

Minors

- Horticulture (HORT), Minor (<http://catalog.okstate.edu/ferguson-college-agriculture/horticulture-landscape-architecture/horticulture-minor/>)

Faculty

Justin Quetone Moss, PhD—Professor and Head

Professors: Louis Anella, PhD; Bruce Dunn, PhD; Michael Holmes, MLA; William McGlynn, PhD; Niels Maness, PhD; Dennis Martin, PhD; Cheryl Mihalko, MLA; Michael A. Schnelle, PhD

Associate Professors: Charles Fontanier, PhD; Qing Luo, MLA; Bo Zhang, PhD

Assistant Professors: Mingying Xiang, PhD; Lu Zhang, PhD

Senior Extension Specialists: Becky Carroll, BS; David Hillock, MS; Shelley Mitchell, PhD

Associate Extension Specialists: Casey Hentges, MS

Assistant Extension Specialists: Aaron Essary, MS

Assistant Research Professor: Shuhao Yu, PhD