HORTICULTURE COURSES

23 HORT 1010  Horticulture Science I
3 ug. cr.  Prereq: None.  BoK: NS  Required for BS, HORT, URLN, URAG, SLD, GRRF

This course is an introduction to basic horticulture science concepts and principles including the development, growth, distribution, and utilization of fruits, vegetables, and ornamental plants. The course will focus on botanical concepts of plant structure, growth, and development, and the plants’ response to environmental conditions and management techniques.

Learning Outcomes  Students will be able to:
• Identify plants by plant kingdom and plant classification.
• Identify basic plant morphology and physiological functions.
• Relate ecological processes to plant culture.
• Apply a horticultural approach to plant culture that includes management techniques in soil fertility, water management, light availability, and temperature control.

23 HORT 1010L  Horticulture I Lab: Technology
2 ug. cr.  Prereq. None.  Required for BS

This survey course for Horticulture majors will introduce students to the technological skills and knowledge required in applications of contemporary horticulture. Lectures and field visits will review scientific and artistic devices, graphic representation media and wares, publication resources, and horticultural growing technologies. This course will prepare students to utilize the resources of UC and the community for future course work and career preparation. A horticultural project that requires basic application of the technologies studied in class will be implemented by the students. The project will build group and individual organizational skills as preparation for advanced course work in horticulture.

Learning Outcomes  Students will be able to:
• Prepare and present a group report that exhibits the use of UC and community resources and demonstrates skill in selecting and synthesizing the literature of horticulture.
• Prepare and present an individual report that summarizes the technology and resources required to implement a horticulture project.
• Select the appropriate technological resources of the College of Design, Art, Architecture, and Planning and other University resources relevant to Horticulture and Landscape Design for use in subsequent course work.
• Select and apply the appropriate resources of the UC Library system and its partners in the metropolitan area for use in subsequent course work.

23 HORT 1011  Horticulture Science II
3 ug.cr.  Prereq: HORT 1010 or perm. of instr.  BoK: NS  Required for BS

This course builds on the basic principles studied in HORT 1010 of horticulture science concepts and principles including competition between plants and weeds, sexual and asexual plant propagation, and plant genetics and breeding. The focus is on biotic and abiotic plant stressors including diseases, insects, and competition for nutrients.

Learning Outcomes  Students will be able to:
• Expand critical thinking skills by applying horticulture principles to modern 21st Century issues.
• Identify the basic principles of food production and genetically engineered products.
• Identify the basic principles of vegetable and organic gardening.
• Identify the basic principles of landscape and turf management.

23 HORT 1011L  Horticulture Science II Lab: Chemistry
1 ug. cr.  Prereq. HORT1010 and HORT 1010L.  Majors only.  Required for BS

This survey of fundamental chemistry for horticulture will review introductory plant nutrition, physiology, microbiology, and soil science. Plant-based sources of chemicals and their historic and modern applications will be studied. The chemical properties and life cycles of horticultural materials and their natural or synthetic origins will be studied.

Learning Outcomes  Students will be able to:
• Identify basic chemical properties of horticultural materials used in plant production, including containers and organic and inorganic plant and soil treatments.
• Identify the basic principles of chemistry that influence plant morphology, physiology, and health.
• Identify the basic principles of chemistry that influence the relationship of soils to plant growth and health.
• Identify the origin of plant-based chemicals and their uses.
23 HORT 1030  Native Plants and Communities I
3 ug. cr.  Prereq.: HORT 1010 or perm. of the instr.  BoK: NS  Required for BS

The course is a survey of the native plants and plant communities of southwestern Ohio. The course develops an awareness of natural vegetative patterns of central hardwood forest types, prairies, and wetlands, and will discuss issues that threaten native plant communities. The course covers the morphology, taxonomy, and biology of indigenous Eastern US plants in a combination of classroom and field studies.

Learning Outcomes  Students will be able to:
• Develop an awareness and appreciation of the natural vegetative patterns.
• Identify native plants in their natural habitats.
• Apply critical thinking skills to issues that threaten native plant communities.

23 HORT 1080  Home Horticulture (Service Course)
3 ug. cr.  Prereq.: None.  BoK: NS

This course introduces the use and habits of flowers, vegetables, and lawns in the domestic landscape. Basic planning, theory, and types of forcing structures will be discussed. This course requires a combination of classroom and field studies.

Learning Outcomes  Students will be able to:
• Identify basic climatic influences and classifications.
• Identify basic physical and chemical soil properties.
• Recommend fertilizers, pest management, soil amendments and mulches that are environmentally and economically appropriate.
• Identify and manage common weeds.
• Apply landscape design principles to the creation of a flowerbed.

23 HORT 1081  Cincinnati Summer Horticulture (Service Course)
3 ug. cr.  Prereq. None  BoK: NS

This survey of horticulture provides a broad look at current issues in horticulture today for non-majors. General plant biology will be examined including plant classification, general morphological structures and physiological functions. The course will also look at issues of human dependence on plants including topics in agriculture, agronomy, vegetable gardening, fruit production, and principles of landscape design.

Learning Outcomes  Students will be able to:
• Classify plants according to plant kingdom and plant classification.
• Identify basic plant morphology and physiological functions.
• Apply the basic principles of horticultural production and landscape design.

23 HORT 1082  Introduction to Wine (Service Course)
3 ug. cr.  Prereq. None  BoK: NS

This course is an introduction to wine and a review of many aspects of wine that are influenced by and influencing culture, history, geography, and economies. Through readings and discussion, this course reviews wine-making, health issues, the senses and their responses to wine, wine and food, and the taste of wine. Wine tastings of over 50 examples are designed to present practical experience with how vinification, viticulture, and terroir express themselves in the glass, as well as the differences that vintage, clonal origin and country of origin influence the flavors and textures of the final product. Students must be 21 years of age or older. A fee will be charged to cover the cost of materials.

Learning Outcomes  Students will be able to:
• Describe the basic steps of vinification and the necessary functions of viticulture.
• Describe the science of enology, including fermentation chemistry and zymology.
• Identify the flavors and origins of major grape varietals.
• Describe the microbiology of olfactory and taste perception.
• Critique a wine for color, flavor, texture, smell, and flaws.

23 HORT 2012  Agriculture and Ecology
3 ug. cr.  Prereq. None  BoK: NS  Required for BS and URAG

In this course, students will investigate the historical origins of agricultural systems and study how they have evolved over time. Students will study the role of the post World War II “Green Revolution” and how it has led up to modern agricultural practices. Additional topics covered in the class include the steady development of “urban agriculture” and community supported agriculture, the role of horticulture in the context of the overall agriculture industry, and how agricultural sustainability is impacting modern agricultural practices.

Learning Outcomes  Students will be able to:
• Identify the role of global centers of diversity as primary food origin centers.
• Understand the historical context of land management in North America prior to European settlement.
• Identify issues associated with the role of the “Green Revolution” impacting current agricultural practices.
• Research, through literature review, contrasting agricultural models (small-scale versus large-scale industrial farming)
• Identify the role of horticulture in the broad field of agriculture (economic, environmental, aesthetic impacts on culture)
• Identify, through literature review, alternative farming methods and proposed ecological impacts.
• Understand the role of urban agriculture and community supported agriculture (CSA) in promoting local food production and economic impact.
• Identify current sustainable agriculture practices through literature review.
23 HORT 2020  Plant Pathology and Microbiology  
3 ug. cr.  Prereq. HORT 1010 and HORT 1011 or perm. of instr.  BoK: NS  Required for BS, HORT  
This course provides an in-depth understanding of plant health management in relation to horticultural crops. Discussion topics include biotic and abiotic agents, identification, control of primary and secondary causal agents, and the cumulative impact of stress factors. The course will be include field trips to local greenhouse facilities to observe disease suppression measures and the role of Integrated Pest Management (IPM) options. A literature review of current sustainable suppression options/practices will also be covered in class.  
Learning Outcomes  Students will be able to:
• Identify factors, symptoms, and cycles of plant diseases.
• Define the role of suppression options as explained by the disease triangle.
• Identify best management practices associated with greenhouse, landscape, and small-scale food producing agriculture disease management.
• Describe biological attributes of various types of plant diseases.
• Identify plant selection and resistance as a plant disease control option.

23 HORT 2030  Woody Ornamentals I  
3 ug. cr.  Prereq: HORT 1010 or perm. of instr.  BoK: NS  Required for BS, HORT  
This course is an introduction to woody ornamental plants, their identification, growth habits, landscape uses, and maintenance. Lectures and field studies will emphasize plants of the Cincinnati region.  
Learning Outcomes  Students will be able to:
• Identify 125 woody ornamental plants by horticultural characteristics, landscape uses, and maintenance requirements.
• Identify and recommend plants based on the cultural requirements and aesthetics of individual plants and their relationship to other plants.

23 HORT 2031  Woody Ornamentals II  
3 ug. cr.  Prereq: HORT 1010 and HORT 2030 or perm. of instr.  BoK: NS  Required for BS, optional for HORT  
This course is an advanced study of woody ornamental plants, their identification, growth habits, landscape uses, and maintenance. Lectures and field studies will emphasize evergreen woody ornamental plants of the Cincinnati region.  
Learning Outcomes  Students will be able to:
• Identify evergreen woody ornamental plants by horticultural characteristics, landscape uses, and maintenance requirements.
• Identify and recommend plants based on the cultural requirements and aesthetics of individual plants and their relationship to other plants.

23 HORT 2032  Herbaceous Ornamental Plants I  
3 ug. cr.  Prereq: HORT 1010 or perm. of instr.  BoK: NS  Required for BS, HORT  
This is a survey course designed to introduce the student to herbaceous plants through a series of lectures, exercises, and field trips. The course will aid students in understanding how to effectively select and grow herbaceous plants. Topics include the botany and nomenclature of herbaceous plants, propagation techniques, invasive plants, selecting and using native plants, and basic design principles. Field trips during class are required.  
Learning Outcomes  Students will be able to:
• Identify approximately 100 genera of herbaceous plants using basic taxonomic features.
• Describe cultural and environmental requirements for plant health.
• Apply basic landscape design principles to the use of herbaceous plants.

23 HORT 2033  Herbaceous Ornamental Plants II  
3 ug. cr.  Prereq: HORT 1010 and HORT 2032 or perm. of instr.  BoK: NS  Required for BS, optional for HORT  
This course advances the basic identification and cultural understanding of the first course to include the ecology and culture of popular and less widely cultivated genera. Design attributes including color, texture, and form, and the design of simple floral beds and borders are studied. Field trips during class are required.  
Learning Outcomes  Students will be able to:
• Identify characteristics of ten plant families typical of annuals and perennials.
• Identify plants using flower, fruit, leaf shape, and color.
• Design gardens of herbaceous plants to meet specific environmental and aesthetic requirements.

23 HORT 2034  Native Plants and Communities II  
3 ug. cr.  Prereq.: HORT1010 and HORT 1030 or perm. of instr.  BoK: NS  Required for BS, SLD, URLN, GRRF  
This course covers various forms of wildlife in residential landscapes, including birds, butterflies, mammals, and amphibians and ties the biological requirements of wildlife and its habitat with landscape design principles for residential landscapes.  
Learning Outcomes  Students will be able to:
• Incorporate popular landscape plants and native wildflowers and trees into their home landscape to create habitat for wildlife.
• Identify and attract various forms of desirable wildlife to residential landscapes.
• Apply wildlife management principles to deal with nuisance wildlife such as deer, groundhogs, and skunks, in compliance with state and federal wildlife management laws.
• Apply landscape design principles to create residential landscapes that support wildlife habitat.
23 HORT 2040  Sustainable Landscape Design I
3 ug. cr.  Prereq: HORT 1010 or perm. of instr.  BoK: FA  Required for BS, SLD, URLN, GRRF, optional for URAG

This introductory course emphasizes sustainable site planning and design principles by introducing a basic design process that addresses contextual, social, economic, and ecological issues for microclimatic design. The introductory nature of the course limits the design project scale to single family residential land use, to address the most basic issues of property, rights of way, easements and utilities, site programming, maintenance, and the functional and aesthetic use of plant materials, hardscape, and other design elements for sustainable residential properties. Manual and computer drafting and rendering techniques will be introduced.

Learning Outcomes  Students will be able to:
• Apply the fundamental design vocabulary of form, composition, and style to a small scale residential project.
• Produce design projects for residential properties that demonstrate basic understanding of social, economic, and environmental issues.
• Apply sustainable design principles to material selection, installation, and maintenance.
• Demonstrate basic skills in graphic and verbal presentations of design solutions.

23 HORT 2041  Sustainable Landscape Design II
3 ug. cr.  Prereq: HORT 1010, HORT 1030, HORT 2040 and either HORT 2030 or HORT 2032 or perm. of instr.  BoK: FA  Required for SLD

This is an advanced course in landscape planning and design, emphasizing sustainable principles for large residential, institutional, or commercial properties. Students will design solutions for projects that address contextual, social, economic, and ecological issues for microclimatic landscape design. Manual and computer drafting and rendering techniques will be applied. Advanced issues in sustainability regarding planting design, infrastructure, stormwater management, and material selection, installation, and maintenance will be addressed.

Learning Outcomes  Students will be able to:
• Apply an advanced design vocabulary of form, composition, and style to a design project.
• Develop skills in applying the design process to diverse land uses.
• Produce design projects that demonstrate basic understanding of legal, social, economic, and environmental issues.
• Apply sustainable design principles to material selection, installation, and maintenance.
• Develop advanced skills in graphic and verbal presentations of design solutions.

23 HORT 2042  Sustainable Landscape Design III
3 ug. cr.  Prereq: HORT 1010, HORT 1030, and HORT 2041 or perm. of instr.  BoK: FA  Required for SLD

This multifaceted course will introduce students to different styles of garden design. Students will learn how to research specific garden styles or themes using a library’s art and data bases to discover the elements of design specific to that style. Students will develop a personal resource reference for each specific garden style. Examples of styles include but are not limited to apothecary gardens, water gardens, cottage gardens, dyer’s gardens, therapy gardens, forest gardens, and herb gardens. The study and application of styles will include historic and contemporary principles of sustainable design.

Learning Outcomes  Students will be able to:
• Explore the principles and history of various theme and specialty gardens by developing a personal resource bibliography for each style.
• Demonstrate appropriate use of each garden style by creating a personal reference that includes appropriate plant material, basic design, sustainability, and resources for each style.
• Select a specific garden style; research it, select appropriate plant material, design it, and include resources.

23 HORT 3010  Soil Science and Plant Nutrition
3 ug. cr.  Prereq: HORT 1010 or perm. of instr.  BoK: NS  Required for BS, HORT, URAG, GRRF

This is a basic soils course addressing the formation and physical, chemical, and biological properties of soils and how they affect plant growth, rate of erosion, and agricultural practices. Lectures and demonstrations of the semester’s first half will review soil types, moisture capacity, soil amendments, and drainage. The second half of the semester will focus on plant nutrition to provide an integrated assessment of the affects of mineral nutrition of the structure, function, disease resistance and productivity of higher plants. Aspects of root ecosystems, problematic soil-types and diagnostic nutritional deficiency symptoms are covered.

Learning Outcomes  Students will be able to:
• Determine the physical properties of soil by sight and feel.
• Perform simple soil tests.
• Interpret soil surveys.
• Take soil samples and interpret test results.
• Identify methods of managing most soil types for improved plant growth.
• Identify plant health problems related to nutrition.
• Identify best practices for maintaining plant health through nutrition.
• Define basic concepts of plant nutrition and the influence of ecological and environmental conditions.
23 HORT 3020  Horticultural Entomology
3 ug. cr.  Prereq: HORT 1010 or perm. of instr.  BoK: NS  Required for BS, optional for HORT
This course is an introduction to insect morphology, physiology, development, behavior, evolution, principles of integrated pest management, and the classification of insects with special emphasis on insects of horticultural importance.

Learning Outcomes  Students will be able to:
• Identify the unique features of the insect body plan.
• Describe the aspects of insect biology that plays a role in insect pest management.
• Identify insects of horticultural importance to order and family.
• Apply insect pest management principles to the horticultural landscape.
• Complete five case studies on insects of economic importance.

23 HORT 3030  Edibles for Sustainable Landscapes I
3 ug. cr.  Prereq. HORT 1010 or perm. of instr.  BoK: NS  Required for BS, URAG
This course is designed to examine edible plants suitable for use in sustainable Midwest landscapes. This course will include plant identification as well as the cultural needs, historical, design, and culinary uses of edible plants.

Learning Outcomes  Students will be able to:
• Identify and select major trees and shrubs suitable for use in sustainable Midwestern residential edible landscapes.
• Select and specify appropriate edible plants for a sustainable residential landscape or orchard design.
• Recommend methods for the sustainable installation and maintenance of edibles.
• Describe how principles of fruit plant physiology influence their maintenance.

23 HORT 3031  Edibles for Sustainable Landscapes II
3 ug. cr.  Prereq. HORT 1010 and HORT 3030 or perm. of instr.  BoK: NS  Required for URAG
This course will provide an introduction to dual-purpose edible and ornamental plant materials and their use in sustainable Midwestern residential landscapes. Topics of discussion will include history and philosophies of edible landscaping, identification, biology, and management of plant materials.

Learning Outcomes  Students will be able to:
• Identify and select major perennial and annual vegetables and herbs suitable for use in sustainable Midwestern residential edible landscapes.
• Select and specify appropriate plants for a residential landscape design or vegetable garden.
• Know how to install and maintain these plants in the residential landscape or garden.
• Recommend methods for the sustainable installation and maintenance of edibles.
• Describe how principles of plant physiology influence their maintenance.

23 HORT 3034  Herbaceous Ornamental Plants III
3 ug. cr.  Prereq. HORT 1010, HORT 2032, and HORT 2033 or perm. of instr.  BoK: NS
This course uses lectures and field trips to study the identity and uses of summer-flowering annuals, perennials, ferns, and ornamental grasses. Flower garden design is introduced with basic vocabulary and plant selection.

Learning Outcomes  Students will be able to:
• Identify the characteristics of ten plant families typical of annuals and perennials.
• Identify plants using flower, fruit, leaf shape, and color.
• Design gardens of herbaceous plants to meet specific environmental and aesthetic requirements.

23 HORT 3040  Urban Landscape I: Forestry
3 ug. cr.  Prereq: None.  BoK: NS  Required for BS, URLN, optional for GRRF
This course introduces students to the uses and management of urban trees in the city. Arboricultural technology and methods, urban landscape design, and urban engineering are examined.

Learning Outcomes  Students will be able to:
• Evaluate the benefits and value of trees in urban ecosystems and land uses.
• List the major elements of an urban forestry program including planning, implementation, and maintenance.
• Use mapping systems for urban forestry programs.

23 HORT 3042  Urban Landscape II: Agriculture
The production of plants for human food and other uses within the urban context will be examined. The focus of the course will be issues in scale of production, economies, community-supported agriculture, and the social, economic, and environmental benefits of urban agriculture.

Learning Outcomes  Students will be able to:
• Write and speak effectively by presenting their writing and research, in both formal classroom presentations and informal discussions of readings.
• Prepare a feasibility study for the planning, design, implementation, and maintenance of a community garden.
• Describe and critically assess the manner in which climate, culture, technology, and economy have influenced the production of food and plant products for use by urban citizens.
23 HORT 3043  Urban Landscape III: Infrastructure
3 ug. cr.  Prereq. None  BoK: HP  Contemporary Topic: SE  Required for URLN, optional for GRRF
This course continues the Urban Landscape series that examines our citizenship in the built environment. This course reviews the working urban landscape and the role of vegetated areas in the city’s livability. Transportation and utility corridors, rights of way and easements, and public lands will be examined.
Learning Outcomes  Students will be able to:
• Write and speak effectively by presenting their writing and research, in both formal classroom presentations and informal discussions of readings.
• Critically interpret written and graphic exercises.
• Describe and critically assess the manner in which climate, culture, technology, and economy have influenced the urban infrastructure.

23 HORT 3044  Urban Landscape IV: Roofs and Facades
3 ug. cr.  Prereq. None  BoK: NS  Required for GRRF, URLN, optional for SLD, URAG
This course is an introduction to the benefits, design, construction, and maintenance of vegetated roofs and facades to improve environmental quality and the quality of life. Basic considerations of vegetated roof design such as structural loading and fall and safety protection, growing medium, and plant selection will be discussed. Readings, field trips, discussion, and lectures will introduce students to the current literature, agencies, research, standards, and policies supporting the implementation of vegetated roofs and exterior walls in North America. Lectures will introduce students to best practices for integrating vegetated roofs and walls into site and building systems to support sustainable strategies.
Learning Outcomes  Students will be able to:
• Demonstrate basic proficiency in applying sustainable principles to vegetated roof and façade site analysis, planning, design, installation, and maintenance.
• Expand critical thinking skills by investigating existing vegetated roof projects and preparing case studies.
• Prepare and present precedent and feasibility studies, programming, and schematic designs to a client.
• Demonstrate basic proficiency in identifying appropriate policy, code, incentive programs, and best practices to support implementation of vegetated roofs and facades.

23 HORT 3045  Urban Landscape V: Interiors
3 ug. cr.  Prereq. None  BoK: NS, FA  Required for URLN, optional for SLD, URAG
This course introduces students to the benefits, planning, and design of interior landscaping in commercial and institutional buildings. Lectures and field studies will review the identification and culture of foliage plants for interior plantings and living walls, and the fundamental issues of planning, design, installation, and maintenance of interior landscapes.
Learning Outcomes  Students will be able to:
• Demonstrate basic proficiency in applying sustainable principles to site analysis, planning, design, installation, and maintenance of interior landscapes.
• Expand critical thinking skills by investigating existing interior landscape projects and preparing case studies.
• Prepare and present a preliminary precedent study, feasibility study, programming, and schematic design for an interior landscape project.
• Demonstrate basic proficiency in identifying appropriate building codes and best practices for interior landscape installation and maintenance.

23 HORT 3050  Landscape History to 1900
3 ug. cr.  Prereq. None  BoK: HP  Required for BS
This course will explore the history of Landscape Architecture from the beginning of human settlement to 1900, covering a wide range of parks, gardens, cemeteries, parkways, and other human-made designed landscapes in urban, suburban, and rural settings. The practice of the profession of Landscape Architecture will be compared and contrasted over time and between regions. This area of study complements and expands students’ understanding of the built environment. Students will find areas of contrast to architecture: the emphasis on space versus object; the close relationship to nature and the seasons; the use of living building materials – plants which grow, change shape, and decline over time; and the use of natural materials – wood, earth, water, and stone.
Learning Outcomes  Students will be able to:
• Demonstrate an understanding of the landscape architectural canons and traditions, including significant built works, texts, places, and landscape architects.
• Demonstrate an understanding of the climatic, technological, socioeconomic, and other cultural factors that have shaped the built environment.
• Write and speak effectively by presenting both readings and student writings and research, in both formal presentations and informal discussions of the readings.
• Critically interpret written and graphic exercises to obtain insights relevant to an understanding of the landscape architecture of the past and present.
• Describe and critically assess the manner in which precedent has influenced past and present landscape designs.
23 HORT 3051  Landscaping History and Theory
3 ug. cr.  Prereq: HORT 3050.  BoK: HP
This course introduces students to the history and theory of landscape architecture from 1900 to the present. Key, influential landscape architectural theories, movements and works are presented, plus texts that illuminate landscape architecture and its contexts. Emphasis is given to the relationship between the built environment and the changing social, cultural, and political context of the modern world, familiarizing students with methods of designing, constructing, understanding, interpreting, and evaluating built form; fostering an awareness of the impact of these factors on landscape architectural practice; and encouraging critical thinking and discussion through exposure to diverse landscape architectural settings and solutions.

Learning Outcomes:  Students will be able to:
• Demonstrate an understanding of the landscape architectural canons and traditions, including key works, texts, places, and landscape architects.
• Demonstrate an understanding of the climatic, technological, socioeconomic and other cultural factors that have shaped and sustained these.
• Write and speak effectively by presenting both readings and their own writings and research, in both formal seminar presentations and more informal reading discussions.
• Think and interpret critically through both written and graphic exercises information and insights relevant to the understanding of the landscape architecture of the past and present.
• Describe and critically assess the manner in which precedent has influenced past and present designs.

23 HORT 3060  Sustainable Landscape Construction I
3 ug. cr.  Prereq: HORT 2040 or perm. of instr.  Contemporary Topic: TI  Required for BS, SLD, URLN, GRRF, optional for URAG
This course is an introduction to the planning, design, installation, and maintenance of sustainable landscapes. Topics include conventional hardwoods elements and design documentation.

Learning Outcomes:  Students will be able to:
• Provide preliminary design documentation for walls, fences, steps, ramps, decks, patios, and walks.
• Prepare preliminary cost estimates and basic landscape implementation plans.
• Evaluate the materials and methods of landscape construction for site protection, site restoration, and sustainable maintenance.

23 HORT 3061  Sustainable Landscape Construction II
3 ug. cr.  Prereq: HORT 3060 or perm. of instr.  BoK: TI  Required for SLD
This course examines large and complex projects for sustainable approaches to construction management, life cycle costs, and maintenance. Discussion and readings will include contemporary approaches and frameworks for evaluating and implementing sustainable landscapes.

Learning Outcomes:  Students will be able to:
• Prepare a project critical path.
• Students will analyze traditional cost estimates and bids against alternative true and life cycle cost measures.
• Students will select sustainable methods and evaluation systems for project implementation and maintenance.

23 HORT 4010  Plant Morphology
3 ug. cr.  Prereq: HORT 1010 and HORT 1011 or perm. of instr.  BoK: NS  Required for BS
This course is an analysis of plant structure, form and development from genesis to maturity using comparison and generalization based on present and fossil species, while introducing the principles and practice of biological systematics and classification. Selected taxa are examined in detail to help students gain appreciation of ecological and evolutionary significance of plant forms and structures.

Learning Outcomes:  Students will be able to:
• Distinguish between major groups of higher plants using the appropriate descriptive terminology.
• Identify and describe plant features at the cell, tissue and organ levels and explain how they combine to create distinct taxa fitted to a particular ecological niche.
• Use observation of structure to determine possible evolutionary relationships among various groups of vascular plants.
• Recognize and explain the identifying characteristics comprising 20 families of flowering plants.
• Critically read peer reviewed literature in the field of plant morphology and summarize it in clear, concise oral and written formats, employing appropriate vocabulary and methods.

23 HORT 4011  Plant Biogeography
3 ug. cr.  Prereq: HORT 1010 or perm. of instr.  BoK: NS  Required for BS
This course explores the distribution of the world’s vegetation and floras, and their evolution, morphological adaptations, and migrations which led to the distributional patterns in the contemporary landscape. Convergent evolution in relation to methods of dispersal, geographic speciation and polyploidy, island biogeography, endemism and evolutionary rates are discussed, with emphasis on the biota of North America.

Learning Outcomes:  Students will be able to:
• Describe where plant species occur today and explain how present and past distributions of living organisms are controlled.
• Explain the variety and ever-changing nature of the geographic ranges of plants, including the impact of humans and climate change on biodiversity.
• Suggest possible consequences of this modification.
• Use the theory of island biogeography to explain problems faced by plants in today’s human-dominated landscapes.
• Critically read peer reviewed literature in the field of plant biogeography and summarize it in clear, concise oral and written formats, employing appropriate vocabulary and methods.
• Design a methodology to study a current problem in plant biogeography, collect data, organize and analyze data and interpret and summarize results.
23 HORT 4012  Plant Propagation
3 ug. cr.  Prereq: HORT 1010 and HORT 1011 or perm. of instr.  BoK: NS  Required for BS, optional for HORT
This is a lecture and demonstration course which examines plant propagation practices and their underlying principles. Plant biology, cultural practices, and the manipulation of growing environments are studied as they are used in commercial production. Field trips to local greenhouses will reinforce understanding of the diversity of growing methodologies and their results.
Learning Outcomes  Students will be able to:
• Apply basic principles of plant physiology and morphology to the reproduction of plants.
• Select appropriate plant propagation methods for specific conditions.
• Exercise critical skills in writing and presenting field trip reports.

23 HORT 4020  Horticulture Crop Physiology
3 ug. cr.  Prereq. HORT 1010 and HORT 1011 or perm. of instr.  BoK: NS  Required for BS
This course provides an integrated view of the relationship between plant structure and function for crop and decorative plants. The effects of various environmental and cultural factors on physiological processes will be discussed.
Learning Outcomes  Students will be able to:
• Identify and define cell structure, plant hormones, dormancy, dominance, fruit and flower development, and stress physiology.
• Identify interventions in physiology that will alter plant development.
• Define basic plant physiology and its considerations for production.

23 HORT 4060  Prairie and Turfgrass Management
3 ug. cr.  Prereq: HORT 1010 or perm. of instr.  BoK: NS.  Alternate odd years only.
Prairie and meadow ecosystems and turfgrass for recreation and lawn surfaces are discussed in the context of Midwestern culture, climate, and maintenance. Sustainable approaches are examined for social, economic, and environmentally positive benefits.
Learning Outcomes  Students will be able to:
• Identify and select prairie and meadow systems for the Midwestern climate.
• Identify select turfgrasses and maintenance programs for the Midwestern climate.
• Propose sustainable installation and maintenance programs for specific applications.
• Propose feasible meadow or prairie alternatives to turfgrasses for sustainable applications.

23 HORT 4061  Integrated Landscape Management
3 ug. cr.  Prereq. HORT 1010 and HORT 1011 and either HORT 2030 or HORT 2032 or perm. of instr.  BoK: NS.  Alternate odd years only.
All aspects of landscape management are examined in this applied, practical, and comprehensive course. The major focus is on site analysis and plant selection, handling, and installation. Management issues will also be examined, including plant pruning, pest diagnostics and management, and site management techniques.
Learning Outcomes  Students will be able to:
• Combine horticulture concepts to develop integrated landscape management plans.
• Expand critical thinking skills by applying principles important for plant health, including fertility and water management and integrated pest management.
• Identify the principles of integrated plant selection and ecology.
• Develop advanced skills in horticulture cultural techniques.

23 HORT 4090  Special Topics in Horticulture
3 ug. cr.  Prereq. None  BoK: NS
This course structures an opportunity for students and faculty to develop a specific topic or theme in horticultural science, plant health, urban landscapes, or sustainable landscape design and construction, through an appropriate combination of research, readings, examples, seminar discussion, creative work, and lab or workshop activities.
Learning Outcomes  Students will be able to:
• Support and participate in advanced investigations of topics relevant to the subject matter of the course as established by the faculty.
• Produce specific, appropriate student-generated outcomes that demonstrate an understanding of the subject matter and areas of emphasis established by the faculty.

23 HORT 4091  Independent Study in Horticulture
1 to 3 ug. cr., max. 12 cr. total.  Prereq. HORT 1010, HORT 1010L, HORT 1011, and HORT 1011L and 60 semester credit hours minimum. Majors only.
Individual collaborative study or project with a faculty member on a subject or in a manner beyond that which is available within the curriculum. The student’s submission of a written proposal, including a specification of outcomes, is agreed to by the faculty advisor and the program coordinator as faculty-of-record.
Learning Outcomes  Students will be able to:
• Conduct self-directed research inquiry.
• Produce specific outcomes and meet conditions mutually agreed upon between the student and the faculty mentor at the beginning of the semester.
23 HORT 4092  Senior Project in Horticulture
3 ug. cr., Prereq HORT 1010, HORT 1010L, HORT 1011, HORT 1011L, and 90 semester credit hours minimum. Majors only. Required for BS

The Senior Project is a culmination of studies that is the capstone experience in Horticulture. Individual or group projects will be advanced applications of undergraduate skills, principles, and knowledge, combining field experience and classroom work in horticultural science, plant health, urban landscapes, or sustainable landscape design and construction. Projects will be based on service to the community, usually within the metropolitan area of Cincinnati.

Learning Outcomes

Students will be able to:
• Identify assets and constraints in the project situation and propose feasible solutions.
• Prepare oral, written, and graphic materials for presentation to the project stakeholders.
• Investigate and integrate information from primary and other sources and apply information from precedent studies to problem solution.
• Propose project solutions that are socially, economically, and environmentally equitable.