

## **Plant Sciences**

### **PLSC 115 - Plants for Health, Aesthetics, and Recreation**

**3 Credit Hours** Introduction to the wide variety of plants used in society to enhance health, beautify surroundings and facilitate recreational activities. Exploration of how cultures value their trees, flowers, vegetables, fruits, herbs and grasses, with emphasis on landscaping, people/plant interactions, sports turf, organic gardening and nutrition.

### **PLSC 210 - Horticulture: Principles and Practices**

**3 Credit Hours** An introduction to the biology and technology underlying the use and production of horticultural crops and landscape plants. Structure, growth, and development of horticultural plants from a practical and scientific approach. Environmental effects, basic principles of propagation, and greenhouse and outdoor production. Nutrition, pruning and chemical control of growth. Pest control and branches of horticulture.

*(RE) Prerequisite(s): Biology 111 and Biology 112.*

### **PLSC 220 - Landscape Plants I**

**3 Credit Hours** Identification, classification, adaptation, culture and landscape uses of late summer and fall ornamental trees, shrubs, vines, herbaceous annuals and perennials, herbs, and ornamental grasses. Basic gardening practices and design elements using ornamental plants.

*Contact Hour Distribution: 2 hours and 1 lab.*

### **PLSC 221 - Landscape Plants II**

**3 Credit Hours** Identification, classification, adaptation, culture and landscape uses of spring and early summer and fall ornamental trees, shrubs, vines, herbaceous annuals and perennials, herbs, and ornamental grasses. Basic gardening practices and design elements using ornamental plants.

*Contact Hour Distribution: 2 hours and 1 lab.*

### **PLSC 226 - Public Horticulture**

**3 Credit Hours** Study of the public horticulture profession. Attention given to the diversity of public horticulture institutions, career opportunities, and research. Discussion of current topics and issues.

### **PLSC 230 - Interior Landscaping**

**3 Credit Hours** History and introduction of the interior plantscaping industry. Identification, culture, propagation, and use of plants for the commercial interior plantscape. Management of the interior environment including light, humidity, growing media, insects, and diseases. Commercial use of containers, planters, water features, and artificial plants.

*Comment(s): Students in turfgrass science and management concentration must also register for 241.*

#### **PLSC 240 - Turfgrass Management**

**3 Credit Hours** Practical turfgrass management. Cultivar selection, identification, and establishment. Basic fertility programs, mowing, irrigation practices, and thatch removal and compaction control. Pest identification and basic controls.

*Contact Hour Distribution: 2 hours lecture.*

*Comment(s): Students in turfgrass science and management concentration must also register for 241.*

#### **PLSC 241 - Turfgrass Management Lab**

**1 Credit Hours** Laboratory addressing topics presented in 240.

*Contact Hour Distribution: 2-hour lab.*

*(RE) Corequisite(s): 240.*

#### **PLSC 250 - World Food and Fiber Plant Production**

**3 Credit Hours** Introduction to important world crops and production systems. Emphasis on plant terminology, origin, distribution and use, world agro-ecosystems, environmental and economic sustainability, current technology in crop production.

#### **PLSC 280 - Fundamentals of Landscape Design**

**3 Credit Hours** History of landscape design as it relates to contemporary applications. Awareness and sensitivity to the landscape. Basic graphic skills and design theory with an emphasis on residential landscape planning. Introduction to landform, landscape materials, and planting design.

*Contact Hour Distribution: 1 hour and 2 labs.*

#### **PLSC 328 - Conservatories: Management, Operations, and Display**

**1 Credit Hours** Study of the history, value, and role of public garden conservatories. Management, operations, and display of plants in controlled environments for research, conservation, and public education and entertainment.

*(RE) Prerequisite(s): 226.*

#### **PLSC 329 - Horticultural Interpretation: Educational Programming for Adults and Children**

**1 Credit Hours** Strategic planning, programming, and budgeting for adult and youth education within a public garden.

*(RE) Prerequisite(s): 226.*

#### **PLSC 330 - Plant Propagation**

**2 Credit Hours** Physiology, methodology, and environmental requirements for propagation.

*Contact Hour Distribution: 2 hours and 1 lab.*

*(RE) Prerequisite(s): 210 and Biology 112.*

*(DE) Prerequisite(s): Biology 111.*

#### **PLSC 331 - Interpreting Research Findings**

**1 Credit Hours** Basic statistical concepts required for understanding and evaluating research findings.

*Recommended Background: 2 mathematics courses.*

*Registration Restriction(s): Minimum student level — junior.*

#### **PLSC 341 - Integrated Turfgrass Management and Environmental Benefits**

**2 Credit Hours** Utilization of resources available to the turfgrass manager (e.g., extension, research, professional associations). Benefits of turfgrass in the environment, including bioremediation, urban greening, and carbon sequestration.

*(RE) Prerequisite(s): 240 and Biology 112.*

*(DE) Prerequisite(s): Biology 111.*

### **PLSC 343 - Turfgrass Entomology**

**1 Credit Hours** Biological study and collection of arthropods that challenge maintenance of healthy grasses, turf, and sod. Review and discussion of sampling/monitoring strategies and decision-making guidelines to help manage turfgrass pests.

*(RE) Prerequisite(s): 240 and Biology 112.*

*(DE) Prerequisite(s): Biology 111.*

### **PLSC 348 - Landscape Plant Physiology**

**2 Credit Hours** Physiological principles as they relate to landscape design and construction, turfgrass management, and public horticulture — photosynthesis and transpiration, respiration, water and hormonal relations, mineral nutrition, plant development, and response to the environment.

*(RE) Prerequisite(s): Biology 112.*

*(DE) Prerequisite(s): Biology 111.*

*Registration Restriction(s): 2.25 GPA.*

### **PLSC 350 - Basic Landscape Construction**

**3 Credit Hours** Basic materials and detailing. Introduction to the landscape construction and contracting industry. Application of landscape materials, wood, concrete and masonry construction. Site drainage and landscape grading.

*Contact Hour Distribution: 2 hours and 1 lab.*

*(RE) Prerequisite(s): 280.*

### **PLSC 353 - Plant Biotechnology, Genetics and Breeding**

**3 Credit Hours** Genetic principles and techniques used in plant modification. Principles of molecular and transmission genetics as applied to plant biotechnology and crop improvement.

*(RE) Prerequisite(s): Biology 111 and Biology 112.*

### **PLSC 360 - Practicum in Landscape Construction**

**3 Credit Hours** Practical experience in implementation of landscape development projects. Directed lab and field instruction in planting operations and basic landscape construction including interpreting and implementing landscape design drawings and specifications.

*Contact Hour Distribution: Two 3-hour labs.*

*(RE) Corequisite(s): 350.*

### **PLSC 370 - Grounds Maintenance**

**3 Credit Hours** Identification and understanding of maintenance tasks, transplanting, soil amendments, growth control, irrigation, climate protection, and pest control. Maintenance and use of equipment; management practices.

*Contact Hour Distribution: 2 hours and 1 lab.*

*(RE) Prerequisite(s): 210.*

### **PLSC 380 - Supplemental Landscape Design Graphics**

**3 Credit Hours** Refinement of graphic skills. Sketches, elevations, sections, isometric projections, and perspectives. Lettering, plan graphics, color rendering, and other visual presentation media.

*Contact Hour Distribution: Two 2-hour labs.*

*(RE) Prerequisite(s): 280.*

### **PLSC 410 - Nursery Management and Production**

**3 Credit Hours** Management methods as applied to retail and wholesale nurseries and landscape contracting firms. Methods of producing liners, container and field-grown woody liners, containers and field-grown ornamental plants.

*Satisfies General Education Requirement: (WC)*

*(RE) Prerequisite(s): 330 and Environmental and Soil Sciences 210.*

*(DE) Prerequisite(s): 220.*

### **PLSC 421 - Native Plants in the Landscape**

**3 Credit Hours** Native plants and plant communities as a basis for landscaping and environmental restoration. Weekly lecture coupled with either an outing or service practicum of invasive exotic plant removals or planting of natives. Study and work sites will primarily be demonstration projects of the University of Tennessee Environmental Landscape Design Lab. They include local schoolyard habitats, greenways, wetlands, streambanks, and shorelines.

*Contact Hour Distribution: One 1.5-hour lecture, one 4-hour lab.*

*(RE) Prerequisite(s): 220 or Ecology and Evolutionary Biology 330.*

*(DE) Prerequisite(s): 210.*

### **PLSC 427 - Management and Administration of Public Horticulture Institutions**

**2 Credit Hours** Management of resources in non-profit institutions, support organizations, and communities. Theoretical framework and institutional mission, strategic planning and programming, financial accounting and budgeting, development and fund raising, personnel policies, volunteer development, marketing and publicity, legal issues, relationships between staff and governing boards, the use of information technology in management and governance systems, and conservation/preservation roles in community development.

*(RE) Prerequisite(s): 226 and 210.*

### **PLSC 429 - Field Study of Public Horticulture Institutions**

**2 Credit Hours** Extended 10-12 day field study of various public horticulture institutions such as botanical gardens, arboreta, historical grounds, zoos, conservatories, cemeteries, and nature preserves. Application and travel fee required.

### **PLSC 430 - Greenhouse Management**

**3 Credit Hours** Principles of greenhouse operation and management for commercial crop production. Greenhouse construction and operation, crop scheduling, and cost accounting. Environmental inputs and cultural practices as they affect plant physiological processes and influence plant growth and development.

*Contact Hour Distribution: 2 hours lecture and one 2-hour lab.*

*(RE) Prerequisite(s): Agriculture and Natural Resources 290 or Computer Science 100.*

### **PLSC 434 - Fruit and Vegetable Crops**

**3 Credit Hours** Botanical description, geographical distribution, general cultural practices of warm and cool season vegetables, small fruits, and deciduous tree fruits. A Saturday field trip is required.

*Contact Hour Distribution: 2 hours lecture and one 2-hour lab.*

*(RE) Prerequisite(s): 210 and Biology 112.*

*(DE) Prerequisite(s): Biology 111.*

### **PLSC 435 - Field and Forage Crops**

**3 Credit Hours** Agronomic principles of crop production and management. Crop improvement, cropping systems, tillage, fertilization, pest management, and harvest and utilization of major field and forage crops.

*(DE) Prerequisite(s): 250.*

### **PLSC 436 - Plant and Garden Photography**

**3 Credit Hours** Principles and techniques of photography as they relate to plants and gardens. Study of equipment options and field shooting under various weather conditions and in different seasons.

*Registration Restriction(s): Minimum student level — senior.*

### **PLSC 437 - Public Garden Operations and Management**

**2 Credit Hours** An analysis of year-round operations and management of public gardens. Case studies involving time and labor management, budget development and management, implementation of volunteer programs, information dissemination methods for public outreach, and management of grounds and

facilities using the University of Tennessee Institute of Agriculture Gardens as a model.  
(RE) Prerequisite(s): 226 and 210.

### **PLSC 439 - Botanic Garden Practicum**

**1-3 Credit Hours** Experiences in active public horticulture projects in the UT Gardens under supervision of staff members. Student should make arrangements for practicum with a faculty mentor prior to enrollment.

*Repeatability: May be repeated. Maximum 3 hours.*

*Registration Restriction(s): Minimum student level — junior.*

*Registration Permission: Consent of instructor.*

### **PLSC 441 - Advanced Turfgrass Management**

**2 Credit Hours** Principles and scientific basis of turfgrass culture. Adaptation, ecology, physiology, climatic influences on grass culture. Clipping, water management, and design.

*Contact Hour Distribution: 1-hour lecture and one 1-hour lab.*

*(RE) Prerequisite(s): 240 and Biology 112.*

*(DE) Prerequisite(s): Biology 111.*

### **PLSC 442 - Turf Root-zone Construction**

**2 Credit Hours** Construction and management of root-zones for home lawns, golf courses, and athletic fields.

*(RE) Prerequisite(s): 240 and Biology 112.*

*(DE) Prerequisite(s): Biology 111.*

### **PLSC 446 - Horticultural Therapy**

**3 Credit Hours** Introduction to the application of horticulture as therapy for treatment, rehabilitation, and/or training of individuals with disabilities.

*(RE) Prerequisite(s): 210 and 226.*

*Registration Restriction(s): Minimum student level — senior.*

### **PLSC 448 - Horticultural Internet Communication**

**3 Credit Hours** Creation and management of information resources for the Internet with a focus on development of visual and oral communications skills through a series of individual and team exercises in writing, graphics, and public speaking.

*Satisfies General Education Requirement: (WC)*

*(DE) Prerequisite(s): Communication Studies 210 or 240.*

*Registration Restriction(s): Minimum student level — senior.*

### **PLSC 449 - Advanced Turf Practicum**

**1-3 Credit Hours** Experiences in active turf projects in the UT turfgrass sciences and management program under supervision of staff members. Student should make arrangements for practicum with a faculty mentor prior to enrollment.

*Repeatability: May be repeated. Maximum 3 hours.*

*(RE) Prerequisite(s): 240.*

*Registration Restriction(s): Minimum student level - junior.*

*Registration Permission: Consent of instructor.*

### **PLSC 450 - Specialty Landscape Construction**

**3 Credit Hours** Methods of design, materials, and construction techniques for specialized components of the landscape industry. Irrigation systems, outdoor lighting, garden ponds, and water features.

### **PLSC 451 - Plant Tissue Culture**

**3 Credit Hours** (See Entomology and Plant Pathology 451.)

### **PLSC 454 - Plant Biotechniques**

**3 Credit Hours** Lectures will discuss recombinant DNA technology, molecular assisted breeding of economically important crops, gene cloning and transformation technologies. Examples will be given of food and ornamental crops, pharmaceuticals, and renewable energy sources produced using biotechnology, as well as potential risks of this technology. Labs will include electrophoresis, tissue culture, plasmid preps, genomic DNA preps, PCR, plant transformation, and genomic techniques.

*Contact Hour Distribution: 1 hour lecture and one 3-hour lab.*

*Credit Restriction: Students may not receive credit for both 454 and 554.*

*(RE) Prerequisite(s): 353 or Biology 240.*

### **PLSC 457 - Weed Management**

**3 Credit Hours** Principles of weed interference, integrated management, and herbicide selectivity and behavior. Specific recommendations for various crop and non-crop situations.

*Contact Hour Distribution: 2 hours and 1 lab.*

*(RE) Prerequisite(s): Environmental and Soil Sciences 210.*

### **PLSC 460 - Professional Practices in Landscape Construction and Management**

**3 Credit Hours** Professionalism, salesmanship, proposals, bidding, estimating, specifications, and contract management in the landscape services industry. Computer technology applicable to landscape construction and contracting industry. Includes presentations by industry representatives.

*(RE) Prerequisite(s): 350.*

### **PLSC 461 - Statistics for Biological Research**

**3 Credit Hours** Application of statistics to interpretation of biological research. Notation, descriptive statistics, probability, distributions, confidence intervals, t- and chi-square tests. Analysis of variance, mean separation procedures, and linear regression and correlation.

*Credit Restriction: Students may not receive credit for both 461 and 561.*

*(RE) Prerequisite(s): Mathematics 125 or Mathematics 152.*

### **PLSC 465 - Biofuel Crop Ecology**

**2 Credit Hours** Studies of the fundamental ecological, biochemical, functional, and agronomic aspects of bioenergy feedstocks, in the context of three distinct systems: ethanol from simple sugars, ethanol from structural carbohydrates, and diesel from oil crops. Special attention will be given to current technological paradigms in biology and materials science, as well as considerations of tradeoffs in terms of domestic security and impacts on the domestic food supply and ecology.

*(RE) Prerequisite(s): Biology 112.*

### **PLSC 469 - Teaching Practicum**

**1-2 Credit Hours** Supervised experience in teaching. May involve preparation of lectures and teaching aids, preparation and supervision of laboratory exercises, evaluation of student performance.

*Repeatability: May be repeated. Maximum 2 hours.*

*Registration Restriction(s): Minimum student level — junior.*

*Registration Permission: Consent of instructor.*

### **PLSC 470 - Professional Practices for the Green Industry**

**3 Credit Hours** Professionalism, sales, sales proposals, budgeting, managerial skills, estimating, specifications, and contract management in the turf, public horticulture, and landscaping professions.

*(RE) Prerequisite(s): 210.*

*(DE) Prerequisite(s): 226 or 230 or 240.*

*Registration Restriction(s): Minimum student level — senior.*

### **PLSC 475 - Professional Issues in Bioenergy**

**3 Credit Hours** Study and discussion of professional issues and practices in the bioenergy field, including economics, policy, engineering, processing, agronomy, biotechnology.

*Registration Restriction(s): Minimum student level - junior.*

### **PLSC 480 - Advanced Landscape Design**

**4 Credit Hours** Comprehensive application of landscape design skills to a variety of project experiences with an emphasis on landscape planning and analysis, planting design, and materials estimating.

*Contact Hour Distribution: Two 3-hour labs.*

*(RE) Prerequisite(s): 280 and 380.*

### **PLSC 485 - Computer Aided Landscape Design**

**3 Credit Hours** Overview of Computer Aided Design (CAD) as it relates to landscape design and construction. Emphasis on development of landscape design drawings through utilization of LANDCADD software.

*(RE) Prerequisite(s): 380 and Computer Science 100.*

### **PLSC 492 - Internship in Horticultural and Plant Sciences**

**1-3 Credit Hours** Supervised work experience with a departmentally-approved employer within the ornamental horticulture, turfgrass, production horticulture, or field crop science industry.

*Grading Restriction: Satisfactory/No Credit grading only.*

*Repeatability: May be repeated. Maximum 6 hours.*

*Registration Restriction(s): 2.25 GPA.*

*Registration Permission: Consent of instructor.*

### **PLSC 493 - Problems in Horticultural and Plant Sciences**

**1-3 Credit Hours** Supervised individual problems relating to the plant sciences or landscape design.

*Repeatability: May be repeated. Maximum 6 hours.*

*Registration Permission: Consent of instructor.*

### **PLSC 494 - Professional Horticultural Communications**

**3 Credit Hours** Communication for public horticulturists through written, oral, and visual media.

Emphasis on communication skills using proper writing techniques and grammar for print media, brochure design using desktop publishing, slide show development, oral presentations, and video use for educational and informational presentations in ornamental horticulture.

*Registration Restriction(s): Minimum student level — senior.*

### **PLSC 497 - Undergraduate Research Participation**

**1-3 Credit Hours** Experiences in active research projects under supervision of staff members. Student should make arrangements for research project with instructor prior to enrollment.

*Repeatability: May be repeated. Maximum 6 hours.*

*Registration Restriction(s): 3.0 GPA.*

*Registration Permission: Consent of instructor.*