



Undergraduate Course Descriptions

Department of Horticulture
Plant & Soil Sciences Building
East Lansing, MI 48824-1325
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FALL 2014 - SPRING 2015

100 Horticulture: Plants and People

3(2-2) Spring

Not open to junior or seniors in the Dept of Hort. Functional uses of plants: aesthetics, food, industry, recreation. Growing and using horticultural plants. Consumer and environmental issues related to horticulture in daily living.

102 Plants for Food, Fun and Profit

2(2-0) Fall

Introduction to the science and art of horticulture including plant breeding, ornamental plant and food production (organic and traditional), postharvest handling, horticultural industries and landscaping. Educate consumers about horticultural plants, products, and their relationship to environment.

109 Intro to Applied Plant Science

2(2-0) Fall

Open only to students in Ag Technology. Plant growth and development. Interrelationship between cultural practice and plant performance. Plant classification, physiology and metabolism.

111 Landscape Design

3(3-3) Spring (off-campus)

Not open if you have cr in HRT 072 or 311. Functional uses of the landscape, landscape design process, drafting and graphic representation, plant selection and use, planting design principles, construction materials and specifications.

203 Principles of Horticulture

3(2-2) Fall

Basics of horticulture. Plant growth including crop selection and management, cultivar development, crop geography, environmental factors affecting plant growth and development, and reproductive development. Field trip required.

204 Plant Propagation

2(2-3) Spring (first 10 wks of sem)

Asexual propagation including rooting of cuttings, micropropagation, grafting, layering, and underground structures. Sexual propagation including seed germination, storage, and production.

205 Plant Mineral Nutrition

1(3-0) Spring (first 5 weeks of sem)

Prerequisite: CSS 210

Mineral elements required by plants. Essential elements, affect of soil and potting media on nutrient availability, absorption and function in plant physiology, and nutrient deficiency and toxicity symptoms. Methods of monitoring and managing plant nutrient levels.

206 Training and Pruning Plants

1(2-2) Spring (last 5 weeks of sem)

Principles and techniques of pruning for landscape and nursery ornamentals, Christmas tree production, tree fruits, and small fruits. Pruning practices, equipment, and basic large tree care techniques.

207 Horticulture Career Development

1(1-0) Fall

Internship preparation and identification of employment opportunities. Career goal establishment, resume construction, correspondence development, personal budgeting, interview skills and strategies.

211 Landscape Plants I

3(2-3) Fall

Identification, adaptation, and evaluation of shade trees, narrow-leaved evergreens, shrubs, woody vines, herbs, ornamental grasses, and herbaceous perennials.

212 Landscape Plants II

3(2-3) Spring

Identification, adaptation, and evaluation of flowering trees and shrubs, broad-leaved evergreens, herbaceous vines, ground covers, bulbs, wildflowers, ferns, and aquatic plants.

213 Landscape Maintenance

2(2-0) Fall, Spring odd years

Ornamental plant mngt Plant growth and development related to pruning, fertilization, irrigation, weed control, transplanting; development of landscape management specifications; integrated plant management and plant health care programs.

213L Landscape Maintenance Field Lab

1(0-2) Fall

Prerequisite: HRT 213 or concurrently Landscape maintenance. Site analysis. Pruning woody plants, transplanting by hand and mechanical tree spade, and planting techniques for ornamentals. Herbaceous perennial care, cutting back, dividing. Scouting as a component of integrated pest management and plant health care.

214 Landscape & Turfgrass Business Operations

2(3-0) Fall, on-line

Open only to students in Agr Technology. Organizing, marketing, and directing a business enterprise within the turf and landscape industry. Project estimating, bidding, payroll, equipment, and accounting.

218 Landscape Irrigation

3(3-3) Spring

Design, installation and maintenance of irrigation systems for turfgrass and landscape plants. Design hydraulics, equipment selection, pump stations, water features, water quality and conservation.

219 Landscape Computer Aided Design

2(0-4) Spring (first 10 wks of sem)

Computer Aided Design (CAD) for landscape design. Calculations, take offs, perspective drawings, AutoCAD and LandCADD software.

221 Greenhouse Structures and Management

3(3-0) Fall

Planning and operation of a commercial greenhouse. Structures, coverings, heating, cooling, ventilation, irrigation, fertilization, root media, and pest control. Field trips req.

242 Passive Solar Greenhouses for Protected Cultivation

1(1-0) Fall, Spring, first five weeks

Season extension and year-round vegetable, herb, flower and fruit production in unheated, low cost passive solar greenhouses. Marketing options, site selection, site preparation, structures, and organic crop management methods. Field trip required.

243 Organic Transplant Production

1(1-0) Spring, second five weeks

Seed ordering. Seed storage and seed germination. Vegetative propagation. Growing containers. Organic root media. Fertility, light, and temperature. Plant health. Hardening off. Considerations for organic certification. Field trip required.

251 Organic Farming Principles and Practices

3(3-0) Spring

History and principles of organic farming. Farms as ecological systems. Certification process and agencies. Organic matter management, the soil food web, and nutrient availability. Biodiversity, crop rotations, plant competition, ground cover, and plant health. Integrating crops and animals. Organic animal husbandry. Field trip required.

253 Compost Production and Use

1(1-0) Spring, last five weeks

Process and methods of composting, maturity and quality analysis, use of compost products at home and farm scale. Field trip.

290 Independent Study

1-4 Fall, Spring, Summer (6 cr maximum)

Open only to students in Agr Technology. Not open to students with credit in HRT 075. A planned learning experience developed by the student with a faculty member.

310 Nursery Management

3(2-3) Fall

Prerequisite: HRT 203 and HRT 204
Management of field and container grown nursery operations. Site selection and development, financing, legal restrictions, production practices, nutrition, irrigation, weed and pest control, modification of plant growth, storage, shipping, and mktg.

311 Landscape Design and Management Specifications

4(3-2) Spring

Prerequisite: HRT 211 and (HRT 212 or concurrently)

Landscape design techniques, spatial organization, plant selection, plant and site interaction. Relationship between design, construction and maintenance. Preparation planting and maintenance specifications.

323 Floriculture Production: Herbaceous Perennials and Annuals

3(1-4) Spring even years

Prerequisite: HRT 203 and (HRT 204 or concurrently) and HRT 221

Commercial greenhouse and outdoor production of herbaceous perennials, annuals, and other plants typically sold in retail nurseries for outdoor gardens. Plant ID, propagation, production, scheduling, and finishing procedures based on specific plant growth requirements. Plant selection, marketing and retailing issues.

332 Tree Fruit Production and Mngt

2(2-1) Fall

Prerequisite: HRT 203 or HRT 251

Commercial apple, cherry, peach, and pear production. Cultural practices to manipulate growth and development and optimize fruit yields and quality. Field trips required.

335 Berry Crop Production and Mngt

1(2-1) Spring, last 10 weeks

Prerequisite: HRT 203 or HRT 251

Commercial production of blueberries, strawberries, raspberries, blackberries, cranberries, and minor fruit. Physiology, growth, and development of these species, how cultural practices used to optimize fruit yields and quality. Field trip required.

341 Vegetable Production and Management

3(2-3) Spring

Prerequisite: HRT 203 or HRT 251 (or concurrently)

Field production of vegetable crops. Marketing systems, tillage practices, field establishment, cultural management, pest management, harvesting, and postharvest handling and storage.

361 Applied Plant Physiology

3(3-0) Fall

Prerequisite: PLB 105 and PLB 106 (or concurrently)

Whole plant physiological and growth responses of plants to light, temperature, and gases during commercial plant production. Coordination and management of growth for optimum production and quality.

362 Applied Crop Improvement

1(3-0) Spring (weeks 6-10 of sem)

Prerequisite: HRT 203 and PLB 105

History of plant improvement. Basic genetic principles of crop breeding and biotechnology.

401 Physiology and Management of Herbaceous Plants

3(3-0) Fall

Prerequisite: HRT 361 or PLB 301

Not open to freshmen or sophomores. Physiological and flowering responses of horticultural crop plants to environmental variables. Adaptive responses of plants to environmental stress. Management of these factors for optimum production.

403 Handling and Storage of Horticultural Crops

3(2-3) Fall

Prerequisite: PLB 105 or BS 110

Not open to freshmen or sophomores. Biological principles involved in quality maintenance of horticultural products. Control of deterioration during harvesting, handling, transport, and storage. Field trip required.

404 Horticultural Management (W)

3(2-2) Spring

Prerequisite: Completion of Tier I writing requirement

Open only to seniors in ANR.

Integration of management, economic, marketing, and horticultural production principles to develop personnel, financial, and resource strategies. Business plan development in a team situation. Effects of business decisions on people/profits.

407 Horticulture Marketing

3(2-2) Fall

Demographic and purchase trends of perishable horticultural commodities, including landscape and floral crops, and fruits and vegetables. Market segmentation and product targeting, distribution, branding and packaging, and advertising and promotion.

411 Landscape Contract Management

3(2-2) Fall

Management of landscape construction and maintenance operations. Working drawing, contracts, bonds, and insurance. Estimating and bidding procedures. Installation techniques for hardscapes and plant material.

415 Natural Landscapes, Native Plants and Landscape Restoration

3(2-0) Fall

Natural landscapes, native plants and landscape restoration options for the natural and built environment. Planning and design approaches, site engineering, construction practices, and management guidelines. Case studies, regulatory policies, contract services, resources and issues of concern will be discussed.

417 Sustainable Sites and Environmental Landscape Practices

3(3-0) Fall

Prerequisite: HRT 211 or HRT 212

Not open to freshmen.

Sustainable sites and environmental landscape practices integrated into the built environment. Planning and design approaches, site engineering, construction practices, and management guidelines. Case studies, specifications, certification programs.

430 Exploring Wines and Vines

3(3-0) Spring

Study of wine, its history, production methods, climactic, social and cultural impacts, and economic impact of wine industry as part of modern agriculture. Sensory evaluations of wine are conducted in relationship to food pairings.

441 Plant Breeding and Biotechnology

3(3-0) Spring even years

Prerequisite: CSS 101

Interdepartmental-enroll in CSS 441.

Plant improvement by genetic manipulation. Genetic variability in plants. Traditional and biotechnological means of creating and disseminating recombinant genotypes and cultivars. Importance of plant breeding to our food system, economy, and environment.

451 Biotechnology Applications for Plant Breeding and Genetics

3(2-2) Spring

Interdepartmental-enroll in CSS 451.

Principles, concepts, and techniques of agricultural plant biotechnology.

Recombinant DNA technology, plant molecular biology and transformation in relation to plant improvement.

486 Biotechnology in Agriculture: Applications and Ethical Issues

3(3-0) Fall even years

Prerequisite: BOT 105 or BS 111

Not open to freshmen or sophomores.

Current and future roles of biotechnology in agriculture: scientific basis, applications. Environmental, social, and ethical concerns.

490 Independent Study: Horticulture

1-2 Fall, Spring, Summer (6 cr maximum)

Prerequisite: HRT 203 and HRT 204

Approval of dept; application required.

Independent study of horticulture on a field, laboratory or library research program of special interest to the student.

491 Selected Topics in Horticulture

1-3 Fall, Spring (6 cr maximum)

Selected topics in horticulture of current interest and importance.

493 Professional Internship in Horticulture

3(0-0) Fall, Spring, Summer (6 cr maximum)

Prerequisite: Departmental Approval.