

# HORTICULTURE (HORT)

## **HORT 112. INTRODUCTION TO HORTICULTURAL SYSTEMS, PRACTICES AND CAREERS. (2 Credits)**

Overview of horticultural systems and practices, with an emphasis on the Pacific Northwest. Exploration of career opportunities in horticulture. Includes viticulture, environmental landscaping, turf management, greenhouse and nursery production, farming, education, and research. Required field trips.

## **HORT 199. SPECIAL TOPICS. (1-16 Credits)**

**Equivalent to:** HORT 199H

*This course is repeatable for 16 credits.*

## **HORT 199H. SPECIAL TOPICS. (1-16 Credits)**

**Attributes:** HNRS – Honors Course Designator

**Equivalent to:** HORT 199

*This course is repeatable for 16 credits.*

## **HORT 212. INTRODUCTION TO ORGANIC AGRICULTURAL SYSTEMS. (4 Credits)**

An introduction to organic agricultural systems with a focus on history, regulations, principles and practices, performance, trends, and careers.

## **HORT 217. \*SOCIAL IMPACTS OF SCIENCE. (3 Credits)**

Contemporary societies provide funding for scientific research, at the same time they struggle with existing and emerging societal problems. This course will discuss how social problems can be addressed by science and technology, and how the impacts of research are quantified. (Bacc Core Course)

**Attributes:** CPSI – Core, Pers, Soc Proc & Inst

## **HORT 226. LANDSCAPE PLANT MATERIALS I: DECIDUOUS HARDWOODS AND CONIFERS. (4 Credits)**

Identification of trees, shrubs, vines, and ground covers used in landscape horticulture. Basic plant taxonomy, nomenclature, anatomy, and use of plants in the landscape. Diverse plant material covered with an emphasis on deciduous hardwoods and conifers.

## **HORT 228. LANDSCAPE PLANT MATERIALS II: SPRING FLOWERING TREES AND SHRUBS. (4 Credits)**

Identification of trees, shrubs, vines, and ground covers used in landscape horticulture. Basic plant taxonomy, nomenclature, anatomy, and use of plants in the landscape. Diverse plant material covered with an emphasis on spring flowering trees and shrubs. Lec/rec.

## **HORT 251. TEMPERATE TREE FRUIT, BERRIES, GRAPES, AND NUTS. (2 Credits)**

Covers fruit and nut crops for temperate zones. Emphasis placed on scientific and common names, plant adaptation, basic morphology, major cultivars, and markets. Offered alternate years.

## **HORT 255. HERBACEOUS ORNAMENTAL PLANT MATERIALS. (3 Credits)**

Identification and culture of herbaceous plants used in the landscape. Offered via Ecampus only.

## **HORT 260. ORGANIC FARMING AND GARDENING. (3 Credits)**

Organic farming and gardening methods are discussed in class and practiced in the field. The philosophical background of organic farming as well as the biological, environmental and social factors involved in organic food production are covered. Emphasis is on hands-on application of scientific principles to create sustainable food production systems. Lec/lab.

## **HORT 270. INTRODUCTION TO THERAPEUTIC HORTICULTURE. (2 Credits)**

An introduction to the history, benefits, and methods of therapeutic horticulture. Surveys program models for vocational, social/recreational, wellness and therapeutic applications of horticulture.

## **HORT 271. TECHNIQUES AND ADAPTIVE STRATEGIES IN THERAPEUTIC HORTICULTURE. (2 Credits)**

An introduction to the characteristics of therapeutic gardens. Survey of year-round, indoor and outdoor therapeutic horticultural programming adaptations, strategies and techniques for different special populations.

**Prerequisites:** HORT 270 with D- or better

## **HORT 272. BASIC THERAPEUTIC SKILLS I. (2 Credits)**

The assessment and evaluation process in therapeutic horticulture. Development of communication strategies, helping skills, and horticultural skills for therapeutic situations.

**Prerequisites:** HORT 271 with D- or better

## **HORT 273. BASIC THERAPEUTIC SKILLS II. (2 Credits)**

Assessment and documentation tools in therapeutic horticulture. Treatment issues related to different types of physical and mental issues. Conduct and evaluate therapeutic horticultural activity sessions.

**Prerequisites:** HORT 272 with D- or better

## **HORT 274. THERAPEUTIC HORTICULTURAL PROGRAMS FOR OLDER ADULTS/CHILDREN. (2 Credits)**

Benefits and applications of therapeutic horticulture to older adults and special needs children.

**Prerequisites:** HORT 273 with D- or better

## **HORT 275. THERAPEUTIC GARDEN DESIGN, MAINTENANCE AND PROGRAMMING. (2 Credits)**

The history, characteristics and design of the therapeutic garden. The use of the garden in therapeutic horticultural programming.

**Prerequisites:** HORT 274 with D- or better and HORT 280 [D-]

## **HORT 285. PERMACULTURE DESIGN AND THEORY: CERTIFICATE COURSE. (4 Credits)**

Permaculture design course meets internationally recognized standards for certification. Lectures, hands-on activities, experiential learning, group discussions, readings, student projects and presentations. Two mandatory weekend days. Design intensive, utilizing graphic and verbal presentation skills. Research into other functioning permaculture systems through literature, websites, and as observed on field trips. Lec/lab.

*This course is repeatable for 8 credits.*

## **HORT 299. SPECIAL TOPICS. (0-16 Credits)**

**Equivalent to:** HORT 299H

*This course is repeatable for 16 credits.*

## **HORT 299H. SPECIAL TOPICS. (1-16 Credits)**

**Attributes:** HNRS – Honors Course Designator

**Equivalent to:** HORT 299

*This course is repeatable for 16 credits.*

## **HORT 300. CROP PRODUCTION IN PACIFIC NORTHWEST AGROECOSYSTEMS. (4 Credits)**

Relation of crop production to human culture and the natural environment. Origins of agriculture and the processes of agricultural change, and productivity and sustainability of specific crop production systems in the Pacific Northwest. History, geography, resource requirements, and key challenges faced are presented. Fundamental crop production practices in relation to productivity and sustainability. Lec/lab/rec. CROSSLISTED as CROP 300.

**Equivalent to:** CROP 300

**HORT 301. GROWTH AND DEVELOPMENT OF HORTICULTURAL CROPS. (3 Credits)**

Gain fundamental knowledge of plant growth and development of horticultural crops from a micro- to macro-level starting at double fertilization through fruit growth—covering seed-to-seed. The last section specifically examines how environmental factors affect growth and development. Lec/lab.

**HORT 303. HORTICULTURAL PROJECTS. (2 Credits)**

Student-managed crop production projects with emphasis on container grown, greenhouse crops. Crop scheduling, propagation and planting, selecting temperature and lighting regimes, specifying growth regulator applications, nutrient management, irrigation management, pest monitoring, and problem diagnosis and correction.

**HORT 306. INPUTS IN ORGANIC CROPPING SYSTEMS: SOURCING AND EFFICACY. (2 Credits)**

Applied course focused on the regulation, sourcing, and efficacy of organic inputs including soil amendments, fertilizers, and pesticides. Gain experience using science-, practice-, and regulation-based information to source and determine effectiveness of inputs in certified organic cropping systems.

**Prerequisites:** HORT 212 with C- or better and CROP 355 [C-]

**HORT 307. ORGANIC SYSTEM PREDICAMENTS. (3 Credits)**

Analyze controversial organic agriculture and systems issues while developing critical- and systems-thinking skills. Synthesis of information from diverse sources and application of scientific knowledge will be required to recommend possible solutions to real world organic agriculture predicaments.

**HORT 308. WEED MANAGEMENT IN ORGANIC CROPPING SYSTEMS. (3 Credits)**

Applied organic weed identification and management course. Learn real-world application of science-, practice-, and regulation-based weed management information while designing and evaluating organic weed management plans for certified organic farming systems.

**HORT 311. PLANT PROPAGATION. (4 Credits)**

The regeneration of plants from vegetative and reproductive tissue and organs. Horticultural and physiological principles, methods, and techniques for laboratory, greenhouse nursery, field, and orchard.

**HORT 314. PRINCIPLES OF TURFGRASS MAINTENANCE. (4 Credits)**

Identification and adaptation of common turfgrasses. Physiology of turfgrass growth and response to cultural and environmental stresses. Cultural practices including establishment, general maintenance, and pest control. Field trips required.

**HORT 315. SUSTAINABLE LANDSCAPES: MAINTENANCE, CONSERVATION, RESTORE. (4 Credits)**

Sustainable care and maintenance practices for non-turf landscape areas. Low input pruning, planting, fertilization, and pest control with an emphasis on IPM. Plant responses to stress, particularly those encountered in the urban environment. Outdoor labs required.

**HORT 316. PLANT NUTRITION. (4 Credits)**

Basic concepts and principles of plant mineral nutrition that provide a basis for solving practical nutritional problems in horticultural crops. Areas covered include mineral nutrients, nutrient availability in the soil and plant uptake, nutrient deficiencies and toxicities and their causes and remedies, and plant and soil analysis. Lec/lab/rec.

**Prerequisites:** CSS 205 with D- or better or CSS 305 with D- or better or SOIL 205 with D- or better

**HORT 318. \*APPLIED ECOLOGY OF MANAGED ECOSYSTEMS. (3 Credits)**

Survey of ecological processes in managed ecosystems emphasizing ecological management techniques. Ecosystem services; biodiversity management; weed dynamics; agroecology; urban ecology; restoration and mitigation; landscape management. Field trip required. (Writing Intensive Course)

**Attributes:** CWIC – Core, Skills, WIC

**HORT 319. RESTORATION HORTICULTURE. (3 Credits)**

As world population increases to some 9 billion plus by 2044, the importance of ecologically sound horticultural practices becomes increasingly apparent. Integration of ecological concepts and theory in management and development of created landscapes is critical for the preservation of many ecological services currently provided by undeveloped areas. Offered via Ecampus only.

**HORT 330. \*PLAGUES, PESTS, AND POLITICS. (3 Credits)**

Integration and interaction of agricultural and public health aspects of entomology in society and history. CROSSLISTED as ENT 300. (Bacc Core Course)

**Attributes:** CSST – Core, Synthesis, Science/Technology/Society

**HORT 331. \*POLLINATORS IN PERIL. (3 Credits)**

Pollinators, human influences on pollination systems, and the potential consequences of pollinator decline. An introduction to the skills needed to investigate media reports and multidisciplinary scientific research. Effects of pesticides, habitat fragmentation, climate change, invasive species, pests, pathogens, and other threats to pollinators in critical natural and agricultural systems around the world. (Bacc Core Course) CROSSLISTED as ENT 331.

**Attributes:** CSGI – Core, Synth, Global Issues

**Equivalent to:** ENT 331

**HORT 344. INSECT AND DISEASE MANAGEMENT IN ORGANIC CROPPING SYSTEMS. (3 Credits)**

A skills-based course on the science, practice, and regulations related to insect and disease management in organic cropping systems.

**Prerequisites:** BOT 350 with C- or better and ENT 311 [C-]

*This course is repeatable for 3 credits.*

**HORT 349. DIAGNOSING PLANT PROBLEMS. (3 Credits)**

Basic principles of problem diagnosis in crop, garden, and landscape plants are covered. Problems caused by cultural and environmental issues, plant diseases, insect pests, and other causes are addressed. Students will gain familiarity with resources for plant problem diagnosis. Offered via Ecampus only.

**HORT 350. URBAN FORESTRY. (3 Credits)**

Introduction to principles and practices of planting and managing trees as a system of urban environment; understanding the economic, environmental, social aspects of urban forests, and an overview of contemporary land use issues and societal perspectives between people and plants. CROSSLISTED as FES 350. Offered via Ecampus only.

**Equivalent to:** FES 350, FOR 350

**HORT 351. FLORICULTURE AND GREENHOUSE SYSTEMS. (4 Credits)**

For students interested in growing plants in commercial or educational greenhouses. Actively explores the production and scheduling of floriculture crops for various markets. Combines the practical aspects of growing floral crops under environments created by traditional and technologically advanced greenhouses. Greenhouse structures and crop environment manipulation will be emphasized. Students actively manage a floriculture crop and are responsible for developing and implementing production schedules, and for making key decisions on the culture of diverse floral crops.

**HORT 358. LANDSCAPE CONSTRUCTION TECHNIQUES. (4 Credits)**

Study of landscape construction process from initial site analysis to finished landscape. Techniques used in building hardscape and landscape areas. Field trips required. Lec/lab.

**HORT 360. IRRIGATION AND DRAINAGE. (4 Credits)**

Familiarizes students with the principles and practices of irrigation and drainage systems. Optimum use of water, irrigation and drainage system design, installation, repairs, and troubleshooting are emphasized. Lec/lab.

**HORT 361. PLANT NURSERY SYSTEMS. (4 Credits)**

Covers how to grow shrubs and trees, and herbaceous annuals and perennials in nurseries for use in urban landscapes and managed ecosystems such as forestry and restoration. Plant nursery systems are diverse and require intensive management involving a dynamic decision making process. This course actively explores field and container production systems as well as the marketing of plants, an overview of plant growth regulation and post-production handling, the influence of efficient production practices on plant quality, integrating pest management strategies, and natural resource utilization.

**HORT 380. SUSTAINABLE LANDSCAPE DESIGN. (3 Credits)**

The assessment of design problems/situations, the development of solutions and the communication of those solutions to the client through the design. Specific topics include designing for ecosystem maintenance/enhancement, introduction to computer-aided design (CAD), using color in landscape designs and rendering section/elevation views.

**HORT 399. SPECIAL TOPICS. (1-16 Credits)**

*This course is repeatable for 16 credits.*

**HORT 401. RESEARCH. (1-16 Credits)**

*This course is repeatable for 16 credits.*

**HORT 402. INDEPENDENT STUDY. (1-16 Credits)**

*This course is repeatable for 16 credits.*

**HORT 403. THESIS. (1-16 Credits)**

*This course is repeatable for 16 credits.*

**HORT 405. READING AND CONFERENCE. (1-16 Credits)**

**Equivalent to:** HORT 405H

*This course is repeatable for 16 credits.*

**HORT 405H. READING AND CONFERENCE. (1-16 Credits)**

**Attributes:** HNRS – Honors Course Designator

**Equivalent to:** HORT 405

*This course is repeatable for 16 credits.*

**HORT 406. PROJECTS: DATA PRESENTATIONS. (1 Credit)**

For any student doing research, to learn to develop and evaluate poster and slide presentations containing scientific data. Students are exposed to a variety of scientific disciplines as they prepare and critique their own and other students' posters and oral presentations. Students improve written and oral communication skills. Letter grade is based on participation, improvement, and the quality of a final poster project and oral presentation. Offered winter term. CROSSLISTED as BRR 406.

**Equivalent to:** BRR 406

**HORT 407. SEMINAR. (1 Credit)**

Senior seminar intended to instruct students on proper techniques for presentation of scientific material. Each student is expected to prepare and present a scientific seminar and to attend and evaluate the seminars given by other class members.

**HORT 408. WORKSHOP. (1-16 Credits)**

*This course is repeatable for 16 credits.*

**HORT 409. PRACTICUM. (1-16 Credits)**

*This course is repeatable for 16 credits.*

**HORT 410. INTERNSHIP. (1-12 Credits)**

Work internship to acquaint horticulture majors with the practices of the horticulture industry. Under direction of departmental internship committee. Requires approved statement of intent, submission of employer and employee evaluation forms and written report.

*This course is repeatable for 12 credits.*

**HORT 411. HORTICULTURE BOOK CLUB. (1 Credit)**

Reading and discussion of noteworthy books and associated topics relating to agriculture, society and the environment.

*This course is repeatable for 2 credits.*

**HORT 412. CAREER EXPLORATION: INTERNSHIPS AND RESEARCH PROJECTS. (1 Credit)**

Provides orientation to the horticulture major internship and research project requirement. Covers procedures for selecting, performing, and reporting on an internship or research project. Includes guidance and skill development valuable in the pursuit of horticultural career goals, such as cover letter and resume preparation and interviewing experience.

**HORT 414. PRECISION AGRICULTURE. (4 Credits)**

Provides insight into the technology available to support precision agriculture and data management planning applications. Examines the concepts and applications of precision agriculture to teach practical use of hardware, equipment and software. An overview of current technology including autonomous vehicles, GPS, soil and crop proximal sensors, imagery and mapping, variable rate control systems, and yield monitors. Lec/lab. CROSSLISTED as CROP 414.

**Equivalent to:** CROP 414

**HORT 418. GOLF COURSE MAINTENANCE. (4 Credits)**

Basic aspects of golf course maintenance under temperate zone conditions. Lec/lab.

**HORT 421. HERBS, SPICES, AND MEDICINAL PLANTS. (3 Credits)**

Principles of crop ecology, morphology, chemistry and utilization of natural products of herbs, spices, and medicinal plants (HSMP). Examines the history and importance of HSMP, their historic and modern uses, current market trends, botany, collection in the wild, fundamentals of production systems for HSMP, harvesting, drying, and other postharvest operations, natural products and their uses, regulations and legal concerns of herbal products.

**HORT 433. SYSTEMATICS AND ADAPTATION OF VEGETABLE CROPS. (4 Credits)**

Covers the botanical and taxonomic relationships, breeding systems and adaptation of vegetable crops. Fresh material is used to illustrate varietal differences and traits of importance. Lec/lab. CROSSLISTED as CROP 433/CROP 533.

**Prerequisites:** BI 102 with D- or better or BI 213 with D- or better or BI 311 with D- or better or HORT 430 with D- or better or CSS 430 with D- or better or HORT 450 with D- or better or CSS 450 with D- or better or PBG 450 with D- or better

**Equivalent to:** CROP 433, HORT 233

**HORT 444. INSECT AGROECOLOGY. (3 Credits)**

Agroecology incorporates ecological concepts and principles to the design and management of sustainable agricultural systems. Topics include: the role of insects in sustainable agricultural systems; application of the principles of insect ecology to better manage insect pests and maximize crop yield; conserving beneficial insects and other natural resources in agroecosystems and the surrounding landscape. CROSSLISTED as ENT 444.

**Equivalent to:** ENT 444

**HORT 447. ARBORICULTURE. (4 Credits)**

The principles and practices of arboriculture, the art and science of selecting, planting, establishing and maintaining trees in urban, suburban, commercial and residential landscapes. Lec/lab. CROSSLISTED as FES 447. Offered via Ecampus only.

**Equivalent to:** FES 447

**HORT 451. TREE FRUIT PHYSIOLOGY AND CULTURE. (4 Credits)**

Plant growth and development in relation to tree fruit production; emphasis on canopy development and pruning theory, flowering and fruit set, and development, dormancy, and cold acclimation. Field trips required.

**HORT 452. BERRY AND GRAPE PHYSIOLOGY AND CULTURE. (4 Credits)**

Production of wine grapes, caneberries, strawberries, blueberries, and other miscellaneous berry crops. Emphasis on plant growth and development; pruning and training systems; flower and fruit development and cultivars. Field trips required. Offered in alternate years.

**HORT 453. GRAPEVINE GROWTH AND PHYSIOLOGY. (3 Credits)**

The physiological aspects of grapevine growth and development including dormancy, flowering and fruit set, vegetative growth, fruit development and water relations. Additional topics include taxonomy, morphology and physiological influences of vineyard mesoclimate and vine microclimate. Lec/lab.

**HORT 454. PRINCIPLES AND PRACTICES OF VINEYARD PRODUCTION. (3 Credits)**

The relationship of vineyard and canopy management to grapevine physiology and fruit quality. Nutrient/water relations within the soil/vine continuum. Vineyard microclimate, floor management, and pests will also be discussed. Lec/lab.

**Prerequisites:** HORT 301 with D- or better

**HORT 455. URBAN FOREST PLANNING, POLICY AND MANAGEMENT. (4 Credits)**

Examination of planning, policy, and management strategies used in the stewardship of urban natural resources. Fundamentals for developing effective programs to maximize the economic, environmental, and social values and benefits of urban forest landscapes. CROSSLISTED as FES 455. Taught via Ecampus only.

**Equivalent to:** FES 455

**HORT 456. PHYSIOLOGY AND PRODUCTION OF BERRY CROPS. (4 Credits)**

Physiology and production systems of blueberries, red and black raspberries, blackberries, and other berry crops. Emphasis on plant growth and development; flower and fruit development; cultivars; pruning and training systems; irrigation; harvesting; nutrient management; and conventional and organic production systems.

**Prerequisites:** HORT 301 with D- or better

**HORT 463. SEED BIOLOGY. (3 Credits)**

Information about reproductive development of plants such as pollination and fertilization, which is important for the initiation of seed formation, will be provided. Embryo and endosperm development as well as accumulation of seed storage materials, which are major events during seed development, will be covered, as well as the dormancy and germination mechanisms in mature seeds. Lectures and discussions (presentations required for graduate students). Offered every even year fall term. CROSSLISTED as CROP 463/CROP 563. Lec/lab.

**Equivalent to:** CROP 463

**HORT 480. CASE STUDIES IN CROPPING SYSTEMS MANAGEMENT. (4 Credits)**

Decision cases involving the production of field and horticultural crops; individual and group activities; discussion of the decision-making process. Multiple field trips required. A field trip fee will be charged. CROSSLISTED as CROP 480/CROP 580.

**Equivalent to:** CROP 480

*This course is repeatable for 8 credits.*

**HORT 481. HORTICULTURE PRODUCTION CASE STUDIES. (4 Credits)**

Field-based case studies investigate production issues encountered in horticultural crops; individual and group activities; discussion of processes for troubleshooting, decision-making and management recommendations; assessment of economic, practical and logistical feasibility. Prior knowledge of plant physiology, soils, entomology, and plant nutrition are required. Multiple field trips required. A field trip fee will be charged.

**Prerequisites:** HORT 301 with D- or better

**HORT 485. ADVANCED PERMACULTURE DESIGN TOOLS FOR CLIMATE RESILIENCE. (3 Credits)**

Permaculture is a design system for creating sustainable human habitation that enriches the natural world. With climate change, geophysical and social conditions are shifting on the planet. There are specific tools that the permaculture designer can use to assess, analyze and project future climate scenarios and respond to them with resilient design. Climate analogue identification and climate change forecasting provide the basis for a student design project that addresses current and future climatic conditions. Students will complete all design mapping assignments using Google Earth Pro, and tutorials will be provided as a component of the course curriculum.

**Prerequisites:** HORT 285 with B or better

**HORT 495. HORTICULTURAL MANAGEMENT PLANS. (3 Credits)**

Develop an integrated management plan for a horticultural enterprise. *This course is repeatable for 6 credits.*

**HORT 499. SPECIAL TOPICS. (1-16 Credits)**

**Equivalent to:** HORT 499H

*This course is repeatable for 16 credits.*

**HORT 499H. SPECIAL TOPICS. (1-16 Credits)**

**Attributes:** HNRS – Honors Course Designator

**Equivalent to:** HORT 499

*This course is repeatable for 16 credits.*

**HORT 501. RESEARCH. (1-16 Credits)**

*This course is repeatable for 16 credits.*

**HORT 503. THESIS. (1-16 Credits)**

*This course is repeatable for 999 credits.*

**HORT 505. READING AND CONFERENCE. (1-16 Credits)**

*This course is repeatable for 16 credits.*

**HORT 506. PROJECTS. (1-16 Credits)**

*This course is repeatable for 16 credits.*

**HORT 507. SEMINAR. (1-16 Credits)**

*This course is repeatable for 16 credits.*

**HORT 508. WORKSHOP. (1-16 Credits)**

*This course is repeatable for 16 credits.*

**HORT 509. PRACTICUM. (1-16 Credits)**

*This course is repeatable for 16 credits.*

**HORT 510. INTERNSHIP. (1-12 Credits)**

Offered via Ecampus only.

*This course is repeatable for 12 credits.*

**HORT 511. RESEARCH AND EDUCATIONAL PERSPECTIVES IN HORTICULTURE. (2 Credits)**

Introduces beginning graduate students to the faculty in horticulture and provides an in-depth discussion of their research and education programs.

**HORT 518. CURRENT TOPICS IN ENTOMOLOGY. (2 Credits)**

This is a core course of the Horticulture graduate program. Provides an advanced understanding of entomology and its relationship to other disciplines through critical analysis of the scientific literature. Students practice synthesizing information and presenting findings to peers. Instructors, topics, and specific learning objectives vary from term to term. CROSSLISTED as ENT 518.

**Equivalent to:** ENT 518

*This course is repeatable for 12 credits.*

**HORT 519. CURRENT TOPICS IN PLANT BREEDING AND GENETICS. (2 Credits)**

Provides an advanced understanding of plant breeding and genetics and their relationship to other disciplines through critical analysis of the scientific literature. Students practice synthesizing information and presenting findings to peers. Instructors, topics, and specific learning objectives vary from term to term. CROSSLISTED as PBG 519.

**Equivalent to:** PBG 519

*This course is repeatable for 12 credits.*

**HORT 520. CURRENT TOPICS IN HORTICULTURAL RESEARCH. (2 Credits)**

This is a core course in the horticulture graduate program. Students gain an advanced understanding of horticulture science and its relationship to other disciplines through critical analysis of the scientific literature. Students practice synthesizing information and presenting findings to their peers. Instructors, topics and specific learning objectives vary from term to term.

*This course is repeatable for 12 credits.*

**HORT 521. HERBS, SPICES, AND MEDICINAL PLANTS. (3 Credits)**

Principles of crop ecology, morphology, chemistry and utilization of natural products of herbs, spices, and medicinal plants (HSMP). Examines the history and importance of HSMP, their historic and modern uses, current market trends, botany, collection in the wild, fundamentals of production systems for HSMP, harvesting, drying, and other postharvest operations, natural products and their uses, regulations and legal concerns of herbal products.

**HORT 533. SYSTEMATICS AND ADAPTATION OF VEGETABLE CROPS. (4 Credits)**

Covers the botanical and taxonomic relationships, breeding systems and adaptation of vegetable crops. Fresh material is used to illustrate varietal differences and traits of importance. Lec/lab. CROSSLISTED as CROP 433/CROP 533.

**Equivalent to:** CROP 533

**HORT 544. INSECT AGROECOLOGY. (3 Credits)**

Agroecology incorporates ecological concepts and principles to the design and management of sustainable agricultural systems. Topics include: the role of insects in sustainable agricultural systems; application of the principles of insect ecology to better manage insect pests and maximize crop yield; conserving beneficial insects and other natural resources in agroecosystems and the surrounding landscape. CROSSLISTED as ENT 544.

**Equivalent to:** ENT 544

**HORT 547. ARBORICULTURE. (4 Credits)**

The principles and practices of arboriculture, the art and science of selecting, planting, establishing and maintaining trees in urban, suburban, commercial and residential landscapes. Lec/lab CROSSLISTED as FES 447.

**Equivalent to:** FES 547

**HORT 552. BERRY AND GRAPE PHYSIOLOGY AND CULTURE. (4 Credits)**

Production of wine grapes, caneberries, strawberries, blueberries, and other miscellaneous berry crops. Emphasis on plant growth and development; pruning and training systems; flower and fruit development and cultivars. Field trips required. Offered in alternate years.

**HORT 555. URBAN FOREST PLANNING, POLICY AND MANAGEMENT. (4 Credits)**

Examination of planning, policy, and management strategies used in the stewardship of urban natural resources. Fundamentals for developing effective programs to maximize the economic, environmental, and social values and benefits of urban forest landscapes. CROSSLISTED as FES 555. Taught via Ecampus only.

**Equivalent to:** FES 555

**HORT 556. PHYSIOLOGY AND PRODUCTION OF BERRY CROPS. (4 Credits)**

Physiology and production systems of blueberries, red and black raspberries, blackberries, and other berry crops. Emphasis on plant growth and development; flower and fruit development; cultivars; pruning and training systems; irrigation; harvesting; nutrient management; and conventional and organic production systems.

**HORT 563. SEED BIOLOGY. (3 Credits)**

Information about reproductive development of plants such as pollination and fertilization, which is important for the initiation of seed formation, will be provided. Embryo and endosperm development as well as accumulation of seed storage materials, which are major events during seed development, will be covered, as well as the dormancy and germination mechanisms in mature seeds. Lectures and discussions (presentations required for graduate students). Offered every even year fall term. CROSSLISTED as CROP 463/CROP 563. Lec/lab.

**Equivalent to:** CROP 563

**HORT 580. CASE STUDIES IN CROPPING SYSTEMS MANAGEMENT. (4 Credits)**

Decision cases involving the production of field and horticultural crops; individual and group activities; discussion of the decision-making process. Multiple field trips required. A field trip fee will be charged. CROSSLISTED as CROP 480/CROP 580.

**Equivalent to:** CROP 580

**HORT 581. HORTICULTURE PRODUCTION CASE STUDIES. (4 Credits)**

Field-based case studies investigate production issues encountered in horticultural crops; individual and group activities; discussion of processes for troubleshooting, decision-making and management recommendations; assessment of economic, practical and logistical feasibility. Prior knowledge of plant physiology, soils, entomology, and plant nutrition are required. Multiple field trips required. A field trip fee will be charged.

**HORT 599. SPECIAL TOPICS. (0-16 Credits)**

*This course is repeatable for 16 credits.*

**HORT 601. RESEARCH. (1-16 Credits)**

*This course is repeatable for 16 credits.*

**HORT 603. DISSERTATION. (1-16 Credits)**

*This course is repeatable for 999 credits.*

**HORT 605. READING & CONFERENCE. (1-16 Credits)**

*This course is repeatable for 16 credits.*

**HORT 606. PROJECTS. (1-16 Credits)**

*This course is repeatable for 16 credits.*

**HORT 607. SEMINAR. (1-16 Credits)**

*This course is repeatable for 16 credits.*

**HORT 608. WORKSHOP. (1-16 Credits)**

*This course is repeatable for 16 credits.*

**HORT 699. SPECIAL TOPICS. (1-16 Credits)**

*This course is repeatable for 16 credits.*