Semester Courses
Department of Horticultural Science

1001. PLANT PROPAGATION. (4 Cr; No prereq.) Fall Semester. Instructor: Smith (classical face to face Lecture) & Spring Semester, instructors: Michaels (hybrid online). Description: Principles and techniques of propagating plants by seeds, cuttings, grafts, buds, layers, division. Lectures on principles; laboratories on practice of various propagating techniques.

1003. HORTICULTURE FOR THE HOME GARDENER. (3 Cr; No prereqs.) Spring Semester. Instructor: Weisenhorn. Foundation education in horticulture-related topics: soils; botany; entomology; plant pathology; indoor, herbaceous, and woody plants; lawn fruits/vegetables; pesticides; wildlife. Emphasizes extension publications/resources useful to home gardeners. 100% online.

1013. FLORAL DESIGN. (3 Cr; No prereq.) Fall Semester. Instructor: Anderson. Description: Floral designs, for use in commercial flower shops or at home, including principles and elements of design, wedding arrangements corsages, and the decorative use of dried materials.

1014. THE EDIBLE LANDSCAPE. (3 Cr; No prereq.) Spring Semester. Instructor: Michaels. Description: One of our most fundamental needs is to eat plants, yet most of us lack a strong understanding of our society's fascinating and complex relationship with edible plants and their production. Let's close that knowledge gap by investigating the history, scales and purposes of edible landscapes and the social, technological and environmental contexts in which they provide food. This course is offered in a flexible, hybrid (online and face to face) format that emphasizes multiple learning strategies.

1015. WOODY AND HERBACEOUS PLANTS. (4 Cr; No prereq.) Fall Semester. Instructor: Hokanson. There are more than 300,000 plant species in the world – quite a few more than you can learn in 15 weeks. During this course you can master the skills that will allow you to identify almost any plant you encounter around the world. You will be introduced to a few hundred of the most important cultivated plants for northern climates. You will learn their distinguishing features for identification, common uses, cultural specificities, and notable cultivars. Lectures and laboratories.

1031. VINES AND WINES: INTRODUCTION TO VITICULTURE AND ENOLOGY (3 Cr; must be 21 years of age by date of first class meeting). Fall & Spring Semester. Instructors: Gardner, Luby. Description: Overview of the history of wine, basic principles of biology and culture of the grapevine, fermentation, and the sensory evaluation of wine.

1061. THE SUSTAINABLE LAWN. (3 Cr; ). Fall Semester. Instructor: Watkins. Description: This course will focus on sustainable turfgrass management for the home lawn. Students will learn how to identify common turfgrasses and then how to properly manage a home lawn in a sustainable way. This course will also equip students with the knowledge and tools necessary to maintain quality turf areas with reduced inputs. Internet-Delivered.

1090. DIRECTED STUDIES (1-3 Cr) All Terms. Description: Approved field, laboratory, or greenhouse experiences in application of horticultural information and practices. Hort 1090 is for high school students working with a faculty advisor to gain a directed study experience.

1901. FRESHMAN SEMINAR 10 PLANTS THAT CHANGED MINNESOTA. (3 Cr) Fall Semester. Instructor, Meyer. This seminar discussed the impact of the 10 plants that have made the most difference in Minnesota. These plants changed the history of the state and had a major impact on the economy, culture, health, food, arts and the environment. Several classes will meet at the Minnesota Landscape Arboretum with transportation provided from the Minneapolis campus. Class is based on student lead environmental discussions, guest lectures, and independent and small group research that will result in written communications and website information especially related to the 10 Plants and their environmental impact in Minnesota. Meets environmental theme for liberal arts requirement.

1942 FRESHMAN SEMINAR (3 Cr) (usually) Fall Semester. Instructor: Watkins – Various subjects each year.
2031. ORGANIC FOOD: HOW TO GROW IT, WHERE TO BUY IT, CAN IT FEED THE WORLD? (3 Cr.). Fall Semester. Instructor: Rogers. Basics of organic food, learn to grow small scale organic fruits and vegetables. Understand the National Organic Program and the importance of organic certification to food purchase; the role of organics to food security, food discrimination, and the potential to feed the world. Lecture and “hands dirty” experience on the student organic farm.

2100. AGRICULTURAL BIOCHEMISTRY. (3 Cr; prereq Chem 1015 or Chem 1017 or consent of instructor). Fall Semester. Instructor: Hegeman. Description: This course provides a chemical and biochemical foundation needed to master biological topics as an integral part of agricultural disciplines. Subject matter emphasizes qualitative understanding of key concepts in organic, analytical and biological chemistry with special emphasis on the chemistry, metabolism and development of plants.

3000. HORTICULTURE GLOBAL SEMINAR (3 Cr.) Summer Semester. Instructor: Meyer. An in-depth study of a particular topic in horticulture in a foreign country. The class will be a 3-week travel course, consisting of lectures and field trips for 15 days with weekends free for personal international experiences. This class will be offered as a University of Minnesota Global Seminar and as such will meet the liberal education international perspectives requirement.

3005W. ENVIRONMENTAL EFFECTS ON HORTICULTURAL CROPS. (4 Cr; Prereq Hort 1001, Chem 1015, 1017 or consent of instructor). Spring Semester. Description: The effects of the environment on plant growth and physiology through laboratory exercises and experiments. Students will learn how the environment affects plants but also how horticulturists manipulate the environment to produce high quality plants.

3090. DIRECTED STUDIES. (1-3 Cr; 6 repeats allowed; All Terms. Description: Approved field, laboratory, or greenhouse experiences in application of horticultural information and practices.

3131. STUDENT ORGANIC FARM PLANNING, GROWING, AND MARKETING. (3 Cr; Prereq Hort 1001, Agro 1101, 1103, Biol 1009 or consent of instructor). Spring Semester. Instructor: Grossman. Description: This course plans and implements cropping and marketing strategies for the organic produce and flowers from the Student Organic Farm on the St. Paul Campus.

3480. TOPICS IN SUSTAINABLE HORTICULTURE. (1-3 Cr, no Prereqs). Fall and Spring Semester. Various topics. Various Instructors.

4000. SUCCESSFUL SCHOOL GARDENS. (3 Cr; no Prereq) Spring Semester. Instructor: Meyer. An experiential and international class that travels to London over spring break. Students teach in London schools and with Twin Cities partner schools in grades K-12. Focus is on understanding what is necessary for successful school gardens; curriculum that works in the winter in Minnesota; integrating plant science into school activities through grad standards across multiple grade levels; and comparing British use of gardens in school curriculum to U. S. school gardens.

4015. ADVANCED WOODY AND HERBACEOUS PLANT TOPICS. (1 Cr; Prereq Hort 1015 or instructor consent). Various Terms. Instructors: Anderson, Erwin, Hokanson, Meyer, Watkin. This course expands on basic identification skills and knowledge of use covered in Hort 1015, focusing on one group of plants. Students are introduced to many species and cultivars and receive detailed information on culture and use. This course may be taken multiple times since the topics vary (topics such as: Spring Flowering Trees and Shrubs, Grasses and Prairie Perennials, Ferns, Spring Flowering Bulbs, Strange & Unusual Plants).

4061W. TURFGRASS MANAGEMENT. (3 Cr; Prereq Hort 1001, or instructor consent). Fall Semester. (Writing Intensive) Instructor: Watkins. Biology of turfgrasses and ecology of landscape system, general turfgrass installation, management and culture of turfgrasses and landscape plant communities. Includes seed production, industrial grounds, athletic fields, park and recreation areas and general lawn.

4062. TURFGRASS WEED AND DISEASE SCIENCE. (3 Cr; Prereq Hort 4061, PiPa 2001 or instructor consent). Fall Semester odd years. Instructor: Watkins. This course will familiarize students with turfgrass weed and disease problems and provide them with the knowledge necessary to deal with these problems using an integrated approach. Biology, identifying features, and management strategies for several turfgrass disease/weeds. How to apply IPM principles to turfgrass weed/disease problems.
4063. TURFGRASS SCIENCE. (3 Cr; Prereq Hort 4061 or instructor consent). Spring Semester even years. Instructor: Watkins. Description: For advanced students in turf with career objectives in professional turf management. Emphasis on the ecology, physiology, and theory of turf population dynamics and specialized management situations such as golf course, commercial sod production, and fine turf athletic settings.

4071W. APPLICATIONS OF BIOTECHNOLOGY TO PLANT IMPROVEMENT. (4 Cr; Prereq: Biol 1009 or equiv or instructor consent). Writing Intensive. Fall Semester. Instructor: Smith. Description: Fundamentals of plant molecular biology and biotechnology with emphasis on their applications to plant propagation, crop improvement. Laboratories include hands on experience in plant tissue culture, gel electrophoresis, and other common laboratory techniques of plant molecular biology.

4096. PROFESSIONAL EXPERIENCE PROGRAM: INTERNSHIP. (1 Cr; may be repeated. Prereq CFANS undergrad; S/N only). All Terms. Description: Professional experience in horticulture firms or government agencies achieved by supervised practical experience; evaluate reports and consultations with faculty advisors and employers. Pick up Learning Agreement from Evonne Kuyper before beginning your internship (kuype001@umn.edu or call 612-624-4242)

4096W. PROFESSIONAL EXPERIENCE PROGRAM: INTERNSHIP. 2 Cr; may not be repeated. Prereq CFANS undergrad; S/N only). All Terms. Writing Intensive. Instructor: Watkins, Meyer. Description: Professional experience in horticulture firms, public gardens, or government agencies achieved by supervised practical experience; evaluate reports and consultations with faculty advisors and employers. Pick up Learning Agreement from Evonne Kuyper before beginning your internship (kuype001@umn.edu or call 612-624-4242).

4141W. PLANT PRODUCTION I (4 Cr). Prereq Hort 1001, Hort 1015 or instructor consent. Fall Semester. Instructor: Erwin (Writing Intensive) Description: Development of specific crop schedules, using current technical and economic data for efficient production; Development of total nursery enterprise designed for workable and profitable business establishment. Pest management and governmental regulations concerning the nursery industry. Container growing operations and marketing of all products. Specific topic research and nursery operation development by the student. Lab includes field trips and greenhouse and field training in nursery operations. Field trips required.

4401. PLANT GENETICS AND BREEDING. (4 Cr; Prereq Biol 1009 or equiv; grad, or instructor consent). Spring Semester. Instructor: Orf, Watkins. Description: Principles of plant genetics, genetic and environmental variation. Applications of genetics to crop evolution and breeding of self-pollinated, cross-pollinated, and asexually propagated agronomic and horticultural crops. Lab experiments will investigate hybridization, variation, and selection in horticultural and agronomic crops and other plants.

4461. HORTICULTURAL MARKETING. (3 Cr; Prereq Apec 1101 or Econ 1101) Fall Semester. Instructor: Yue. Description: This course examines several major areas in horticultural marketing. First, we analyze the functions performed by the marketing system from an economic point of view. Second, in order to understand the economic performance of the marketing system, we will analyze the behavior of marketing firms (farms, food processors, garden centers) on the different markets. Finally, current issues and trends in markets for horticultural inputs and products are explored.

4601. AQUAPONICS: INTEGRATED FISH AND PLANT FOOD SYSTEMS. (4 Cr; Prereq Biol1001 or 1009, Chem 1015 & 1017, or Chem 1061 & 1065 or permission of instructor. Spring Semester. Instructors: Anderson & Venturelli. Description: Aquaponics is a form of sustainable food production that combines fish and plants in a closed system. This course introduces students to all aspects of aquaponics (biology, engineering, economics, policy, culture, and the environment) through hands-on training and experience with system design and maintenance as well as community engagement.

4850. POLLINATOR PROTECTION IN MANAGED LANDSCAPES. (3 Cr; Prereq Hort 1001 or Agro 1101 or Biol 1009 or 1001 or Ent 1001 or PIPa 1005). At least 30 credits completed (non-freshman status). Spring Semester. Instructors: Watkins & Spivak. Description: Importance of pollinators in agricultural/other natural landscapes. Risks to pollinators. Ways risks can be reduced, minimized, or overcome. Ways public policy has impacted pollinators/how future policy decisions will affect pollinator protection efforts.

5007. ADVANCED PLANT PROPAGATION. (3 Cr; Prereq Hort 1001). Spring Semester even years. Instructor: Cohen. Description: Control of growth and development, as related to sexual and asexual reproduction of plants, including the effects of environment, plant growth substances and protocols on dormancy, origin and development of adventitious structures, and success with specialized propagation techniques.

5012. COMMON CHINESE MEDICINAL PLANTS: GROWING AND PROCESSING. (3 Cr; Prereq Hort 1001 or Bio 1009 and Chem 1015 and Hort 5011). Fall Semester of Even Years. Instructor: Chen. Description: Chinese medicinal plants and products have markets of tens of billions of U.S. dollars in medicine and food. In the U.S., the Chinese herbal products also have a multibillion dollar market value as food supplements. Through the introduction to cultivated medicinal plants on the farms in China and to market information from all over the world, the class will equip students to grow, process, and apply Chinese herbs for a healthy diet. The class will focus on 40 common Chinese herbs and herbal products. Partially online.

5023. PUBLIC GARDEN MANAGEMENT. (2 Cr; Prereq – Exclude Fr or Soph, instructor consent; qualified students may register for graduate credit at the University of Minnesota). Spring Semester. Instructor: Hokanson. Description: There are a growing number of public gardens around the world. Cities, counties, and states are developing arboreta and botanical gardens and private gardens are being donated to public service at an increasing pace. This has produced a demand for people skilled in the management of such gardens. This class will provide an overview of the knowledge and skills necessary for an individual looking toward a career in public garden management. Topics covered will include physical and programming planning, research, educational programs, plant conservation and curation, public relations, personnel administration, garden management and business operations.

5031. FRUIT PRODUCTION AND VITICULTURE FOR LOCAL AND ORGANIC MARKETS. (3 Cr; Prereq Hort 1001, 3005w or instructor consent). Fall Semester of odd years. Instructor: Hoover, Luby. Description: Principles of fruit production emphasizing temperate fruit crops. Integrated management of fruit cropping systems, including site selection, cultural management practices, taxonomic classification, physiological and environmental control of plant development. Integration of writing into understanding various fruit cropping systems.

5032. ORGANIC VEGETABLE PRODUCTION. (3 Cr; Prereq Hort 3005w; Ent 1005, PlPa 2001, Soils 2125, or instructor consent). Spring Semester of odd years. Instructor: Rogers. Description: Principles of commercial vegetable production. Emphasis on integrated management of vegetable cropping systems, including site selection and environment, seed and stand establishment, cultural management practices, commodity use, and handling from harvest to market. Perspective on types of vegetable cultivars, origin, historical significance and improvement through breeding nutrition and medicinal aspects, and physiological and environmental control of development.

5051. PLANT PRODUCTION II (4 Cr; Hort 1001, 1015, or instructor consent). Spring Semester. Instructor: Anderson. Description: Emphasizes problem-solving and management practices important in the propagation, production, and utilization of floral crops with an emphasis on bedding plants, perennials, and cut flowers. How to grow, market, and utilize herbaceous plants to modify the environment. The scientific basis for cultural practices will be discussed and students will understand the concepts behind manipulation of environmental factors to achieve desired plant growth and quality. Function, culture, and use of herbaceous plants in the landscape will also be covered in relation to how this information can be conveyed to various clientele groups.


5059. PLANT CYTOGENETICS LAB. (1 Cr; Prereq Hort 4404 or Agro 4401, Biol 4004). Spring Semester. Instructor: Chen. Description: Consolidate knowledge of plant cytogenetics of practicing series of microscopy/computational technologies. Examine number, movement structure/structure modification of chromosomes, Application in plant improvement.

5071. ECOLOGICAL RESTORATION. (4 Cr; Prereq one college course in ecology and one class in plant science or botany, or instructor consent), meets with ESPM 4071. Fall Semester. (Fulfills CLE: Designated Theme: Environment) Instructor: Galatowitsch. Description: Ecological and physiological concepts as a basis for the
revegetation of grasslands, wetlands, forests, and other landscapes. Plant selection, stand establishment, evaluating revegetation success. State and federal programs that administer restoration and reclamation programs. Field trips in several areas of Minnesota.

5090. DIRECTED STUDIES. (1-3 Cr; Prereq - 8cr upper div Hort courses). All Terms. Description: Opportunities for in-depth exploration of concepts, technology, materials, or programs in specific areas to expand professional competency and self-confidence. Planning, organizing, implementing, and evaluating knowledge obtained from formal education and experience.