HORT 105. Miracle Growing. 3 Credits. (3 Lec) Science in the context of horticulture. Learn environmental factors affecting horticulture and current measurement technology. Projects explore global and regional issues, careers, and tools necessary to be a successful horticulturist.

HORT 120. Intro to Landscape Design. 3 Credits. (1 Lec, 3 Std) S Introduction studio course in a sequence of studios into basic design process and skills used in landscape design, planning, and management. Concentration on navigating the design process while developing concepts, skills, and methods of design in critical spatial analysis of various natural and human systems in a variety of exterior settings.

HORT 131. Landscape Design/HS/Theory. 3 Credits. (3 Lec) F Introduction to the history of landscape design from ancient civilizations to the present. The evolution of design theory as it relates to visual arts, material palettes, climate, ecology, cultural, and social issues. Current trends in landscape industry and the work of major designers will be studied.

HORT 201. Sustainable Landscape Studio. 3 Credits. (1 Lec, 2 Lab) F PREREQUISITES: HORT 120 or consent of instructor. CO-REQUISITES: HORT 131, HORT 225. One of two studios in the suite of studio 3 related to theoretical concepts and practical applications of sustainable landscape design and land development at nested scales (site, neighborhood, city, region, and nation) with this one focusing on natural resource aspects. Course material provided through lectures, readings, and student projects.

HORT 202. Sustainable Landscape Studio II. 3 Credits. (1 Lec, 2 Lab) S PREREQUISITES: HORT 120, HORT 201, HORT 225. COREQUISITE: HORT 226. One of two studios in the sustainability series relating to the theoretical concepts and practical applications of sustainable landscape design and land development, with this one focusing on cultural and social aspects. Course material provided through lectures, readings, and student projects.

HORT 225. Landscape Graphics I. 3 Credits. (1 Lec, 2 Lab) PREREQUISITE: ARCH 151RA. Hand graphic communication methods, media, and equipment for landscape designers throughout the design process. Exploration and assessment of landscape representation for site analysis, schematic design, planting design, and design presentation.

HORT 226. Landscape Graphics II. 3 Credits. (1 Lec, 2 Lab) S PREREQUISITE: HORT 225 and DDSN 131 (Can be concurrent with HORT 225). Understanding of the opportunities offered by computer graphic techniques for landscape architectural drawings, including plans, elevations, axonometrics, perspectives, and layouts. Includes instruction in three major areas of computer applications for the different phases of a design project.

HORT 231. Woody Ornamentals. 3 Credits. (1 Lec, 2 Lab) Identification, culture and uses of deciduous and evergreen trees, shrubs and vines commonly used as ornamentals in Montana, and some species utilized outside of Montana. Lab includes extensive plant walks.

HORT 232. Herbaceous Ornamentals. 3 Credits. (2 Lec, 1 Lab) S PREREQUISITE: BIOB 170IN (may be taken as a co-requisite). Identification, characteristics, cultural requirements and ornamental uses of indoor tropical foliage and flowering plants, herbaceous landscape annuals and perennials and flowering bulbs. This is a hybrid course requiring student participation in one lab each week, with all other course information and participation via the web.

HORT 245. Plant Propagation. 3 Credits. (2 Lec, 1 Lab) S PREREQUISITE: CHMY 121IN or CHMY 141 and BIOB 170IN or BIOB 160IN. Traditional sexual and asexual reproduction of plants including seed germination, stem and leaf cuttings, grafting, and layering. Includes discussion of the biology and physiology of propagation methods. Lab includes experimentation with the various propagation methods using native plants as model systems.

HORT 291. Special Topics. 1-4 Credits. (1-4 Lec) 12 cr max) On Demand PREREQUISITE: None required, but some may be necessary by each offering department. Courses not required in any curriculum for which there is a particular one-time need, or given on a trial basis to determine acceptability and demand before requesting a regular course number.

HORT 298. Internship. 2-12 Credits. (2-12 Int; 12 cr max) ES,Su PREREQUISITE: Consent of instructor and approval of department head. For Sustainable Foods & Bioenergy Systems students only. An individualized assignment arranged with an agency, business, or other organization to provide guided experience within the field.

HORT 310. Turfgrass Management. 3 Credits. (2 Lec, 1 Lab) F PREREQUISITE: BIOB 170IN. Quantitative Reasoning Core, and HORT 105. Turfgrass propagation, fertilization, establishment, and maintenance. Recognition and adaptabilities of Northern and Southern turfgrasses used for landscape and sports use. Includes irrigation principles and basic hydraulicst, establishment and fertilizer calculations, and pest management. Lab includes experimentation with establishment techniques, equipment calibration, soil testing, and turfgrass maintenance.

HORT 331. Planting Design. 3 Credits. (1 Lec, 2 Lab) F PREREQUISITES: HORT 225 and HORT 226, and HORT 231 and HORT 332 (may be taken as co-requisites). Focuses on planting design elements and principles, landscape trends, styles and theory; involves application of planting design to a variety of project types including engineering, architectural, climate control, habitat, sensory, and aesthetic uses. Emphasis on plant and environmental relationships. Construction documentation and cost estimating for planting landscape installation.

HORT 335. Site Development. 4 Credits. (3 Lec, 1 Lab) S PREREQUISITE: M 105Q (formerly M 145Q), HORT 331. Introductory site engineering course for landscape architects. Course explores concepts and methods related to grading and drainage. Topics include landform as design, site grading problem solving, storm water management principles and ecological design strategies, graphic communication for grading plans.

HORT 336. Landscape Construction. 4 Credits. (2 Lec, 2 Lab) S PREREQUISITES: HORT 331; HORT 335 (may be taken as a co-requisite). Understanding of construction materials used to create the built landscape. Design and production of computer-aided working drawings and models of structures and surfaces including paving, retaining walls, fences, decks and other landscape features. Production of landscape construction portfolio which details a complete site development project.

HORT 337. Vegetable Production. 3 Credits. (3 Lec) F alternate, odd years PREREQUISITE: BIOB 110CS or BIOO 230. Modern production practices for all major temperate-zone vegetable crops, including crop management, development, storage, and post-harvest physiology. The class will include production of transplants and detailed discussion of several major vegetable crop families, including Solanaceae, Curcurbitaceae, Brassicaceae, Liliaceae, and the Fabaceae.

HORT 340. Site Design Studio I. 4 Credits. (1 Lec, 3 Lab) S PREREQUISITE: HORT 331. Focuses on site planning and design of residential, commercial, and mixed-use projects. Explores site design processes including, design concept, development ordinances and project submittals. Introduction to theory and methods of sustainable community planning, such as, transit-oriented development, closed-loop neighborhoods, and mixed-use projects. Lab includes extensive plant walks.

HORT 343. Comm Plant Production. 3 Credits. (3 Lec) S PREREQUISITE: BIOB 110CS. Focus is on greenhouse and nursery design and operation, including environmental control, growing media, irrigation, and fertilization of field and container grown ornamental crops. Retail and wholesale marketing strategies will be explored. Sustainable practices will be emphasized.

HORT 345. Market Gardening. 3 Credits. (3 Lec) S PREREQUISITE: HORT 105. Focus is on the production of quality vegetable, herb and flower products for sale through local, regional or non-traditional marketing avenues. Special attention is made to present and analyze sustainable food crop production systems.

HORT 410. Horticulture Recitation. 1 Credit. (1 Ret) S PREREQUISITE: Senior standing and consent of instructor This course synthesizes and reinforces a broad range of concepts covered throughout the Environmental Horticulture curriculum and applies this knowledge within new contexts. At the end of the semester students take the Certified Plant Professional exam.

HORT 432. Advanced Landscape Design. 4 Credits. (1 Lec, 3 Std) F PREREQUISITES: HORT 331, Concurrent: HORT 335, HORT 336. Sustainable site design for parks, civic properties, community organization grounds, playgrounds, or trails. Site planning and design processes incorporate landscape performance benefits and requirements. Includes service-learning design projects focused on advanced graphic and verbal communication, stakeholder participation, individual and group work skills, technical writing, and construction detailing.

HORT 435. Landscape Planning. 4 Credits. (1 Lec, 3 Lab) S PREREQUISITE: Alternate Odd Years PREREQUISITES: HORT 331 Explores opportunities for integrating biophysical characteristics and ecological assets with land-use development at mensuration and meso scales. Topics include landscape ecology for land use planning, PROST (parks, recreation, open space and trails) planning, and master planning for green infrastructure.
HORT 440. Urban Planning and Design. 4 Credits. (1 Lec, 3 Lab) S
Alternate Even Years PREREQUISITES: HORT 331. Focuses on the challenges and opportunities of developing vibrant, sustainable neighborhoods and regions. Topics include city form, street design, sustainable neighborhoods, and urban ecological design. Studio projects focus on neighborhood master planning, brownfields redevelopment, and public infrastructure design.

HORT 447. Advanced Plant Propagation. 3 Credits. (1 Lec, 2 Lab) F
PREREQUISITE: Senior standing. Students will learn specialized sexual and asexual propagation techniques, with an emphasis on the physiological and environmental manipulation of plants associated with in vitro, seed and grafting production. Students will receive extensive tissue culture experience.

HORT 485R. Horticulture Capstone I. 1 Credit. (1 Lec) F
PREREQUISITE: Senior standing, for majors only. First semester of a two-semester project for seniors majoring in Horticulture Science. This capstone course allows students to pursue a contemporary issue or problem in horticulture within a team research project.

HORT 486R. Horticulture Capstone II. 2 Credits. (2 Lec) S
PREREQUISITE: majors only and senior standing. Second semester of a two-semester project for seniors majoring in Horticulture Science. This capstone course allows students to pursue a contemporary issue or problem in horticulture within a team research project.

HORT 490R. Undergraduate Research. 1-4 Credits. (1-4 Ind; 12 cr max) ES, Su
PREREQUISITE: Junior or Senior standing and approval of instructor. Undergraduate research which may culminate in a research paper, journal article, or undergraduate thesis. Course will address responsible conduct of research.

HORT 491. Special Topics. 1-4 Credits. (1 Ind; 12 cr max) On Demand
PREREQUISITE: Course prerequisites as determined for each offering. Courses not required in any curriculum for which there is a particular one-time need, or given on a trial basis to determine acceptability and demand.

HORT 492. Independent Study. 1-3 Credits. (1-3 Ind; 6 cr max) F, S, Su
PREREQUISITE: Junior standing, consent of instructor and approval of department head. Directed research and study on an individual basis.

HORT 498. Internship. 2-12 Credits. (2-12 Lec; 12 cr max) F, S, Su
PREREQUISITE: Junior standing, consent of instructor and approval of department head. An individualized assignment arranged with an agency, business, or other organization to provide guided experience in the field.