HORT 801 Biology of Plant Pathogens
Crosslisted with: PLPT 801, AGRO 801
Prerequisites: PLPT 369 or equivalent
Description: Molecular and cellular approach to the study of plant pathological principles.
Credit Hours: 3
Max credits per semester: 3
Max credits per degree: 3
Grading Option: Grade Pass/No Pass Option
Prerequisite for: PLPT 866; PLPT 965, AGRO 965, HORT 965

HORT 802 Ecology and Management of Plant Pathogens
Crosslisted with: PLPT 802, AGRO 802
Prerequisites: PLPT 369 or equivalent; an introduction to biochemistry course
Description: Principles of plant disease epidemiology and disease control through cultural, biological, chemical and host plant resistance strategies.
Credit Hours: 3
Max credits per semester: 3
Max credits per degree: 3
Grading Option: Grade Pass/No Pass Option
Prerequisite for: PLPT 866; PLPT 965, AGRO 965, HORT 965

HORT 803 Scientific Writing and Communication
Crosslisted with: PLAS 403, AGRO 803
Prerequisites: Senior standing or higher, an ACE 1 written communication course, an ACE 2 oral communication course, and permission of instructor.
Description: Reading and critiquing, writing, and presenting scientific information. Use research data to compose a manuscript in standard scientific format, and prepare and present a poster to a general audience. Ethical issues in research and writing.
Credit Hours: 3
Max credits per semester: 3
Max credits per degree: 3
Grading Option: Graded

HORT 806 Plant Ecophysiology: Theory and Practice
Crosslisted with: AGRO 806, NRES 406, NRES 806, PLAS 406
Prerequisites: Junior standing; 4 hrs ecology; and 4 hrs botany or plant physiology.
Description: Principles of plant physiology which underlie the relationship between plants and their physical, chemical and biotic environments. An introduction to the ecological niche, limiting factors and adaptation. An overview of the seed germination and ecology, plant and soil water relations, nutrients, plant energy budgets, photosynthesis, carbon balance and plant-animal interactions. An introduction to various field equipment used in ecophysiological studies.
Credit Hours: 4
Max credits per semester: 4
Max credits per degree: 4
Grading Option: Grade Pass/No Pass Option

HORT 807 Bio-Atmospheric Instrumentation
Crosslisted with: GEOG 469, PLAS 407, METR 469, MSYM 469, NRES 469, AGRO 869, GEOG 869, METR 869, MSYM 869, NRES 869
Prerequisites: Junior standing; MATH 106; 4 hrs physics; physical or biological science major.
Description: Discussion and practical application of principles and practices of measuring meteorological and related variables near the earth's surface including temperature, humidity, precipitation, pressure, radiation and wind. Performance characteristics of sensors and modern data collection methods are discussed and evaluated.
Credit Hours: 3
Max credits per semester: 3
Max credits per degree: 3
Grading Option: Grade Pass/No Pass Option

HORT 808 Microclimate: The Biological Environment
Crosslisted with: PLAS 408, GEOG 408, METR 408, NRES 408, WATS 408, AGRO 808, GEOG 808, METR 808, NRES 808
Prerequisites: Junior standing, MATH 106 or equivalent, 5 hrs physics, major in any of the physical or biological sciences or engineering.
Description: Physical factors that create the biological environment. Radiation and energy balances of earth's surfaces, terrestrial and marine. Temperature, humidity, and wind regimes near the surface. Control of the physical environment through irrigation, windbreaks, frost protection, manipulation of light, and radiation. Applications to air pollution research. Instruments for measuring environmental conditions and remote sensing of the environment.
Credit Hours: 3
Max credits per semester: 3
Max credits per degree: 3
Grading Option: Grade Pass/No Pass Option
Prerequisite for: PLAS 409B, AGRO 809B

HORT 809A Case studies in plant breeding: Breeding for Disease Resistance
Crosslisted with: PLAS 409A, AGRO 809A
Notes: A previous class in genetics is highly recommended.
Description: The application of fundamental genetics principles in inheritance, gene mapping and DNA analysis to decision making by plant breeders with the goal of improving disease resistance in crop cultivars. Learning is structured by the genetics discovery story told in published research articles and the thinking process of plant breeders who will use these discoveries in their work.
Credit Hours: 1
Max credits per semester: 1
Max credits per degree: 1
Grading Option: Grade Pass/No Pass Option
Offered: FALL/SPR

HORT 809B Case Studies in plant breeding: Transgenic strategies for disease resistance
Crosslisted with: PLAS 409B, AGRO 809B
Description: The application of basic science and technology by plant genetic engineering experts with the goal of teaming with plant breeders to improve disease resistance in crop cultivars. Learning is structured by the genetics discovery story told in published research articles and the thinking process of genetic engineers and plant breeders who will use these discoveries in their work.
Credit Hours: 1
Max credits per semester: 1
Max credits per degree: 1
Grading Option: Grade Pass/No Pass Option
Offered: FALL/SPR
HORT 810 Plant Molecular Biology
Crosslisted with: AGRO 810, BIOC 810
Prerequisites: AGRO 215 or BIOS 206; BIOC 831
Description: Molecular genetic basis of biological function in higher plants. Genome organization, gene structure and function, regulation of gene expression, recombinant DNA, and genetic engineering principles. Material taken primarily from current literature.
Credit Hours: 3
Max credits per semester: 3
Max credits per degree: 3
Grading Option: Grade Pass/No Pass Option
Offered: SPRING

HORT 811 Plant Tissue Culture
Crosslisted with: BIOS 811, NRES 811
Description: Survey of techniques used in plant cell, tissue and organ culture, including current research. Laboratory emphasizes practical manipulation of plant cells, tissues, and organs, including examples from woody and herbaceous plant species.
Credit Hours: 4
Max credits per semester: 4
Max credits per degree: 4
Grading Option: Grade Pass/No Pass Option
Course and Laboratory Fee: $25

HORT 812 Landscape Ecology
Crosslisted with: NRES 810
Prerequisites: 12 hrs biological sciences or related fields including BIOS 320
Description: Spatial arrangements of ecosystems, the interaction among component ecosystems through the flow of energy, materials and organisms, and alteration of this structure through natural or anthropogenic forces.
Credit Hours: 3
Max credits per semester: 3
Max credits per degree: 3
Grading Option: Grade Pass/No Pass Option

HORT 813 Turfgrass and Landscape Weed Management
Crosslisted with: AGRO 813, TLMT 813
Description: Fundamental terminology associated with turfgrass and landscape weed management. Weed identification and the cultural practices and herbicide strategies to limit weed invasion and persistence.
Credit Hours: 1
Max credits per semester: 1
Max credits per degree: 1
Grading Option: Grade Pass/No Pass Option

HORT 814 Turfgrass Disease Management
Crosslisted with: AGRO 814, PLPT 414, PLPT 814, PLAS 414, TLMT 814
Prerequisites: BIOS/PLPT 369 or one semester of introductory plant pathology.
Description: Pathogens, epidemiology, and control of diseases specific to turfgrass.
Credit Hours: 1
Max credits per semester: 1
Max credits per degree: 1
Grading Option: Grade Pass/No Pass Option

HORT 817 Plant Pathology Principles and Application
Crosslisted with: PLPT 817, AGRO 817
Prerequisites: 12 hours of prior coursework in the plant sciences
Description: Introduction to the biology of plant pathogenic organisms; pathogen-plant interactions; environmental influences; cultural, resistance, and chemical strategies for plant disease management.
Credit Hours: 3
Max credits per semester: 3
Max credits per degree: 3
Grading Option: Grade Pass/No Pass Option

HORT 818 Agroforestry Systems in Sustainable Agriculture
Crosslisted with: PLAS 418, NRES 417, NRES 817
Prerequisites: 12 hours biological or agricultural sciences.
Description: The roles of woody plants in sustainable agricultural systems of temperate regions. Emphasis on the ecological and economic benefits of trees and shrubs in the agricultural landscape. Topics include: habitat diversity and biological control; shelterbelts structure, function, benefits and design; intercropping systems; silvopastoral systems; riparian systems; and production of timber and specialty crops.
Comparison of temperate agroforestry systems to those of tropical areas.
Credit Hours: 3
Max credits per semester: 3
Max credits per degree: 3
Grading Option: Grade Pass/No Pass Option

HORT 821 Learning Biotechnology
Crosslisted with: AGRO 821
Description: Investigate biotechnology and its application in solving problems and connect biotechnology to basic science concepts in biology and chemistry. Integrate individually-designed biotechnology lessons into learning standards.
Credit Hours: 3
Max credits per semester: 3
Max credits per degree: 3
Grading Option: Grade Pass/No Pass Option

HORT 822 Integrated Weed Management
Crosslisted with: AGRO 822
Prerequisites: 12 hrs AGRO and/or closely related HORT and/or BIOS
Credit Hours: 1
Max credits per semester: 1
Max credits per degree: 1
Grading Option: Grade Pass/No Pass Option

HORT 824 Plant Nutrition and Nutrient Management
Crosslisted with: AGRO 824
Prerequisites: AGRO 325 or basic course in plant physiology. A course in organic chemistry or biochemistry recommended
Notes: Offered spring semesters.
Description: Macro and micro nutrient elements and their function in the growth and development of plants. Role of single elements. Interaction and/or balances between elements and nutrient deficiency and/or toxicity symptoms as they affect the physiology of the whole plant. Relationship between crop nutrition and production and/or environmental considerations (e.g. yield, drought, temperature, pests).
Credit Hours: 3
Max credits per semester: 3
Max credits per degree: 3
Grading Option: Grade Pass/No Pass Option
HORT 826 Invasive Plants
Crosslisted with: PLAS 426, AGRO 826, NRES 426, NRES 826
Prerequisites: PLAS/SOIL 153, PLAS 131
Description: Identification, biology and ecology of weedy and invasive plants. Principles of invasive plant management by preventative, cultural, biological, mechanical and chemical means using an adaptive management framework. Herbicide terminology and classification, plant-herbicide and soil-herbicide interactions, equipment calibration and dosage calculations.
Credit Hours: 3
Max credits per semester: 3
Max credits per degree: 3
Grading Option: Grade Pass/No Pass Option
Offered: SPRING
HORT 842A Plant Pathology
Description: Survey of the principles and practice of plant pathology. The main and genetic elements in plant disease will be covered. Many of the major diseases, as well as their causes and effects, will be surveyed. Course is taught by faculty from the University of Nebraska-Kearney, and will be offered in the spring semester of even-numbered calendar years. To enroll, students must be accepted into the horticulture graduate certificate program or get permission.
Credit Hours: 3
Max credits per semester: 3
Max credits per degree: 3
Grading Option: Grade Pass/No Pass Option

HORT 842B Plant Physiology
Description: Life processes of plants, with an emphasis on water relations and hormonal and stress physiology. Includes fundamental concepts underlying the science of crop physiology, including crop phenology, canopy development and light interception, photosynthesis and respiration, and dry matter partitioning. Course is taught by faculty from the University of Nebraska-Kearney, and will be offered in the fall semester of even-numbered calendar years. To enroll, students must be accepted into the horticulture graduate certificate program or get permission.
Credit Hours: 3
Max credits per semester: 3
Max credits per degree: 3
Grading Option: Grade Pass/No Pass Option

HORT 843A Greenhouse Crop Production
Prerequisites: Admission to the Horticulture graduate certificate program; and permission
Notes: Distance education course delivered by Texas Tech University.
HORT 843A is offered spring semester of odd-numbered calendar years.
Description: Introduction to the concepts of greenhouse construction, operation and management for a variety of horticultural crops, with an emphasis on ornamental crops. Greenhouse construction, heating, cooling, growing media, pest management, nutrition, fertility, growth regulation, irrigation, post-harvest handling, and marketing of greenhouse crops.
Credit Hours: 4
Max credits per semester: 4
Max credits per degree: 4
Grading Option: Grade Pass/No Pass Option

HORT 843B Advanced Interiorscaping
Prerequisites: Admission to the Horticulture graduate certificate program; and permission
Notes: Distance education course delivered by Texas Tech University.
HORT 843B is offered spring semester of even-numbered calendar years.
Description: Physiological principles and industry practices in the production, moving, care, and maintenance of interior plants. Career tools to design, install and maintain interior plant-scapes. Review of pertinent literature and class exercises designed to improve skills and knowledge of interior plant physiology, care and maintenance.
Credit Hours: 3
Max credits per semester: 3
Max credits per degree: 3
Grading Option: Grade Pass/No Pass Option

HORT 843K Advanced Arboriculture
Prerequisites: Admission to the Horticulture graduate certificate program; and permission
Notes: Distance education course delivered by Texas Tech University.
HORT 843K is offered fall semester of odd-numbered calendar years.
Description: Physiological principles and industry practices in the production, moving, care, and maintenance of ornamental trees, shrubs, and ground covers. Provides career tools for installation and maintenance woody plants.
Credit Hours: 3
Max credits per semester: 3
Max credits per degree: 3
Grading Option: Grade Pass/No Pass Option

HORT 843M Weed Science
Prerequisites: Admission to the Horticulture graduate certificate program; and permission
Notes: Distance education course delivered by Texas Tech University.
HORT 843M is offered fall semester of odd-numbered calendar years.
Description: Weeds and weed control methods in agronomic and horticultural crops and turf grass with chemical weed control. History of weed control, weed characteristics, weed competition, and methods of weed control including mechanical, cultural, biological, and chemical. Discussion of herbicides by family with regard to chemical structure, efficacy, mode and mechanism of action, crop selectivity, soil activity and persistence, and cost.
Credit Hours: 4
Max credits per semester: 4
Max credits per degree: 4
Grading Option: Grade Pass/No Pass Option

HORT 844A Environmental Nursery Production Practices
Prerequisites: Admission to the Horticulture graduate certificate program; and permission
Notes: Distance education course delivered by North Carolina State University.
HORT 844A is offered spring semester of odd-numbered calendar years.
Description: Cultural nursery crop production practices presented in consideration of current best management practices, conservation of resources, scientific research-based investigations related to nursery cultural practices, potential risks to nursery personnel, and off-site movement of airborne materials and effluents to surrounding areas and public watersheds.
Credit Hours: 3
Max credits per semester: 3
Max credits per degree: 3
Grading Option: Grade Pass/No Pass Option

HORT 844B Environmental Stress Physiology
Prerequisites: Admission to the Horticulture graduate certificate program; and permission
Notes: Distance education course delivered by North Carolina State University.
HORT 844B is offered spring every year and fall semester of even-numbered calendar years.
Description: Physiology of plant responses to environmental stresses, with emphasis on current research in selected physiological, molecular, and biochemical mechanisms for tolerance to environmental stresses, such as temperature extremes, drought, salt, pathogens and other plants.
Credit Hours: 1
Max credits per semester: 1
Max credits per degree: 1
Grading Option: Grade Pass/No Pass Option
HORT 844E General Viticulture
Prerequisites: Admission to the Horticulture graduate certificate program; and permission
Notes: Distance education course delivered by North Carolina State University. HORT 844E is offered spring semester of odd-numbered calendar years.
Description: Aspects of grapes from vine anatomy to final products. Cultivars, propagation, canopy management, diseases, weed control, physiology, anatomy, irrigation, wine production, climates and soils.
Credit Hours: 3
Max credits per semester: 3
Max credits per degree: 3
Grading Option: Grade Pass/No Pass Option

HORT 849 Woody Plant Growth and Development
Crosslisted with: BIOS 849, NRES 849
Prerequisites: CHEM 251 and AGRO 325
Description: Plant growth and development specifically of woody plants as viewed from an applied whole-plant physiological level. Plant growth regulators, structure and secondary growth characteristics of woody plants, juvenility, senescence, abscission and dormancy.
Credit Hours: 3
Max credits per semester: 3
Max credits per degree: 3
Grading Option: Grade Pass/No Pass Option

HORT 862 Cannabis Growth, Production and Breeding Basics
Crosslisted with: PLAS 462, AGRO 862
Prerequisites: PLAS 131 or LIFE 121; PLAS 215 or BIOS 206
Notes: PLAS 221 recommended
Description: History, breeding and production of cannabis for medicinal marijuana and hemp for fiber use when grown using a growth room, greenhouse, high tunnel and/or field. Clarification between scientific evidence and casual information.
Credit Hours: 2
Max credits per semester: 2
Max credits per degree: 2
Grading Option: Graded
Offered: FALL/SPR

HORT 871 Vines, Wines and You
Crosslisted with: PLAS 471, NUTR 471, NUTR 871, HRTM 471, HRTM 871
Prerequisites: 6 hrs science or equivalent experience; 21 years of age or older
Notes: Proof of age is required.
Description: Origin, botany, historical and cultural significance of the grapevine and related species. Principles and practices of vineyard establishment, management and processing of grape products, importance and/or scope of grape and wine industry; global and local significance. Culinary applications, health, environmental and safety-related issues, business and industry relations and experience.
Credit Hours: 3
Max credits per semester: 3
Max credits per degree: 3
Grading Option: Grade Pass/No Pass Option

HORT 878 Plant Anatomy
Crosslisted with: BIOS 478, BIOS 878, PLAS 478, AGRO 878
Prerequisites: 8 hrs biological sciences
Notes: BIOS 109 recommended.
Description: Development, structure, and function of tissues and organs of the higher plants. Relationships of structure to physiology and ecology of plants.
Credit Hours: 4
Max credits per semester: 4
Max credits per degree: 4
Grading Option: Grade Pass/No Pass Option
Prerequisite for: BIOS 879

HORT 880 Modified Root Zones
Crosslisted with: PLAS 480, TLMT 880, AGRO 880
Prerequisites: PLAS 153/SOIL 153
Notes: Recommend CHEM 105A/CHEM 105L or CHEM 109A/CHEM 109L, PLAS 131, PLAS 227, and PLAS 453 or PLAS 472
Description: Modified root zones and their applications in the turfgrass and landscape management industry. Correct applications and construction techniques.
Credit Hours: 1
Max credits per semester: 1
Max credits per degree: 1
Grading Option: Grade Pass/No Pass Option
Offered: SPRING

HORT 888 Entrepreneurship and Enterprise Development
Crosslisted with: PLAS 488, EAEP 488, ENTR 488, EAEP 888, AGRO 888, ENTR 888, ABUS 488
Description: The process of starting your own enterprise. Competitive environment, risk management, finance for business startups, funding, and business plan writing.
Credit Hours: 3
Max credits per semester: 3
Max credits per degree: 3
Grading Option: Grade Pass/No Pass Option
Offered: FALL/SPR

HORT 889 Urbanization of Rural Landscapes
Crosslisted with: PLAS 489, AGRO 889, CRPL 489, CRPL 889
Prerequisites: Senior standing or graduate standing.
Description: Development converts rural landscapes into housing, roads, malls, parks, and commercial uses. This process fragments landscapes and changes ecosystem functions, drives up land prices, and pushes agriculture into more marginal areas. This multi-disciplinary, experiential course guides students in learning about the urbanization process, the impacts on landscapes, people, and the community, and the choices that are available to informed citizens.
Credit Hours: 3
Max credits per semester: 3
Max credits per degree: 3
Grading Option: Grade Pass/No Pass Option

Course and Laboratory Fee: $95
HORT 894 Graduate Degree Project Credits
Crosslisted with: AGRO 894
Prerequisites: Admission to Master of Agronomy or Horticulture degree program
Notes: Project activity for the nonthesis option II MS degree.
Description: Design, develop and complete a project that requires synthesis of the course topics covered in the primary area of emphasis.
Credit Hours: 1-6
Min credits per semester: 1
Max credits per semester: 6
Max credits per degree: 6
Grading Option: Pass No-Pass

HORT 896 Independent Study
Prerequisites: 12 hrs plant sciences, permission and advance approval of plan of work
Description: Individual or group projects in research and literature review under supervision and evaluation of a departmental faculty member.
Credit Hours: 1-5
Min credits per semester: 1
Max credits per semester: 5
Max credits per degree: 5
Grading Option: Grade Pass/No Pass Option

HORT 897 Master of Applied Science Project
Crosslisted with: AGRI 897, AGRO 897, NRES 897, ASCI 897
Prerequisites: Admission to Master of Applied Science degree program
Notes: Project activity for the Master of Applied Science degree.
Description: Design, develop and complete a project that requires synthesis of the course topics covered in the primary area of emphasis.
Credit Hours: 1-6
Min credits per semester: 1
Max credits per semester: 6
Max credits per degree: 6
Grading Option: Grade Pass/No Pass Option

HORT 899 Masters Thesis
Prerequisites: Admission to masters degree program and permission of major adviser
Credit Hours: 1-10
Min credits per semester: 1
Max credits per semester: 10
Max credits per degree: 99
Grading Option: Pass No-Pass

HORT 919 Advanced Crop Genetics and Genomics
Crosslisted with: AGRO 919
Prerequisites: AGRO 215
Description: Focus student learning on principles related to mendelian, population, and molecular genetics of plants including allelisms, nonallelic gene interaction, linkage and recombination, mode of inheritance, mutation, epigenetics, DNA-based makers and mapping techniques, inheritance of qualitative and quantitative traits, and plant transformation.
Credit Hours: 3
Max credits per semester: 3
Max credits per degree: 3
Grading Option: Grade Pass/No Pass Option
Offered: FALL

HORT 920 Xenobiotics in the Environment
Crosslisted with: AGRO 920, ENTO 920, EOHT 920, NRES 920
Prerequisites: Recommend one course each in organic chemistry, soil science, biochemistry, plant physiology, microbiology and ecology
Description: Fate and ecotoxicological impacts of biologically foreign compounds in soil-water-plant environments; uptake, mechanisms of toxicity and metabolism in plants and other biota. Herbicides and other pesticides.
Credit Hours: 3
Max credits per semester: 3
Max credits per degree: 3
Grading Option: Grade Pass/No Pass Option

HORT 931 Population Genetics
Crosslisted with: AGRO 931, ASCI 931
Prerequisites: AGRO 215 and STAT 801A
Description: Structure of populations, forces affecting gene frequency and frequency of genotypes, continuous variation, population values and means, genotypic and environmental variances and covariances.
Credit Hours: 3
Max credits per semester: 3
Max credits per degree: 3
Grading Option: Grade Pass/No Pass Option

HORT 932 Population Genetics
Prerequisite for: AGRO 932, STAT 847; ASCI 932; ASCI 933; ASCI 944, STAT 844

HORT 963 Genetics of Host-Parasite Interaction
Crosslisted with: AGRO 963, PLPT 963
Prerequisites: BIOS 820; and permission
Credit Hours: 3
Max credits per semester: 3
Max credits per degree: 3
Grading Option: Graded

HORT 965 Plant Virology
Crosslisted with: PLPT 965, AGRO 965
Prerequisites: PLPT 801 or 802; and permission.
Notes: PLPT 865 is offered odd-numbered calendar years.
Description: Virus molecular biology; virosphere; virus-vector relationships; plant resistance to virus infection economic impact and control of plant diseases by viruses.
Credit Hours: 3
Max credits per semester: 3
Max credits per degree: 3
Grading Option: Grade Pass/No Pass Option
Offered: SPRING

HORT 968 Seminar in Plant Pathology
Crosslisted with: PLPT 968, AGRO 968
Prerequisites: Permission
Credit Hours: 1
Max credits per semester: 1
Max credits per degree: 1
Grading Option: Grade Pass/No Pass Option
Offered: SPRING

HORT 991 Seminar Presentation and Evaluation
Crosslisted with: AGRO 991
Description: Various topics in horticulture, agronomy or related subjects. Emphasis on techniques.
Credit Hours: 1
Max credits per semester: 1
Max credits per degree: 2
Grading Option: Grade Pass/No Pass Option
HORT 992 General Seminar
Crosslisted with: AGRO 992, NRES 992
Notes: Agronomy and Horticulture PhD students should enroll in this course twice.
Description: Expected of all Agronomy and Horticulture graduate students. Presentation of thesis/dissertation or non-thesis topics in agronomy, horticulture or related subjects. Agronomy and Horticulture PhD students should enroll in this course twice.
Credit Hours: 1
Max credits per semester: 1
Max credits per degree: 5
Grading Option: Pass No-Pass

HORT 996 Research Other Than Thesis
Prerequisites: Permission
Description: Investigations, without reference to thesis work, on genetic, physiological, ecological, meteorological, and morphological aspects of horticultural crops.
Credit Hours: 1-6
Min credits per semester: 1
Max credits per semester: 6
Max credits per degree: 6
Grading Option: Grade Pass/No Pass Option

HORT 999 Doctoral Dissertation
Crosslisted with: AGRO 999
Prerequisites: Admission to doctoral degree program and permission of supervisory committee chair.
Notes: AGRO 999 is pass/no pass only.
Credit Hours: 1-24
Min credits per semester: 1
Max credits per semester: 24
Max credits per degree: 99
Grading Option: Pass No-Pass