

PLANT and ENVIRONMENTAL SCIENCES

Professor Greg L. Mullins, department head

Professor John G. Mexal, assistant department head

Professors Bosland, Daugherty, Guldan, Harrington, Lindemann, Mexal, Monger, Mullins, O'Connell, Ray, Sammis, Sengupta-Gopalan; **Associate Professors** Cramer, Flynn, O'Neill, Picchioni, St. Hilaire, Ulery, Zhang; **Assistant Professors** Angadi, Goss, Shukla, Unc
(575) 646-3405; (575) 646-6041 (fax); (866) 884-7231 (toll free number)

DEGREE: Bachelor of Science in Agriculture

MAJOR: Agronomy
OPTION: Crop Consulting
OPTION: Plant Genetics
OPTION: General Agronomy
OPTION: Agronomic Business
OPTION: Agronomic Journalism

MAJOR: Horticulture
OPTION: Ornamental Horticulture
OPTION: Landscape Design
OPTION: Horticulture Business
OPTION: Crop Consulting
OPTION: Plant Genetics

MAJOR: Soil Science
OPTION: Soils
OPTION: Environment and Resource Management
OPTION: Soil and Water Science

MAJOR: Turfgrass Science and Management
OPTION: Athletic Field Management
OPTION: Golf Course Management
OPTION: Turfgrass Business
OPTION: Turfgrass Science

DEGREE: Bachelor of Science in Environmental Science
MAJOR: Environmental Science

DEGREE: Bachelor of Science
MAJOR: Genetics

The undergraduate program in Plant and Environmental sciences prepares you for a variety of careers in agriculture and related fields. Accordingly, a flexible curriculum has been designed that will allow specific programs to be developed in consultation with the your academic advisor. Programs may also be developed if you wish to prepare for advanced studies in graduate school. In addition to the courses listed for each major, 35 credits must be taken in the College of Agriculture and Home Economics, and the university general education requirements must be met.

DEGREE: Bachelor of Science in Agriculture
MAJOR: Agronomy

Agronomy is an understanding of the principles of plant and soil science and an application of these principles in the production of crops. Commercial sector careers include positions in agricultural consulting companies, agricultural seed or chemical companies, research and development with commercial companies, and farm and/or ranch management. Careers in county, state or federal agencies are in the areas of USDA, Cooperative Extension Service, Soil Conservation Service, Forest Service and Bureau of Land Management.

Requirements of Agronomy Major

At least 24 credits from agronomy and soil science courses with a grade of C or above, including the following:

AGRO 100G, Introduction to Plant Science	4
AGRO 305, Principles of Genetics	3

AGRO 365, Principles of Crop Production	4
AGRO 447, Seminar	1
AGRO 483, Sustainable Production of Agronomic Crops	3
SOIL 252, Soils	3
SOIL 252L, Soils Laboratory	1
SOIL 312, Soil Management and Fertility	3
SOIL 312L, Soil Management and Fertility Lab	1
Other required courses include:	
AG E 250G, Life with Microcomputers	3
BIOL 111G, Natural History of Life, or BIOL 211G, Cellular and Organismal Biology	3
CHEM 111, 112, General Chemistry I, II	8
CHEM 211, Organic Chemistry	4
EPWS 311, Weed Science; or EPWS 303, Economic Entomology; or EPWS 310, Plant Pathology	4
E ST 311G, Statistical Applications	3
MATH – to equal the proficiency level of MATH 142G or MATH 121	3
Five options are available in the agronomy major. In addition to the completion of the requirements of the major listed above, you must elect an option and complete 25 credits from the requirements for that option. The Agronomic Business and Agronomic Journalism options may be satisfied by obtaining a minor in business administration through the College of Business Administration and Economics or by obtaining a minor in journalism and mass communications through the College of Arts and Sciences, respectively. To deviate from the courses required within an option, you must file a formal petition, subject to approval by departmental committee. You should develop a specific program of study in consultation with a departmental agronomy advisor.	
OPTION: Crop Consulting	
Required courses marked with an asterisk (*).	
AGRO 365, Principles of Crop Production*	4
AGRO 462, Plant Breeding*	3
AGRO 492, Diagnosing Plant Disorders*	3
AG E 236, Agribusiness Management Principles	3
AG E 315G, World Agriculture and Food Problems	3
AG E 450, Advanced Microcomputer Applications in Agriculture	3
AGRO 311, Weed Science	4
B A 202, Small Business Enterprise	3
EPWS 314, Plant Physiology	3
EPWS 455, Advanced Insect Pest Management	3
EPWS 456, Biological Control	3
HORT 471, Plant Mineral Nutrition	3
HORT 485, Vegetable Crop Management	3
SOIL 312, Soil Management and Fertility	3
SOIL 312L, Soil Management and Fertility Lab	1
SOIL 456, Irrigation and Drainage	3
SPAN 111, Elementary Spanish I	4
SPAN 211, Intermediate Spanish I	3
OPTION: Plant Genetics	
Required courses marked with an asterisk (*).	
AGRO 303G, Genetics and Society	3
AGRO 305L, Genetics Techniques	1
AGRO 340, Plant Tissue Culture Methods	3
AGRO 449, Special Problems (Independent Research)	1-3
AGRO 462, Plant Breeding	3
AGRO 486, Intermediate Genetics*	3
ANSC 423, Animal Breeding	3
BIOL 431, Genetic Aspects of Population Biology	3
BIOL 467, Evolution	3
BIOL 478, Molecular Biology of Microorganisms	3
BCHE 341, Survey of Biochemistry*	3
EPWS 314, Plant Physiology*	3
HORT 452, Independent Studies in Bioinformatics	1-3
MOLB 470, Genome Analysis and Bioinformatics	3

OPTION: General Agronomy

Required courses marked with an asterisk ().*

AG E 236, Agribusiness Management Principles	3
AG E 305, Marketing and Pricing Agricultural Products	3
AG E 315G, World Agriculture and Food Problems	3
AGRO 357, Climatology	3
AGRO 391, Internship	1-3
AGRO 471, Plant Mineral Nutrition*	3
AGRO 492, Diagnosing Plant Disorders*	3
BIOL 312, Plant Taxonomy	4
BIOL 313, Structure and Function of Plants*	4
BLAW 316, Legal Environment of Business	3
EPWS 314, Plant Physiology	3
HORT 250, Plant Propagation	3
HORT 350, Arboriculture	3
HORT 485, Vegetable Crop Management	3
RGSC 294, Rangeland Resource Management	3
RGSC 325, Rangeland Restoration Ecology	3
RGSC 465, Public Lands Policy and Analysis	3
SOIL 456, Irrigation and Drainage	3
SUR 221, General Surveying	3

DEGREE: Bachelor of Science in Agriculture

MAJOR: Horticulture

Horticulture includes a wide variety of topics that relate to fruit, vegetable, and ornamental crops, and their uses. Careers range from production management to processing and marketing, retail and wholesale management, greenhouse and nursery production, floriculture, landscaping, turf management, research and development, various service activities and positions with local, state, and federal agencies.

Requirements of Horticulture Major

Each of the following courses is required:

BIOL 111G, Natural History of Life, or BIOL 211G, Cellular and Organismal Biology	3
BIOL 314, Plant Physiology	3
CHEM 111, 112, General Chemistry I, II or CHEM 114 and CHEM 211	8
EPWS 303, Economic Entomology	4
EPWS 310, Plant Pathology	4
HORT 447, Seminar	1
MATH 142G, Applied Mathematics for the Biological and Social Sciences, or MATH 121, College Algebra	3
SOIL 252, Soils	3

At least 29 credits from horticulture courses with a grade of C or above.

Choose from the following courses:

HORT 100G, Introductory Plant Science	4
HORT 115, Introduction to Forestry	3
HORT 200, Special Topics	1-4
HORT 210, Ornamental Plants I	4
HORT 211, Ornamental Plants II	4
HORT 240, Floral Quality Evaluation and Design	2
HORT 241, Floriculture Field Practicum	1
HORT 250, Plant Propagation	3
HORT 300, Special Topics	1-4
HORT 301, Introduction to Landscape Horticulture	3
HORT 302G, Forestry and Society	3
HORT 305, Principles of Genetics	3
HORT 305L, Genetics Techniques	1
HORT 307, Landscape Design	3
HORT 308, Landscape Construction	3
HORT 310, Medicinal Herbs	3
HORT 310L, Medicinal Herbs Laboratory	1
HORT 330, Organic Fall Vegetable Production (f)	3
HORT 331, Organic Spring Vegetable Production (s)	3

HORT 340, Plant Tissue Culture Methods	3
HORT 350, Arboriculture	2
HORT 360, Biological Information Systems	3
HORT 365, Principles of Crop Production	4
HORT 391, Internship	1-3
HORT 401, Turf Management	4
HORT 420, Postharvest Biology and Technology	4
HORT 447, Seminar	1
HORT 449, Special Problems	1-3
HORT 450, Special Topics	1-4
HORT 452, Independent Studies in Bioinformatics	1-3
HORT 460, System Analysis & Automation in Biological Laboratories	3
HORT 462, Plant Breeding	3
HORT 465, Landscape Case Studies	3
HORT 471, Plant Mineral Nutrition	3
HORT 475, Woody Plant Physiology	3
HORT 484, Ornamental Plant Production and Management	4
HORT 485, Vegetable Crop Management	4
HORT 486, Intermediate Genetics	3
HORT 488, Greenhouse Management	4
HORT 492, Diagnosing Plant Disorders	3

Five options are available in the horticulture major. In addition to the completion of the requirements of the major listed above, you must elect an option and complete the requirements for that option. You should develop a specific program of study in consultation with a departmental horticulture advisor. If you want to apply for certification as a professional horticulturist, you should also complete HORT 305, Genetics, and either BCHE 341, Biochemistry, or CHEM 211, Organic Chemistry.

OPTION: Ornamental Horticulture

Select 4 courses from the following list:

HORT 210 or 211, Ornamental Plants I, II	4
HORT 250, Plant Propagation	3
HORT 301, Introduction to Landscape Horticulture	3
HORT 365, Principles of Crop Production	4
HORT 484, Ornamental Plant Production and Management	4
HORT 488, Greenhouse Management	4

Select 8 courses from the following list (or similar alternative courses with same prefix and level after consultation with advisor):

AG E 236, Agribusiness Management Principles	3
AG E 250G, Life with Microcomputers, or C S 110G, Computer Literacy	3
AG E 305, Marketing and Pricing Agricultural Products, or MKTG 303, Principles of Marketing	3
AG E 425, Agribusiness Financial Management	3
AGRO 311, Weed Science	4
BIOL 301, Principles of Ecology	3
BIOL 313, Structure and Function of Plants	3
BLAW 316, Legal Environment of Business	3
EPWS 452, Applied Pesticide Technology	3
EPWS 456, Biological Control	3
MGT 315G, Human Relations in Organizations	3
MKT 313, Retail Management	3
SOIL 312, Soil Management and Fertility	3

OPTION: Landscape Design

Required courses:

HORT 210, Ornamental Plants I	4
HORT 211, Ornamental Plants II	4
HORT 307, Landscape Design	3
HORT 308, Landscape Construction	3
HORT 465, Landscape: Case Studies	3

Select 8 courses from the following:

A EN 372, Landscape Irrigation Design or A EN 479, Irrigation Systems Design and Management	3
---	---