Department of Plant and Soil Sciences

Department Head: Dr. Darrin Dodds
Office: 117 Dorman Hall

Plant and Soil Sciences curricula focus on the application of sciences to the integrated management of plants, soil, and climate for high-quality production of food, fiber, fuel, and ornamental plants. Central to this course of study is the dedication to conserve, maintain and enhance our environment. An undergraduate student may major in Agronomy (AGN), Envrionmental Sciences in Agricultural Systems (ESAS), or Horticulture (HO) and specialize in concentration areas such as Agricultural and Environmental Soil Sciences (AGN), Golf and Sports Turf Management (AGN), Integrated Crop Management (AGN), Integrated Pest Management (AGN), Floral Management (HO), Floriculture and Ornamentals (HO), and Fruit and Vegetable Production (HO). A grade of "C" or better is required in all required PSS courses in the student's major prior to completion of the degree.

Graduate programs (M.S. and Ph.D.) are also offered in the Department of Plant and Soil Sciences in the major of Plant and Soil Sciences, with concentrations in Agronomy, Horticulture, and Weed Science. Consult the Graduate Bulletin for additional details.

BS in Agronomy (AGN)

Degree Requirements

English Composition		
EN 1103	English Composition I	3-4
or EN 1104	Expanded English Composition I	
EN 1113	English Composition II	3
or EN 1173	Accelerated Composition II	
Mathematics		
MA 1313	College Algebra	3
Select 3 hours from the General Education courses or see Concentrations:		3
Science		
BIO 2113	Plant Biology [1]	3-4
or BIO 1144	Biology II	
PSS 1313	Plant Science [1]	3
See major core/concentration		
Humanities		
See major core/concentration or General Education list		6
Fine Arts		
See major core/concentration or General Education list		3
Social Science		
AEC 2713	Introduction to Food and Resource Economics	3
or EC 2113	Principles of Macroeconomics	
or EC 2123	Principles of Microeconomics	
Select 3 hours from GenEd list		3
Major Core		
PSS 3301	Soils Laboratory [1]	1
PSS 3303	Soils [1]	3
BIO 4214	General Plant Physiology	3-4
or PSS 4113	Agricultural Crop Physiology	
PSS 4313	Soil Fertility and Fertilizers	3
Oral Communication Requirement:		
CO 1003	Fundamentals of Public Speaking	3
or CO 1013	Introduction to Communication	
Writing Requirement		
AELC 3203	Professional Writing in Agriculture, Natural Resources, and Human Sciences	3
Total Hours		**49-53**

[1] Satisfies General Education requirement

Choose one of the following concentrations:

Agricultural and Environmental Soil Sciences Concentration (SOSI)

Advisors: Professors Michael Cox, William Kingery, and Jac Varco

The Agricultural and Environmental Soil Science curriculum provides an educational foundation in soil processes involving physical, chemical, and biological interrelationships. The soil resource is an integral component of our environment and is subject to loss and degradation through human activities. Humanity's dependence on soil for food and fiber production and the need for ensuring environmental quality require individuals trained in the management of this resource. Career opportunities exist both nationally and internationally in agricultural and environmental consulting, agribusiness, government agencies, teaching, and research. Required courses provide soil science training, while elective courses can be selected to meet specific needs.

Internship: SOSI students must complete a miniumum one semester internship with an approved internship spnosor in industry, private consulting firms/individuals, or governmental agencies.

GR 1123	Introduction to World Geography [1]	3
MA 1323	Trigonometry [1]	3
MA 1713	Calculus I [1]	3
ST 3123	Introduction to Statistical Inference	3
BIO 3304	General Microbiology	4
CH 1211	Investigations in Chemistry I [1]	1
CH 1213	Chemistry I [1]	3
CH 1221	Investigations in Chemistry II [1]	1
CH 1223	Chemistry II [1]	3
CH 2311	Analytical Chemistry I Laboratory	1
CH 2313	Analytical Chemistry I	3
CH 4513	Organic Chemistry I	3
CH 4523	Organic Chemistry II	3
GG 1111	Earth Sciences I Laboratory	1
GG 1113	Survey of Earth Sciences I	3
PH 1113	General Physics I	3
PH 1123	General Physics II	3
PSS 3423	Agronomy Internship	3
PSS 4314	Microbiology and Ecology of Soil	4
PSS 4323	Soil Classification	3
PSS 4333	Soil Conservation and Land Use	3
PSS 4603	Soil Chemistry	3
Restricted Electives (see advisor) [2]		15
Computer Science Requirement		
AELC 4203	Applications of Computer Tech to Agricultural Education, Leadership, and Communications	3
or TKT 1273		
Total Hours		**121-122**

1 Satisfies General Education requirements.

2 Restricted Electives. Select from: ABE 4263, ADS 1113, AEC 3133, BCH 4013, BIO 4213, BIO 4404, CH 3213, CH 4303, CH 4403, CH 4413, EPP 2213, EPP 4113, GG 3133, GG 4114, GG 4304, GG 4503, GR 2313, GR 3113, GR 4603, MA 1723, PSS 3133, PSS 4103, PSS 4123, PSS 4133, PSS 4223, PSS 4373, PSS 4413, PSS 4483, PSS 4553.

Golf and Sports Turf Management Concentration (GSTM)

Advisor: Associate Professor Barry Stewart

Golf and Sports Turf Management (GSTM) is the study of plant and soil sciences for the culture of turfgrass on golf and sports facilities. The GSTM curriculum prepares individuals for careers as golf course superintendents at private, daily fee, and resort courses or as sports turf managers at city, school, and professional sports turf facilities (i.e. football, baseball, soccer fields.) New construction of golf courses and sports facilities has led to a heightened demand for trained golf and sports turf management professionals. Three semesters of Cooperative Education work experience will be required of all students enrolled in the GSTM concentration.

Cooperative Education Requirements: GSTM students must complete a minimum 12 months or three semesters of Coop work at a golf course with an individual who is certified or progressing toward certification with the Golf Course Superintendents Association of America or at a sports stadium with a recognized sports turf manager. One of the three Coop semesters enrolled by the student must be a non-summer semester period. A 2.50 cumulative GPA on all MSU work is required to participate in the GSTM program. All new students must register with their coop advisor early in their initial semester of enrollment.

ACC 2013	Principles of Financial Accounting	3
ABE 2873	Land Surveying	3
BIO 1134	Biology I	4
CH 1043	Survey of Chemistry I [1]	3
or CH 1213	Chemistry I	
CH 1053	Survey of Chemistry II [1]	3
or CH 1223	Chemistry II	
CH 1051	Experimental Chemistry [1]	1
or CH 1211	Investigations in Chemistry I	
CH 2503	Elementary Organic Chemistry	3
CH 2501	Elementary Organic Chemistry Laboratory	1
EPP 3423	Ornamental and Turfgrass Insects	3
EPP 4113	Principles of Plant Pathology	3
EPP 4523	Turfgrass Diseases	3
FLS 1113	Spanish I [1]	3
FLS 1123	Spanish II [1]	3
LA 4344	Landscape Architecture Construction IV	4
MA 1323	Trigonometry [1]	3
or ST 2113	Introduction to Statistics	
or MA 2113	Introduction to Statistics	
MGT 3513	Introduction to Human Resource Management	3
PSS 2111	Turf Management Lab	1
PSS 2113	Introduction to Turfgrass Science	3
PSS 2423	Plant Materials I	3
PSS 3133	Introduction to Weed Science	3
PSS 3411	Turf Seminar I	1
PSS 3421	Turn Seminar II	1
PSS 4353	Arboriculture and Landscape Maintenance	3
PSS 4413	Turfgrass Management	3
PSS 4423	Golf Course Operations	3
PSS 4443	Athletic Field Management	3
PSS 4823	Turfgrass Weed Management	3
Restricted Electives (see advisor) [2]		6
Sustainability Elective (see advisor) [3]		3
CP 2103	First Work Semester	3
CP 2203	Second Work Semester	3
CP 3303	Third Work Semester	3
Computer Science Requirement		
Satisfied by successful completion of PSS 4423 and PSS 4443		
Total Hours		**122-123**

1 Satisfies General Education requirements.

2 Restricted Electives. Select from: ABE 2173, BCH 4013, CO 3213, CO 2253, CO 3833, FIN 2003, GR 1604, KI 2213, LA 3603, LA 4753, PE 1081, PH 1113, PSS 3473, PSS 3633, PSS 3923, PSS 4043, PSS 4223, PSS 4314, PSS 4323, PSS 4333,PSS 4343 PSS 4363, PSS 4373, PSS 4503, PSS 4553

3 Sustainability Electives: LA 4753, PSS 3633, PSS 4363.

Integrated Crop Management Concentration (ICM)

Advisors: Professors Brian Baldwin, Jac Vacaro, William Kingery, Michael Cox
Associate Professors Ted Wallace

Integrated Crop Management (ICM) is the study of food and fiber production utilizing ecologically sound and technologically advanced methods. Areas covered include basic concepts of plant science and specific practices in crop initiation, culture, harvesting, processing, distribution and marketing. Methods of germplasm enhancement are taught. Specific program areas of study include agronomic crop production, crop science, fruit science, seed science, seed technology, and vegetable crop production. Students completing the Integrated Crop Management curriculum are prepared for careers as producers, consultants, technical representatives, assistant plant breeders, extension agents, or inspectors with USDA and state agencies. This curriculum also provides a good background of basic sciences for those who wish to pursue graduate studies.

Internship: ICM students must complete a minimum one semester internship with an approved internship sponsor in industry, private consulting firms/ individuals, or governmental agencies.

AEC 3133	Introductory Agribusiness Management	3
BCH 4013	Principles of Biochemistry	3
BIO 3304	General Microbiology	4
or PSS 4314	Microbiology and Ecology of Soil	
CH 1043	Survey of Chemistry I [1]	3
or CH 1213	Chemistry I	
CH 1053	Survey of Chemistry II [1]	3
or CH 1223	Chemistry II	
CH 1051	Experimental Chemistry	1
or CH 1211	Investigations in Chemistry I	
CH 2503	Elementary Organic Chemistry	3
CH 2501	Elementary Organic Chemistry Laboratory	1
EPP 2213	Introduction to Insects	3
EPP 4113	Principles of Plant Pathology	3
MKT 3013	Principles of Marketing	3
PO 3103	Genetics I	3
PSS 3133	Introduction to Weed Science	3
PSS 3423	Agronomy Internship	3
Restricted Electives (see advisor) [2]		24
Unrestricted Electives		6
Computer Science Requirement		
AELC 4203	Applications of Computer Tech to Agricultural Education, Leadership, and Communications	3
or TKT 1273		
Writing Requirement		
See Major Core		
Total Hours		**121-122**

1 Satisfies General Education requirements.

2 Restricted Electives. Select from: ABE 3513, EPP 4163, EPP 4234, EPP 4263, GA 1111, MA 1713, PH 1113, PSS 2423, PSS 3043, PSS 3923, PSS 4103, PSS 4123, PSS 4133, PSS 4143, PSS 4223,PSS 4314, PSS 4323, PSS 4333, PSS 4343, PSS 4363, PSS 4373, PSS 4413, PSS 4453, PSS 4483, PSS 4503,PSS 4553, PSS 4603, PSS 4633, PSS 4813.

Integrated Pest Management Concentration (IPM)

Major Advisor: Assistant Professor Fred R. Musser and Connor Ferguson

Integrated Pest Management (IPM) is an interdisciplinary concentration of study in Entomology, Plant Pathology and Weed Science jointly administered by the Department of Entomology and Plant Pathology and the Department of Plant and Soil Sciences. Effective management of pest problems requires a broad base of knowledge in the pest disciplines and practical field experience. The Integrated Pest Management concentration features a strong core of courses in the three pest disciplines (entomology, plant pathology, and weed science); a strong background in biological and physical sciences; and practical training through an internship. The curriculum is designed to meet the needs of students who wish to pursue advanced degrees and of students who wish to terminate their higher education with a baccalaureate degree. A range of restricted and non-restricted electives allows students to personalize their degree program for careers in crop production, agri-business, natural resource management, and/or graduate studies preparation. A

grade of “C” or better is required in all courses with the EPP or PSS prefix prior to completion of the degree. No course may be transferred for credit from another college or university in which a grade of “D” was made.

Graduates are well prepared for employment with industry; state and federal research, extension and regulatory agencies; private agricultural consulting firms; farmer’s cooperatives; nurseries, home and garden centers; greenhouse plant production; and corporate farms.

Internship: IPM students must complete a minimum one semester internship with an approved internship sponsor in industry, private consulting firms/individuals, or governmental agencies.

BIO 1134	Biology I [1]	4
CH 1051	Experimental Chemistry	1
or CH 1211	Investigations in Chemistry I	
CH 1043	Survey of Chemistry I [1]	3
or CH 1213	Chemistry I	
CH 1053	Survey of Chemistry II [1]	3
or CH 1223	Chemistry II	
CH 2503	Elementary Organic Chemistry	3
EPP 4113	Principles of Plant Pathology	3
EPP 4154	General Entomology	4
EPP 4163	Plant Disease Management	3
EPP 4263	Principles of Insect Pest Management	3
PO 3103	Genetics I	3
PSS 3133	Introduction to Weed Science	3
PSS 3423	Agronomy Internship	3
PSS 4553	Plant Growth and Development	3
PSS 4633	Weed Biology and Ecology	3
PSS 4813	Herbicide Technology	3
ST 2113	Introduction to Statistics [1]	3
or ST 3123	Introduction to Statistical Inference	
Restricted Electives (see advisor) [2]		18
Unrestricted Electives		6
Writing Requirement		
See Major Core		
Computer Literacy		
AELC 4203	Applications of Computer Tech to Agricultural Education, Leadership, and Communications	3
or TKT 1273		
Total Hours		**121-122**

1 Satisfies University Core.

2 Restricted Electives. Select from: ABE 3513, ABE 4313, ACC 2013, AEC 3113, AEC 3133, AEC 3213, AEC 3233, AEC 3513, AEC 4123, BIO 3304, BIO 4203, EPP 3124, EPP 3423, EPP 4214, EPP 4234, EPP 4244,EPP 4523 EPP 4543,FO 4313, FO 4453, GR 2313, GR 3303, GR 4303, GR 4323, LA 1333, MGT 3513, MKT 3013, PSS 2423, PSS 3473, PSS 4103, PSS 4123, PSS 4133, PSS 4314, PSS 4323, PSS 4333, PSS 4343, PSS 4353, PSS 4363, PSS 4373, PSS 4411, PSS 4413, PSS 4453, WFA 4153, WFA 4253.

BS in Environmental Sciences in Agricultural Systems (ESAS)

Major Advisor: Dr. Michael Cox

The Environmental Sciences in Agricultural Systems (ESAS) curriculum provides an educational foundation to prepare students for diversified careers focused on environmental issues related to agronomic and horticultural production. Students completing this curriculum are prepared for careers in national and international environmental agricultural consulting, government conservation agencies, teaching, and research. Required courses provide training in environmental sciences related to agricultural issues.

Degree Requirements

English Composition		
EN 1103	English Composition I	3-4
or EN 1104	Expanded English Composition I	

EN 1113	English Composition II	3
or EN 1173	Accelerated Composition II	
Mathematics		
MA 1313	College Algebra	3
ST 3123	Introduction to Statistical Inference	3
or MA 1323	Trigonometry	
Natural Sciences		
BIO 1134	Biology I	4
CH 1211	Investigations in Chemistry I	1
CH 1213	Chemistry I	3
CH 1221	Investigations in Chemistry II	1
Humanities		
FLS 1113	Spanish I	3
FLS 1123	Spanish II	3
Fine Arts		
Select from General Education courses		3
Social/Behavioral Sciences		
Choose one of the following:		3
AEC 2713	Introduction to Food and Resource Economics	
EC 2113	Principles of Macroeconomics	
EC 2123	Principles of Microeconomics	
Select additional course from General Education options		3
Oral Communication Requirement		
CO 1003	Fundamentals of Public Speaking	3
or CO 1013	Introduction to Communication	
Computer Literacy Requirement		
AELC 4203	Applications of Computer Tech to Agricultural Education, Leadership, and Communications	3
or AEC 1223	Computer Applications for Agriculturists and Life Scientists	
Junior Level Writing Requirement		
AELC 3203	Professional Writing in Agriculture, Natural Resources, and Human Sciences	3
Major Core		
ADS 1113 & ADS 1121	Animal Science and Animal Science Laboratory	4
BIO 1144	Biology II	4
BIO 2503	Environmental Quality	3
BIO 3304	General Microbiology	4
BIO 4214	General Plant Physiology	3-4
or PSS 4113	Agricultural Crop Physiology	
CH 1223	Chemistry II	3
CH 2501	Elementary Organic Chemistry Laboratory	1
CH 2503	Elementary Organic Chemistry	3
ENS 2103	Introduction to Environmental Science	3
GG 1111	Earth Sciences I Laboratory	1
GG 1113	Survey of Earth Sciences I	3
GG 3613	Water Resources	3
PH 1113	General Physics I	3
PO 3103	Genetics I	3
PSS 1313	Plant Science	3
PSS 3301	Soils Laboratory	1
PSS 3303	Soils	3
PSS 3423	Agronomy Internship	3
or PSS 3433	Horticulture Internship	

Agricultural Systems Electives - see advisor for list of approved courses	6
Restricted Electives - see advisor for list of approved courses	21
Total Hours	**123-124**

BS in Horticulture (HO)

Degree Requirements

English Composition		
EN 1103	English Composition I	3
or EN 1104	Expanded English Composition I	
EN 1113	English Composition II	3
or EN 1173	Accelerated Composition II	
Mathematics		
MA 1313	College Algebra	3
See concentration requirements		
Science		
See concentration requirements		
Humanities		
See concentration requirements		
Fine Arts		
See concentration requirements		
Social/Behavioral Sciences		
AEC 2713	Introduction to Food and Resource Economics *	3
or EC 2123	Principles of Microeconomics	
or EC 2113	Principles of Macroeconomics	
See concentration requirements		3
Major Core		
ACC 2013	Principles of Financial Accounting	3
EPP 2213	Introduction to Insects	3
or EPP 3423	Ornamental and Turfgrass Insects	
MKT 3013	Principles of Marketing	3
PSS 1313	Plant Science	3
PSS 3511	Seminar	1
PSS 3923	Plant Propagation	3
Writing Requirement		
AELC 3203	Professional Writing in Agriculture, Natural Resources, and Human Sciences	3
Oral Communcation Requirement		
CO 1003	Fundamentals of Public Speaking	3
or CO 1013	Introduction to Communication	
Computer Literacy Requirement		
AEC 1223	Computer Applications for Agriculturists and Life Scientists	3
or AELC 4203	Applications of Computer Tech to Agricultural Education, Leadership, and Communications	
or BIS 1012	Introduction to Business Information Systems	
or TKT 1273		

* Students in Floral Management concentration may not select EC 2113.

Choose one of the following concentrations:

Floral Management Concentration (FLMG)

Instructors: Lynette McDougald and Dr. Coleman Etheredge

Floral Management involves sourcing, purchasing, distributing, marketing, designing with, and selling floricultural products. Students enrolled in this concentration are provided with courses in design and horticulture, balanced with business and sciences. Career opportunities for graduates include

retailing, wholesaling, special event designing, and display gardening. The University Florist, a professional flower shop owned and operated by the Department of Plant and Soil Sciences on the MSU campus, provides students with work and management opportunities.

Internship Requirements (PSS 3413): FM majors must complete a 10 week, 400 clock hour work experience in a floral industry enterprise. The internship requirement may be completed any semester after successful completion of PSS 2343 Floral Design.

Additional General Education courses		
BIO 2113	Plant Biology [1]	3
CH 1043	Survey of Chemistry I [1]	3
or CH 1213	Chemistry I	
CH 1053	Survey of Chemistry II [1]	3
or CH 1223	Chemistry II	
CH 1051	Experimental Chemistry [1]	1
or CH 1211	Investigations in Chemistry I	
PSS 2343	Floral Design [1]	3
Math course from General Education [1]		3
Humanities - Select from General Education courses [1]		6
Concentration courses		
ACC 2023	Principles of Managerial Accounting	3
ART 1113	Art Appreciation	3
ART 1123	Design I	3
BL 2413	The Legal Environment of Business	3
EC 2113	Principles of Macroeconomics	3
FIN 3113	Financial Systems	3
HS 2603	Interior Design Fundamentals	3
LA 1423	History of Landscape Architecture	3
PS 1113	American Government	3
PSS 2423	Plant Materials I	3
PSS 3313	Interior Planting Design and Maintenance	3
PSS 3343	Wedding Floral Design	3
PSS 3413	Floristry Internship	3
PSS 3443	Permanent Botanical Floral Design	3
PSS 4023	Floral Management	3
PSS 4073	Sympathy Floral Design	3
PSS 4083	Floral Design for Special Events	3
PSS 4093	Post-harvest Care of Cut Floral Crops	3
PSY 1013	General Psychology [1]	3
Restricted Electives (see advisor) [2]		6
Total Hours		**121**

1 Satisfies General Education requirements.

2 Restricted Electives. Select from: EPP 4113, PSS 3043, PSS 3303, PSS 3473, PSS 4000,PSS 4043, PSS 4143, PSS 4343, PSS 4353, PSS 4363, PSS 4453, PSS 4503, PSS 4613.

Floriculture and Ornamental Horticulture Concentration (FLOR)

Advisors: Professor Richard L. Harkess

Floriculture and Ornamental Horticulture offers diversified opportunities that are challenging, intellectually stimulating, and economically rewarding. Floriculture and Ornamental Horticulture is the science and art of producing, distributing, and marketing flowers, flowering and foliage plants. It offers a wide variety of employment opportunities and competitive salaries. Students completing this curriculum are prepared for many different careers including greenhouse or nursery management, landscape management, public service, research and technical product research and sales.

Additional General Education courses		
BIO 1134	Biology I [1]	4
BIO 2113	Plant Biology [1]	3-4
or BIO 1144	Biology II	

CH 1043	Survey of Chemistry I [1]	3
or CH 1213	Chemistry I	
CH 1051	Experimental Chemistry [1]	1
or CH 1211	Investigations in Chemistry I	
CH 1053	Survey of Chemistry II [1]	3
or CH 1223	Chemistry II	
MA /ST 2113	Introduction to Statistics [1]	3
FLS 1113	Spanish I [1]	3
FLS 1123	Spanish II [1]	3
Social Sciences - select from General Education courses [1]		3
PSS 2343	Floral Design [1]	3
or LA 1803	Landscape Architecture Appreciation	
Concentration courses		
BIO 4214	General Plant Physiology	3-4
or PSS 4113	Agricultural Crop Physiology	
CH 2501	Elementary Organic Chemistry Laboratory	1
CH 2503	Elementary Organic Chemistry	3
EPP 4113	Principles of Plant Pathology	3
PO 3103	Genetics I	3
PSS 2423	Plant Materials I	3
PSS 3301	Soils Laboratory	1
PSS 3303	Soils	3
PSS 3313	Interior Planting Design and Maintenance	3
PSS 3433	Horticulture Internship	3
PSS 3473	Plant Materials II	3
PSS 4341	Controlled Environment Agriculture Laboratory	1
PSS 4343	Controlled Environment Agriculture	3
PSS 4363	Sustainable Nursery Production	3
PSS 4613	Floriculture Crop Programming	3
Restricted Electives (see advisor) [2]		18
Total Hours		**122**

1 Satisfies General Education requirements.

2 Restricted Electives. Select from: AEC 3133 AEC 3413, BCH 4013, BIO 3304, BIO 4204,BIO 4203, BIO 4213, BIO 4404, EPP 4163, EPP 4263, FLS 2133, FLS 2143, LA 1333, LA 4753,MKT 3213, PSS 2113, PSS 2343, PSS 3133, PSS 3043, PSS 3343, PSS 3443, PSS 3633, PSS 4000, PSS 4023, PSS 4073, PSS 4083, PSS 4093 PSS 4143, PSS 4313, PSS 4353, PSS 4043, PSS 4413, PSS 4453, PSS 4503, PSS 4553.

Fruit and Vegetable Production (FVP)

Advisors: Professor Richard Harkess and Assistant Professor Tongyin Li

Fruit and Vegetable Production (FVP) offers opportunities that are challenging, intellectually stimulating, and economically rewarding. Fruit and Vegetable Production focuses on the production, distribution, and marketing of fruits and vegetables for local consumption and commercial markets. It offers a wide variety of employment opportunities and competitive salaries. Students completing this curriculum are prepared for careers in local and commercial production of fruits and vegetables, marketing, quality control, purchasing, research, and technical product research sales.

Additional General Education courses		
BIO 1134	Biology I [1]	4
BIO 2113	Plant Biology [1]	3-4
or BIO 1144	Biology II	
CH 1043	Survey of Chemistry I [1]	3
or CH 1213	Chemistry I	
CH 1051	Experimental Chemistry	1
or CH 1221	Investigations in Chemistry II	
CH 1053	Survey of Chemistry II [1]	3

or CH 1223	Chemistry II	
MA 2113	Introduction to Statistics [1]	3
or ST 2113	Introduction to Statistics	
FLS 1113	Spanish I [1]	3
FLS 1123	Spanish II [1]	3
Social Sciences - Select from General Education courses [1]		3
Fine Arts - Select from General Education courses [1]		3
Concentration courses		
BIO 4214	General Plant Physiology	3-4
or PSS 4113	Agricultural Crop Physiology	
CH 2501	Elementary Organic Chemistry Laboratory	1
CH 2503	Elementary Organic Chemistry	3
EPP 4113	Principles of Plant Pathology	3
PO 3103	Genetics I	3
PSS 3043	Fruit Science	3
PSS 3133	Introduction to Weed Science	3
PSS 3301	Soils Laboratory	1
PSS 3303	Soils	3
PSS 3433	Horticulture Internship	3
PSS 3633	Sustainable and Organic Horticulture	3
PSS 4143	Advanced Fruit Science	3
PSS 4313	Soil Fertility and Fertilizers	3
PSS 4453	Vegetable Production	3
Restricted Electives		12
Free Electives		6
Total Hours		**121**

1 Satisfies General Education requirements.

2 Restricted Electives. Select from: AEC 3133, AEC 3413, BCH 4013, BIO 3304, BIO 4204, BIO 4203, BIO 4213, BIO 4404, EPP 4163, EPP 4263 FNH 4114, FNH 4164, FNH 4193, FNH 4583, MKT 3213, PH 1113, PSS 2423, PSS 3473, PSS 4000, PSS 4093, PSS 4314, PSS 4333,PSS 4341,PSS 4343, PSS 4373, PSS 4043, PSS 4483, PSS 4503, PSS 4553, PSS 4633, PSS 4813

Minors

Agronomy

There is a growing need for people with specialized knowledge outside the field of agronomy. The agronomic industry recruits and employs personnel trained in areas such as accounting, biological sciences, business, computer science, human nutrition, microbiology, engineering, advertising and marketing, veterinary medicine, human resource management and law. A minor in Agronomy provides these individuals enhanced employment opportunities in agriculture.

Students seeking an Agronomy minor are required to complete the following courses to receive a minor in Agronomy:

PSS 1313	Plant Science	3
PSS 3303	Soils	3
PSS 3133	Introduction to Weed Science	3
Choose 9 hours from the following:		9
PSS 2111	Turf Management Lab	
PSS 2113	Introduction to Turfgrass Science	
PSS 4103	Forage and Pasture Crops	
PSS 4123	Grain Crops	
PSS 4133	Fiber and Oilseed Crops	
PSS 4223	Seed Production	
PSS 4313	Soil Fertility and Fertilizers	
PSS 4314	Microbiology and Ecology of Soil	
PSS 4323	Soil Classification	

PSS 4333	Soil Conservation and Land Use	
PSS 4373	Geospatial Agronomic Management	
PSS 4413	Turfgrass Management	
PSS 4423	Golf Course Operations	
PSS 4443	Athletic Field Management	
PSS 4483	Introduction to Remote Sensing Technologies	
PSS 4503	Plant Breeding	
PSS 4603	Soil Chemistry	
PSS 4633	Weed Biology and Ecology	
PSS 4813	Herbicide Technology	
PSS 4823	Turfgrass Weed Management	
Total hours		**18**

Floral Management

A **minor** in Floral Management is available. To obtain a minor, students are required to complete the following 15 hours:

PSS 2343	Floral Design	3
Choose four of the following courses:		12
PSS 3313	Interior Planting Design and Maintenance	
PSS 3343	Wedding Floral Design	
PSS 3443	Permanent Botanical Floral Design	
PSS 4023	Floral Management	
PSS 4073	Sympathy Floral Design	
PSS 4083	Floral Design for Special Events	
PSS 4093	Post-harvest Care of Cut Floral Crops	

Floriculture and Ornamental Horticulture

A **minor** in Floriculture and Ornamental Horticulture is available. To obtain a minor, students are required to complete 15 hours.

PSS 2423	Plant Materials I	3
PSS 3473	Plant Materials II	3
PSS 3923	Plant Propagation	3
Choose two of the following:		6
PSS 3313	Interior Planting Design and Maintenance	
PSS 4343	Controlled Environment Agriculture	
PSS 4353	Arboriculture and Landscape Maintenance	
PSS 4363	Sustainable Nursery Production	
PSS 4613	Floriculture Crop Programming	