

<b>Course No.</b>	<b>Course Title</b>	<b>Credits</b>
AB 2225	Agricultural Economics.....	3
AB 3126	Agricultural Marketing .....	3
*BA 3141	Small Business Management.....	3
*AB 4113	Farm Management .....	3
AB 4242	Food and Agricultural Policy .....	3
<b>Total .....</b>		<b>15</b>

\* Requires prerequisite.

## **AGRONOMY AND ENVIRONMENTAL SCIENCE (AE)**

### **Faculty:**

Barbara Muse, Chairperson  
 Steven S. DeBroux  
 Lawrence D. Hepner, Jr.  
 Douglas T. Linde  
 Ronald R. Muse

Students studying in the Agronomy and Environmental Science area can select from three majors: Soils and Environmental Science, Crop Science, and Turf Management.

The Environmental Science major focus is placed on the environmental issues facing society today and the knowledge and training necessary to deal with these complex problems. Computers and geographic information systems aid in analysis and visual display of information. Interdisciplinary courses from the Chemistry and Biology Departments strengthen the Environmental Science portion of the curriculum.

The Crop Science major prepares students for science-based technical courses in agricultural production or work in associated agricultural industries. Agriculture is one of the largest sectors of the national economy and positions are numerous. Students interested in the biological and chemical sciences will find challenges in biotechnology as they look forward to a career in improving the quality and quantity of our food supply.

The Turf Management major prepares students for careers in the golf course industry, sports turf industry, and lawn care industry. Courses that provide technical competence plus business and management expertise are key components of the curriculum. An active turf club provides professional contacts and experiences outside the classroom.

Students in all majors take advantage of our 500 acre living laboratory containing turf and crop demonstration plots, putting green, sports fields, wetlands, forested land, streams, and agricultural land.

Undergraduate students participate in ongoing faculty research.

Effective utilization of elective credits provides the opportunity to minor in a subject area outside the department in each of the majors.

A degree in the Agronomy and Environmental Science Department offers a wide variety of career opportunities. Graduates find opportunities for employment in both the public and private sectors. In private industry they serve as consultants on environmental problems involving land use, waste disposal and other soil and water contamination problems. In the crop industry they serve as consultants and field representatives for fertilizer, insecticide, herbicide, seed and equipment companies. In the turf industry, graduates serve as golf course superintendents, sports field managers, and lawn care specialists. Trained Agronomists manage farm production operations or work in production and marketing for agricultural industries. Federal, state and local governments offer job opportunities in soil and water conservation, and in the area of environmental protection. Others enter graduate programs available throughout the country.

The total number of credits required for graduation with a degree in Agronomy and Environmental Science is 127 credits for the Environmental Science Major, 128 credits for the Crop Science Major, and 127 credits for the Turf Management Major.

### **RECOMMENDED COURSE SEQUENCE**

#### ***Environmental Science Major***

##### **FRESHMAN YEAR**

###### **First Semester**

<b>Course No.</b>	<b>Course Title</b>	<b>Credits</b>
AE 1120	Urban/Rural Systems and the Environment .....	3
CH 1103	General Chemistry I.....	3
CH 1103L	General Chemistry I Lab.....	1
EN 1101	English I.....	3
IT 1011	Information Technology Concepts ....	1.5
IT 1012	Computer Applications .....	1.5
LA 1020	Skills for College Success .....	1
MP 1102	College Algebra or	
MP 1203	Elementary Functions .....	3
PE 1109	Physical Education I .....	1
<b>Total .....</b>		<b>18</b>

###### **Second Semester**

AE 4211	Seminar .....	1
CH 1203	General Chemistry II.....	3
CH 1203L	General Chemistry II Lab .....	1
EN 1201	English II.....	3

## **Programs**

MP 1203	Elementary Functions or	
MP 1204	Calculus I.....	3-4
LA 2005	Speech.....	3
PE 1209	Physical Education II .....	1
<b>Total .....</b>	<b>15-16</b>	

### **Employment Program**

AE 2370	Employment Program.....	1-2
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## **SOPHOMORE YEAR**

### **First Semester**

<b>Course No.</b>	<b>Course Title</b>	<b>Credits</b>
AE 2004	Soils.....	3
AE 2017	Topographical Surveying and GIS.....	3
BY 1116	Biological Science I .....	3
CH 2003	Princ. of Organic Chemistry.....	3
CH 2003L	Princ. of Organic Chemistry Lab.....	1
	Elective.....	3
<b>Total .....</b>	<b>16</b>	

### **Second Semester**

AE 2209	Soil Fertility.....	3
BY 1217	Biological Science II .....	3
EN 2028	Introduction to Literature .....	3
HT 2101	Botany of Vascular Plants.....	3
	Elective.....	3
<b>Total .....</b>	<b>15</b>	

### **Employment Program**

AE 2370	Employment Program.....	1-2
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## **JUNIOR YEAR**

### **First Semester**

<b>Course No.</b>	<b>Course Title</b>	<b>Credits</b>
AE 3104	Field Soil Morphology .....	3
AE 3105	Soil Conservation .....	3
AE 3107	Environmental Geology .....	3
BY 2003	Genetics .....	3
	Humanities Area.....	3
<b>Total .....</b>	<b>15</b>	

### **Second Semester**

AE 3220	Watershed Management .....	3
AE 4211	Seminar .....	1
BA 2008	Macroeconomics .....	3
HT 2005	Plant Physiology.....	3
	Restricted Elective .....	3
	Elective.....	3
<b>Total .....</b>	<b>16</b>	

## **SENIOR YEAR**

### **First Semester**

<b>Course No.</b>	<b>Course Title</b>	<b>Credits</b>
LA 4037	Non-Western Societies .....	3
	Social Science Area .....	3
	Restricted Electives.....	6
	Elective.....	3
<b>Total .....</b>	<b>15</b>	

### **Second Semester**

AE 4211	Seminar .....	1
LA 1060	Introduction to Fine Arts .....	3
	Humanities Area.....	3
	Restricted Elective .....	3
	Elective.....	3
<b>Total .....</b>	<b>13</b>	

### **Social Sciences Area: select one of the following:**

LA 2012	Introduction to Sociology .....	3
LA 2036	Introduction to Psychology .....	3
LA 4203	Social Psychology and Human Interaction .....	3

### **Humanities Area: select two courses from the following:**

LA 2040	Modern History of Western Societies .....	3
LA 2042	Introduction to Philosophy .....	3
LA 2138	History of Western Civilization I.....	3
LA 3032	American History and Government since 1877 .....	3
LA 4127	United States Foreign Policy .....	3

## **Restricted Elective Courses**

### **Environmental Science Major**

(12 Credits Required)

Students select a minimum of 12 credits from among the restricted elective courses listed for their chosen major in consultation with their advisor. Limited substitutions permitted with department chair approval.

<b>Course No.</b>	<b>Course Title</b>	<b>Credits</b>
AE 3103	Soil Judging .....	1
AE 3125	Principles of Ecology .....	3
AE 3140	Environmental Impacts .....	3
AE 3145	Land Planning and the Law .....	3
AE 3216	Soil Classification .....	3
AE 4010	Soils and Environmental Planning.....	3
AE 4015	Regional Land Use Planning .....	3
AE 4016	Hydrogeology.....	3
AE 4025	Climatology.....	3
AE 4043	Applied Toxicology & Risk Assessment .....	3
BY 2108	Ecology .....	4
BY 3002	General Microbiology .....	4

BY 3126	Limnology .....	4
BY 3203	Taxonomy of Vascular Plants.....	3
HT 2240	Organic Crop Science .....	3
HT 3240	Integrated Pest Management.....	3
HT 4132	Principles of Plant Protection.....	3
IT 3205	Geographic Information Systems.....	3
IT 4131	Auto CAD .....	3
OH 2220	Woody Plant Identification I .....	2
OH 2118	Woody Plant Identification II .....	2
OH 3117	Herbaceous Plant Materials I .....	2
OH 3217	Herbaceous Plant Materials II .....	2

**Crop Science Major****FRESHMAN YEAR****First Semester**

Course No.	Course Title	Credits
AE 1120	Urban/Rural Systems and the Environment .....	3
CH 1103	General Chemistry I.....	3
CH 1103L	General Chemistry I Lab.....	1
EN 1101	English I.....	3
IT 1011	Information Technology Concepts ....	1.5
IT 1012	Computer Applications .....	1.5
LA 1020	Skills for College Success .....	1
MP 1102	College Algebra or	
MP 1203	Elementary Functions .....	3
PE 1109	Physical Education I .....	1
<b>Total .....</b>		<b>18</b>

**Second Semester**

AE 4211	Seminar .....	1
CH 1203	General Chemistry II.....	3
CH 1203L	General Chemistry II Lab .....	1
EN 1201	English II.....	3
LA 2005	Speech.....	3
MP 1203	Elementary Functions or	
MP 1204	Calculus I.....	3-4
PE 1209	Physical Education II .....	1
<b>Total .....</b>		<b>15-16</b>

**Employment Program**

AE 2370	Employment Program.....	1-2
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**SOPHOMORE YEAR****First Semester**

Course No.	Course Title	Credits
AE 2004	Soils .....	3
BY 1116	Biological Science I .....	3
CH 2003	Princ. of Organic Chemistry.....	3
CH 2003L	Princ. of Organic Chemistry Lab.....	1
EN 2028	Introduction to Literature .....	3
	Elective.....	3
<b>Total .....</b>		<b>16</b>

**Second Semester**

AE 2202	Field Crops I.....	3
AE 2209	Soil Fertility.....	3
AE 4211	Seminar .....	1
BY 1217	Biological Science II .....	3
EN 2226	Professional Communications .....	3
	Elective.....	3
<b>Total .....</b>		<b>16</b>

**Employment Program**

AE 2370	Employment Program.....	1-2
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**JUNIOR YEAR****First Semester**

Course No.	Course Title	Credits
AE 3102	Field Crops II .....	3
BY 2003	Genetics .....	3
BA 2008	Macroeconomics .....	3
HT 2101	Botany of Vascular Plants.....	3
	Restricted Elective .....	4
<b>Total .....</b>		<b>16</b>

**Second Semester**

AE 3202	Plant Breeding.....	3
AE 4211	Seminar .....	1
HT 2005	Plant Physiology.....	3
	Restricted Elective .....	3
	Elective.....	3
<b>Total .....</b>		<b>13</b>

**SENIOR YEAR****First Semester**

Course No.	Course Title	Credits
AE 4116	Weed Science .....	3
	Humanities Area.....	3
	Humanities Area.....	3
	Social Science Area .....	3
	Restricted Elective .....	3
<b>Total .....</b>		<b>15</b>

**Second Semester**

LA 1060	Introduction to Fine Arts .....	3
LA 4037	Non-Western Societies .....	3
	Restricted Elective .....	3
	Electives .....	6
<b>Total .....</b>		<b>15</b>

**Social Sciences Area: select one of the following:**

LA 2012	Introduction to Sociology.....	3
LA 2036	Introduction to Psychology .....	3
LA 4203	Social Psychology and Human Interaction .....	3

## **Programs**

### **Humanities Area: select two courses from the following:**

LA 2040	Modern History of Western Societies .....	3
LA 2042	Introduction to Philosophy .....	3
LA 2138	History of Western Civilization I.....	3
LA 3032	American History and Government since 1877 .....	3
LA 4127	United States Foreign Policy .....	3

### **Restricted Elective Courses**

#### **Crop Science Major**

(13 Credits Required)

Students will select a minimum of 13 credits from among the restricted elective courses listed for their chosen major in consultation with their advisor. Limited substitutions permitted with department chair approval.

<b>Course No.</b>	<b>Course Title</b>	<b>Credits</b>
AB 2225	Agricultural Economics.....	3
AB 4113	Farm Management .....	3
AB 4242	Food and Ag. Policy .....	3
AE 2007	Feed Grains and Forages .....	3
AE 2013	Agricultural Machinery.....	3
AE 3103	Soil Judging .....	1
AE 3104	Field Soil Morphology .....	3
AE 3105	Soil Conservation .....	3
AE 3108	Irrigation Technology .....	3
AE 3127	Agricultural Entomology.....	3
AE 3210	Global Crop Ecology .....	3
AE 3216	Soil Classification .....	3
AE 4025	Climatology.....	3
AE 4218	Seed Science.....	3
BY 2004	Genetics Laboratory .....	1
BY 3002	General Microbiology .....	4
BY 3007	Entomology .....	3
BY 3203	Taxonomy of Vascular Plants.....	3
BY 4155	Molecular Biology .....	3
CH 2203	Biochemistry and .....	3
CH 2203L	Biochemistry Lab.....	1
FS 1130	Food, Culture & Cuisine.....	3
HT 2235	Princ. of Sustainable Agri.....	3
HT 2240	Organic Crop Science .....	3
HT 3240	Integrated Pest Management.....	3
HT 4005	Plant Pathology .....	3
HT 4132	Princ. of Plant Protection .....	3
HT 4204	Plant Pest Management .....	3

*NOTE: Some of these courses may require prerequisites.*

### **Turf Management Major**

#### **FRESHMAN YEAR**

##### **First Semester**

<b>Course No.</b>	<b>Course Title</b>	<b>Credits</b>
AE 1120	Urban/Rural Systems and the Environment .....	3
CH 1103	General Chemistry I.....	3
CH 1103L	General Chemistry I Lab.....	1
EN 1101	English I.....	3
IT 1011	Information Technology Concepts .....	1.5
IT 1012	Computer Applications .....	1.5
LA 1020	Skills for College Success .....	1
MP 1102	College Algebra or	
MP 1203	Elementary Functions .....	3
PE 1109	Physical Education I .....	1
<b>Total .....</b>		<b>18</b>

##### **Second Semester**

CH 1203	General Chemistry II.....	3
CH 1203L	General Chemistry II Lab .....	1
EN 1201	English II .....	3
LA 2005	Speech.....	3
MP 1203	Elementary Functions or	
MP 1204	Calculus I.....	3-4
PE 1209	Physical Education II .....	1
<b>Total .....</b>		<b>14-15</b>

#### **Employment Program**

AE 2370	Employment Program.....	1-2
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#### **SOPHOMORE YEAR**

##### **First Semester**

<b>Course No.</b>	<b>Course Title</b>	<b>Credits</b>
AE 2004	Soils .....	3
AE 2017	Topographical Surveying & GIS .....	3
BY 1116	Biological Science I .....	3
EN 2028	Introduction to Literature .....	3
LA 4037	Non-Western Societies .....	3
<b>Total .....</b>		<b>15</b>

##### **Second Semester**

AE 2209	Soil Fertility.....	3
AE 4211	Seminar .....	1
BY 1217	Humanities Area.....	3
	Social Science Area .....	3
	Elective.....	3
<b>Total .....</b>		<b>13</b>

#### **Employment Program**

AE 2370	Employment Program.....	1-2
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**JUNIOR YEAR****First Semester**

<b>Course No.</b>	<b>Course Title</b>	<b>Credits</b>
AE 3114	Introduction to Turf Management .....	3
BA 2008	Macroeconomics .....	3
EN 2226	Professional Communications.....	3
HT 2101	Botany of Vascular Plants.....	3
	Restricted Elective .....	3
	Elective.....	1
<b>Total .....</b>		<b>16</b>

**Second Semester**

AE 3220	Watershed Management .....	3
AE 3230	Turf Cultural Systems.....	3
AE 4211	Seminar.....	1
HT 2005	Plant Physiology.....	3
	Restricted Elective .....	3
	Elective.....	3
<b>Total .....</b>		<b>16</b>

**SENIOR YEAR****First Semester**

<b>Course No.</b>	<b>Course Title</b>	<b>Credits</b>
AE 3115	Turf Pest Management.....	3
BA 3028	Supervision & Management .....	3
	Humanities Area.....	3
	Restricted Elective .....	3
	Elective.....	3
<b>Total .....</b>		<b>15</b>

**Second Semester**

AE 4211	Seminar .....	1
AE 4230	Case Studies in Turf Management .....	3
LA 1060	Introduction to Fine Arts .....	3
	Restricted Elective .....	3
	Electives .....	6
<b>Total .....</b>		<b>16</b>

**Social Sciences Area: select one of the following:**

LA 2012	Introduction to Sociology .....	3
LA 2036	Introduction to Psychology .....	3
LA 4203	Social Psychology and Human Interaction .....	3

**Humanities Area: select two courses from the following:**

LA 2040	Modern History of Western Societies ...	3
LA 2042	Introduction to Philosophy .....	3
LA 2138	History of Western Civilization I.....	3

LA 3032	American History and Government since 1877 .....	3
LA 4127	United States Foreign Policy .....	3

**Restricted Elective Courses****Turf Management Major**

(12 Credits required)

Students will select a minimum of 12 credits from among the restricted elective courses listed for their chosen major in consultation with their advisor. Limited substitutions permitted with department chair approval.

<b>Course No.</b>	<b>Course Title</b>	<b>Credits</b>
AE 3105	Soil Conservation .....	3
AE 3108	Irrigation Technology .....	3
AE 4116	Weed Science .....	3
AE 4222	Golf Course Design & Construction....	3
BA 2225	Accounting Fundamentals .....	3
HT 2240	Organic Crop Science .....	3
HT 4005	Plant Pathology .....	3
OH 2015	Landscape Techniques.....	3

**Biotechnology Minor (for Plant Science Majors)**

Students majoring in the Plant Science area (Agronomy and Environmental Science, Horticulture or Ornamental Horticulture and Environmental Design) may enroll in an interdisciplinary minor made up of the following recommended courses. Substitutions may be arranged in advance with permission of the student's major Department Chairperson.

<b>Course No.</b>	<b>Course Title</b>	<b>Credits</b>
AE 3000	Selected Topics .....	1
BT 3000	*Introduction to Biotechnology .....	3
BY 4155	*Molecular Biology.....	4
CH 2203	*Biochemistry.....	3
CH 2203L	*Biochemistry Lab .....	1
MP 3231	*Statistics for Science .....	3
<b>Total .....</b>		<b>15</b>

\* Requires prerequisite.

**Agronomy & Environmental Science Minor**

A student majoring in another department's program may earn a minor in Crop Science, Environmental Science, or Turf Management by successfully completing 15 credits approved by the department chair.