

Stockbridge School of Agriculture
UMass Amherst

Stockbridge *B.S. Degree*

2015 - 2016 Handbook

- Plant, Soil, and Insect Sciences
- Sustainable Food and Farming
 - Sustainable Horticulture
- Turfgrass Science and Management



STOCKBRIDGE | UMASS
SCHOOL OF AGRICULTURE | AMHERST

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ACADEMIC MAJORS

Plant, Soil, and Insect Sciences

Through theoretical and practical training, the Plant, Soil, and Insect Sciences major prepares students to tackle real-world problems by integrating and applying knowledge they learn from different disciplines. This major includes rigorous training in biology and laboratory methods. Students focus their study in one of two general areas: general applied biology or plant science. They may also choose to focus their advanced course work in horticultural sciences, plant pathology, plant science and biotechnology, soil science or a related discipline. Many successful graduates work in research or applied aspects of the biotech industries, agricultural and horticultural businesses, environmental consulting arenas, and pest management. Others go on for advanced graduate training for careers in academia, business, or the public sector.

Sustainable Food and Farming

The Sustainable Food and Farming major allows students who are interested in the social, political and scientific issues of sustainable agriculture and food systems to seek a broad exposure to this discipline in the liberal arts tradition. Students are exposed to a range of courses, including the biophysical aspects of agriculture and economic aspects of food production and distribution, as well as the social elements affecting food policy and accessibility. Students can tailor their individual programs to prepare for careers in sustainable farming, policy, advocacy, community outreach and education in topics related to crop production, food access, and hunger issues, as well as many others. Graduates will be qualified to compete successfully for a wide array of emerging careers in the growing field of sustainable food systems.

Sustainable Horticulture

Concepts and practices vital to the preservation of natural resources in managed plant systems are stressed. This major provides students with the tools and knowledge to work in the horticultural field. Students receive scientific training in the production of herbaceous ornamentals, fruits, and vegetables. In addition, students have the option of taking business courses to complement their horticultural training or to further enhance their scientific training through more courses in basic science. The University-operated greenhouses, vegetable field, and orchard are used as laboratory spaces to provide hands-on experience related to knowledge acquired in the classroom. Successful graduates find employment in plant conservatories and arboreta as well as manage businesses, including direct-market farms, greenhouse operations, landscaping firms and nurseries, or they continue to graduate school for advanced degrees.

Turfgrass Science and Management

The Turfgrass Science and Management major is an applied science program that focuses on the production and maintenance of grassed areas, including home lawns, parks, golf courses and other athletic surfaces. This concentration integrates scientific theory with practical experience and covers such topics as grass and seed identification, turfgrass culture and physiology, pest control, and equipment maintenance. Students in this major have the option of selecting a business management or a science focus. Many graduates find employment in the golf course industry, while others choose to specialize in sports turf management. The lawn care industry also employs many of our graduates in jobs as varied as direct lawn maintenance, research, and sales.

GENERAL INFORMATION

Curriculum Requirements

The undergraduate curriculum in the Stockbridge School of Agriculture has been designed with the goal of allowing students to tailor their course work to best reflect individual academic interests and career objectives. The major encompasses a broad range of related disciplines dealing with applied biology and ecology. Specific majors include: Plant, Soil, and Insect Sciences, Sustainable Food and Farming, Sustainable Horticulture, and Turfgrass Science and Management.

Students begin their studies with introductory classes in the major and with general education courses required of all University students. These initial courses, which include biology, chemistry, ecology and mathematics, form the foundation for more advanced study in the major. The exact sequence of courses is determined by the student's selection of an area of study. Independent study and internships are available under each major providing students with the opportunity to integrate laboratory and field work into their curriculum.

All four majors share a common core of discipline areas:

- **Biological Science** two semesters of course work with labs in introductory biology, botany and/or soil science
- **Chemistry** one semester minimum of introductory chemistry with lab
- **Ecosystems Studies** a course in the fundamentals of ecosystem ecology
- **Math, Statistics and Reasoning** two semesters in math, statistics and/or analytic reasoning
- **Writing** two semesters of writing: College Writing taken during the freshman year, and Junior Year Writing

Independent Study and Internships

Students are encouraged to enhance their major with an independent study research project or an internship experience. These opportunities provide students with experience and training that will be useful in career planning as well as in decision-making regarding fields of possible graduate study. Students must have attained at least sophomore status and be in good academic standing. The University allows up to 18 credits of internship to be applied towards the 120 credits required for graduation.

Independent Study - students wishing to complete a research project or independent learning project must select a faculty member within the major who will approve the project and provide guidance. An Independent Study form must be completed, which specifies the number of credits to be earned, a statement of objectives, planned activities, and criteria to be used for evaluation and grading. This form must be filed with the Director's Office before the project is initiated.

Internships - an internship is a summer or semester-long work experience that allows students to "apprentice" with professionals in their field. Internships are intended to be learning experiences, and do not necessarily provide significant monetary compensation. Instead, academic credits are earned. Students can earn 12 credits for a full time, semester long internship experience and 3 to 9 credits for a summer program. Prior to undertaking an internship, the student and his/her faculty sponsor must complete an Academic Contract (Independent Study/Practicum form), including planned activities, a statement of objectives, as well as criteria for evaluation and grading.

Major Requirements

Students will complete a minimum of 30 course credits taken within the Stockbridge School of Agriculture. Specific course requirements vary by major.

Research Papers & Projects Assistance

Two librarians are available to Stockbridge School of Agriculture students to provide assistance with finding reliable information for research papers and other projects. Students may contact them for an individual consultation by phone, email, skype, or in person. Please feel free to contact:
Madeleine Charney, Du Bois Library; 413-577-0784; mcharney@library.umass.edu
Naka Ishii, Science & Engineering Library; 413-545-1656; nishii@library.umass.edu

UNIVERSITY REQUIREMENTS

Credits

Minimum 120 credits must be obtained, 45 of which must be earned in residence. Residence credits are defined as credits earned for work done while registered at the UMass Amherst campus or while enrolled in one of the University's formal exchange programs.

Grade Point Average (GPA)

Minimum Overall Grade Point Average (GPA)
2.00 minimum cumulative GPA is required.

Minimum Stockbridge School of Agriculture Cumulative Grade Point Average (GPA)
2.00 minimum cumulative GPA is required for courses within the
Stockbridge School of Agriculture majors.

General Education (GEN ED) Requirements

Consult your Academic Requirements Report (ARR) and/or an advisor for clarification.

NOTE: Freshmen entering in Fall 2010 or later will use the following requirements.
Transfer students entering in Fall 2010 or later must use the Gen Ed Course Planning Guide (on SPIRE).

Basic Mathematics 1 course

ONE COURSE (R1) 3 credits
OR
PASSING SCORE ON THE TIER 1 MATH EXEMPTION EXAM 0 credits

Analytic Reasoning 1 course

ONE COURSE (R2) 3 credits

Biological & Physical World 2 courses

SELECT ONE 4-CREDIT COURSE FROM BOTH CATEGORIES 1 & 2

1. BIOLOGICAL SCIENCE (BS)
Fall/Spr BIOLOGY 151 Introductory Biology I (BS) 4 credits
OR
STOCKSCH 105 Soils **OR** 4 credits

2. PHYSICAL SCIENCE (PS)			
<i>Fall</i>	CHEM 110	General Chemistry (PS)	4 credits
	OR	OR	OR
<i>Fall/Spr</i>	CHEM 111	General Chemistry-Science (PS)	4 credits

Integrative Experience 1 course

INTEGRATIVE EXPERIENCE (IE)	3 credits
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Social & Cultural Diversity 2 courses

SELECT ONE COURSE FROM BOTH CATEGORIES 1 & 2

3 CREDIT MINIMUM FOR EACH

CAN BE COMBINED WITH OTHER SOCIAL WORLD DESIGNATIONS (eg. ALU, HSG, IG, etc.)

1. UNITED STATES diversity (U, ALU, ATU, HSU, IU, or SBU) 3-4 credits
2. GLOBAL diversity (G, ALG, ATG, HSG, IG, or SBG) 3-4 credits

Social World 4 courses

SELECT ONE 4-CREDIT COURSE FROM ALL CATEGORIES 1-4

1. ARTS (AT) or LITERATURE (AL)
2. HISTORICAL STUDIES (HS)
3. SOCIAL AND BEHAVIORAL SCIENCES (SB)
4. ADDITIONAL SOCIAL WORLD (AL, AT, or SB) or INTERDISCIPLINARY (I or SI)

Writing 2 courses

SELECT ONE COURSE FROM BOTH CATEGORIES 1 & 2

1. *Fall/Spr* ENGLWRIT 112 (CW) College Writing 3 credits
OR
EXEMPTION/WAIVER (see Writing Program) 0 credits
2. Junior Year Writing within the major:
Fall/Spr NATSCI 397A CNS Junior Writing 3 credits
OR
STOCKSCH 382 Writing for Sustainability 3 credits

Notes:

- From your major department:
-only one course can count towards GEN ED requirements
-one additional course can fulfill a Diversity requirement
- No more than three I or SI courses will count towards GEN ED and Diversity requirements.
- GEN ED courses cannot be taken on a pass/fail basis.
- Freshmen entering Fall 2010 and beyond with 9 semester hours or more of college course (not exam) credits taken prior to enrollment can switch to Transfer GEN ED requirements via the Student Records Office.

PLANT, SOIL, AND INSECT SCIENCES

CORE REQUIREMENTS OF THE MAJOR

CREDITS

<i>Fall</i>	STOCKSCH 105	Soils (BS)	4
<i>Fall</i>	STOCKSCH 108	Introductory Botany	4
<i>Spr</i>	STOCKSCH 384	Introduction to Plant Physiology	3
<i>Fall</i>	STOCKSCH 505	General Plant Pathology	4

Total Core Requirements 15

MAJOR REQUIREMENTS

Biological Science

<i>Fall/Spr</i>	BIOLOGY 151	Introductory Biology I (BS)	4
<i>Fall/Spr</i>	BIOLOGY 152	Introductory Biology II (BS)	3
<i>Fall/Spr</i>	BIOLOGY 283	General Genetics	3
<i>Fall/Spr</i>	BIOLOGY 285	Cellular & Molecular Biology	3

Chemistry

<i>Fall/Spr</i>	CHEM 111	General Chemistry-Science (PS)	4
<i>Fall/Spr</i>	CHEM 112	General Chemistry-Science (PS)	4

Ecosystems Studies

SELECT ONE OF THE FOLLOWING SUGGESTED COURSES:

<i>Fall/Spr</i>	BIOLOGY 287	Introductory Ecology	3
<i>Fall</i>	ENVIRSCI 101	Introduction to Environmental Science (BS)	4
<i>Spr</i>	ENVIRSCI 214	Ecosystems, Biodiversity and Global Change	3
<i>Fall</i>	NRC 100	Environment and Society (SI)	4

General Science

SELECT 6 CREDITS MINIMUM FROM THE FOLLOWING SUGGESTED COURSES:

<i>Fall/Spr</i>	BIOCHEM 420	Elementary Biochemistry	3
<i>Fall/Spr</i>	CHEM 261	Organic Chemistry	3
<i>Fall/Spr</i>	CHEM 262	Organic Chemistry	3
<i>Fall/Spr</i>	MICROBIO 310	General Microbiology	3
<i>Fall/Spr</i>	MICROBIO 312	Microbiology Lab	3
<i>Fall/Spr</i>	PHYSICS 131/151	Introductory Physics I/General Physics I (PS)	4
<i>Fall/Spr</i>	PHYSICS 132/152	Introductory Physics II/General Physics II (PS)	4

Integrative Experience

<i>Spr</i>	NATSCI 494I	Global Issues in Applied Biology	3
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Junior Year Writing

<i>Fall/Spr</i>	NATSCI 397A	CNS Junior Writing	3
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PLANT, SOIL, AND INSECT SCIENCES

CREDITS

Math, Statistics and Reasoning

SELECT COURSE(S) FROM BOTH CATEGORIES 1 & 2:

1. Basic Mathematics (R1)

<i>Fall/Spr</i>	MATH 101+MATH 102	Precalculus Algebra with Functions & Graphs	2
		Analytic Geometry & Trigonometry (R1)	2
	OR	OR	OR
<i>Fall/Spr</i>	MATH 104	Algebra, Analytic Geometry, & Trig (R1)	3

2. Analytical Reasoning (R2)

<i>Fall/Spr</i>	STATISTC 111	Elementary Statistics (R2)	3
	OR	OR	OR
<i>Fall/Spr</i>	STATISTC 240	Introduction to Statistics (R2)	3

Experimental Techniques Course or Independent Study

SELECT 2-4 CREDITS FROM THE FOLLOWING SUGGESTED COURSES:

<i>Fall/Spr</i>	BIOLOGY 383H	Gene and Genome Analysis	4
<i>Fall/Spr</i>	CHEM 264	Organic Lab II	1
<i>Fall/Spr</i>	CHEM 269	Organic Chemistry Lab	2
<i>Fall/Spr</i>	NRC 585	Introduction to GIS	4
<i>Spr</i>	MICROBIO 385	Introduction to Biotechnology Laboratory	4

Restricted Electives

SELECT 12 CREDITS MINIMUM AT OR ABOVE 300-LEVEL WITH 6 CREDITS MINIMUM AT 500-LEVEL
COURSES MAY BE MIXED AND MATCHED ACROSS MORE THAN ONE SUBJECT AREA

Horticultural Science

<i>Fall/odd yrs</i>	STOCKSCH 300	Deciduous Orchards Science	3
<i>Fall/even yrs</i>	STOCKSCH 305	Small Fruit Production	3
<i>Fall</i>	STOCKSCH 310	Principles of Weed Management	3
<i>Fall</i>	STOCKSCH 315	Greenhouse Management	4
<i>Spr</i>	STOCKSCH 325	Vegetable Production	4
<i>Spr</i>	STOCKSCH 335	Environmental Physiology and Biology of Spring Greenhouse Crops	4
<i>Fall</i>	STOCKSCH 350	Sustainable Soil and Crop Management	3
<i>Fall</i>	STOCKSCH 505	General Plant Pathology	4
<i>Spr/odd yrs</i>	STOCKSCH 510	Management & Ecology of Plant Diseases	3
<i>Fall</i>	STOCKSCH 530	Plant Nutrition	4
<i>Spr/odd yrs</i>	STOCKSCH 535	Diagnostic Plant Pathology	4
<i>Spr</i>	STOCKSCH 545	Postharvest Biology	4
<i>Spr</i>	STOCKSCH 550	Plant Growth Regulators in Agriculture	3
<i>Fall</i>	STOCKSCH 575	Environmental Soil Chemistry	4
<i>Spr</i>	STOCKSCH 580	Soil Fertility	3

PLANT, SOIL, AND INSECT SCIENCES

CREDITS

Plant Biotechnology

<i>Fall/Spr</i>	BIOLOGY 383H	Gene and Genome Analysis	4
<i>Spr</i>	BIOLOGY 510	Plant Physiology	3
<i>Fall</i>	STOCKSCH 530	Plant Nutrition	4
<i>Spr/odd yrs</i>	STOCKSCH 535	Diagnostic Plant Pathology	4
<i>Fall</i>	STOCKSCH 597A	Phyto/Bioremediation	3

Plant Pathology

<i>Fall/Spr</i>	MICROBIO 310	General Microbiology	3
<i>Fall/Spr</i>	MICROBIO 312	Microbiology Lab	3
<i>Fall</i>	STOCKSCH 505	General Plant Pathology	4
<i>Spr/odd yrs</i>	STOCKSCH 510	Management & Ecology of Plant Diseases	3
<i>Fall</i>	STOCKSCH 523	Plant Stress Physiology	3
<i>Spr</i>	STOCKSCH 535	Diagnostic Plant Pathology	4
<i>Spr</i>	STOCKSCH 545	Postharvest Biology	4

Soil Science

<i>Spr</i>	GEO-SCI 587	Hydrogeology	4
<i>Fall</i>	STOCKSCH 350	Sustainable Soil and Crop Management	3
<i>Fall</i>	STOCKSCH 515	Microbiology of the Soil	3
<i>Fall</i>	STOCKSCH 575	Environmental Soil Chemistry	4
<i>Spr</i>	STOCKSCH 580	Soil Fertility	3
<i>Spr</i>	STOCKSCH 585	Inorganic Contaminants/Soil, Water, & Sediment	3
<i>Fall</i>	STOCKSCH 597A	Phyto/Bioremediation	3

Total Major Requirements 56-60

Summary of Requirements

Total Core Requirements 15

Total Major Requirements 56-60

Biological Science	13
Chemistry	8
Ecosystems Studies	3-4
General Science	6
Integrative Experience	3
Junior Year Writing	3
Math, Statistics and Reasoning	6-7
Experimental Techniques Course or Independent Study	2-4
Restricted Electives	12

Grand Total for Plant, Soil, and Insect Sciences 71-75

SUSTAINABLE FOOD AND FARMING

CORE REQUIREMENTS OF THE MAJOR

CREDITS

Biological Science

<i>Fall/Spr</i>	STOCKSCH 105	Soils (BS)	4
<i>Fall</i>	STOCKSCH 108	Introductory Botany	4

Chemistry

<i>Fall</i>	CHEM 110	General Chemistry (PS)	4
	OR	OR	OR
<i>Fall/Spr</i>	CHEM 111	General Chemistry-Science (PS)	4
	OR	OR	OR
<i>Fall</i>	CHEM 121H	Honors General Chemistry-Science (PS)	4
	OR	OR	OR
<i>Spr</i>	STOCKSCH 117	Agricultural Chemistry	3

Ecosystems Studies

SELECT ONE OF THE FOLLOWING

OTHER ECOSYSTEMS COURSES MAY BE SUBSTITUTED WITH ADVISOR APPROVAL

<i>Fall/Spr</i>	BIOLOGY 287	Introductory Ecology	3
<i>Fall/Spr</i>	STOCKSCH 197G	Introduction to Permaculture	3

Food/Land Policy or Agricultural Education

SELECT ONE OF THE FOLLOWING:

<i>Fall</i>	STOCKSCH 262	Introduction to Teaching Agricultural Education	3
<i>Summer/Fall</i>	STOCKSCH 288	Land Use Policies and Sustainable Farming	3
<i>Fall</i>	STOCKSCH 342	Pesticides, Public Policy & the Environment	3
<i>Fall/odd years</i>	STOCKSCH 355	Community Food Systems	3
<i>Fall/even years</i>	STOCKSCH 356	Food Justice and Policy	3
<i>Spr</i>	STOCKSCH 362	Vocational Agricultural Education Seminar	3

Integrative Experience

<i>Spr</i>	NATSCI 494I	Global Issues in Applied Biology	3
	OR	OR	OR
<i>Fall</i>	STOCKSCH 379	Agricultural Systems Thinking	3

Junior Year Writing

<i>Fall/Spr</i>	NATSCI 397A	CNS Junior Writing	3
	OR	OR	OR
<i>Spr</i>	STOCKSCH 382	Writing for Sustainability	3

SUSTAINABLE FOOD AND FARMING

CREDITS

Math, Statistics and Reasoning

SELECT COURSE(S) FROM BOTH CATEGORIES 1 & 2:

1. Basic Mathematics (R1)

<i>Fall/Spr</i>	MATH 101+MATH 102	Precalculus Algebra with Functions & Graphs	2
		Analytic Geometry & Trigonometry (R1)	2
	OR	OR	OR
<i>Fall/Spr</i>	MATH 104	Algebra, Analytic Geometry, & Trig (R1)	3
	OR	OR	OR
	EXEMPTION EXAM	(see Math Program)	0

2. Analytical Reasoning (R2)

Advisor Approval Required 3

Total Core Requirements 25-31

MAJOR REQUIREMENTS

Agricultural Science and Practice

SELECT 18 CREDITS MINIMUM WITH 12 CREDITS AT OR ABOVE 200-LEVEL

<i>Spr</i>	ANIMLSCI 103	Introductory Animal Management	4
<i>Fall</i>	ANIMLSCI 220	Physiology & Anatomy of Domestic Animals	4
<i>Fall/Spr</i>	STOCKSCH 120	Organic Farming and Gardening (BS)	4
<i>Spr</i>	STOCKSCH 182	Principles of Pesticide Management	2
<i>Summer</i>	STOCKSCH 197A	Backyard Homesteading	3
<i>Fall/Spr</i>	STOCKSCH 197D	Draft Horse Husbandry I	3
<i>Fall/Spr</i>	STOCKSCH 197G	Introduction to Permaculture	3
<i>Fall</i>	STOCKSCH 200	Plant Propagation	3
<i>Fall</i>	STOCKSCH 211	Pasture Management	3
<i>Spr</i>	STOCKSCH 235	Pruning Fruit Crops	2
<i>Spr</i>	STOCKSCH 255	Herbaceous Plants	3
<i>Fall</i>	STOCKSCH 262	Introduction to Teaching Agricultural Education	3
<i>Fall/Spr</i>	STOCKSCH 265	Sustainable Agriculture	3
<i>Spr</i>	STOCKSCH 280	Herbs, Spices & Medicinal Plants (BS)	4
<i>Spr</i>	STOCKSCH 290W	Organic Weed Control	3
<i>Spr</i>	STOCKSCH 297PD	Permaculture Design and Practice	3
<i>Fall</i>	STOCKSCH 297T	Alternative Medicine for Animals and Humans	1
<i>Fall</i>	STOCKSCH 297V	Organic Vegetable Production	3
<i>Fall/odd yrs</i>	STOCKSCH 300	Deciduous Orchards Science	3
<i>Fall/even yrs</i>	STOCKSCH 305	Small Fruit Production	3
<i>Fall</i>	STOCKSCH 310	Principles of Weed Management	3
<i>Fall</i>	STOCKSCH 315	Greenhouse Management	4
<i>Spr</i>	STOCKSCH 325	Vegetable Production	4
<i>Fall</i>	STOCKSCH 326	Insect Biology	3
<i>Fall</i>	STOCKSCH 342	Pesticides, Public Policy & the Environment	3
<i>Fall</i>	STOCKSCH 350	Sustainable Soil and Crop Management	3
<i>Spr</i>	STOCKSCH 362	Vocational Agricultural Education Seminar	3
<i>Spr</i>	STOCKSCH 370	Tropical Agriculture	3
<i>Fall</i>	STOCKSCH 375	Soil & Water Conservation	3

SUSTAINABLE FOOD AND FARMING

Agricultural Science and Practice (con't.)

			<i>CREDITS</i>
<i>Spr</i>	STOCKSCH 384	Introduction to Plant Physiology	3
<i>Spr</i>	STOCKSCH 398E	Farm Enterprise Practicum	3-6
<i>Fall/Spr</i>	STOCKSCH 398G	Greenhouse Practicum	1-18
<i>Fall</i>	STOCKSCH 498E	Farm Enterprise Practicum II	3-6
<i>Fall</i>	STOCKSCH 505	General Plant Pathology	4
<i>Spr/odd yrs</i>	STOCKSCH 510	Management & Ecology of Plant Diseases	3
<i>Fall</i>	STOCKSCH 530	Plant Nutrition	4
<i>Spr</i>	STOCKSCH 580	Soil Fertility	3

Professional Electives

COURSES MAY ALSO BE USED TO MEET GEN ED REQUIREMENTS

SELECT 18 CREDITS MINIMUM ACROSS THE THREE CATEGORIES

WITH ONE COURSE MINIMUM FROM EACH CATEGORY

COURSES MAY BE TAKEN FROM OTHER DEPARTMENTS OR FROM ONE OF THE OTHER FIVE COLLEGES

WITH ADVISOR APPROVAL

EXAMPLES OF PRE-APPROVED COURSES ARE LISTED BELOW

OTHER COURSES MAY FULFILL THIS REQUIREMENT WITH ADVISOR APPROVAL

1. Biophysical Systems

EXAMPLES

<i>Fall</i>	BIOLOGY 421	Plant Ecology	4
<i>Spr</i>	ENVIRDES 591B	Sustainable Cities	3
<i>Fall</i>	NRC 382	Human Dimensions of Natural Resource Mgt	4
	Most STOCKSCH courses		3-4

2. Economic Systems

EXAMPLES

<i>Fall/Spr</i>	ECON 308	Political Economy of the Environment	3
<i>Fall</i>	ECON 366	Economic Development	3
<i>Fall/Spr</i>	MANAGMNT 301	Principles of Management	3
<i>Fall/Spr</i>	HT-MGT 260	Human Resource Mgt/Hospitality Industry	3
	OR	OR	OR
<i>Fall/Spr</i>	MANAGMNT 314	Human Resource Management	3
<i>Fall/Spr</i>	MARKETNG 301	Fundamentals of Marketing	3
<i>Fall/Spr</i>	RES-ECON 212	Introductory Statistics/Social Sciences (R2)	4
<i>Fall/Spr</i>	RES-ECON 262	Environmental Economics (SB)	4
<i>Fall</i>	RES-ECON 263	Natural Resource Economics (SB)	4
<i>Spr</i>	RES-ECON 324	Small Business Finance	3

SUSTAINABLE FOOD AND FARMING

CREDITS

3. Social Systems

EXAMPLES

<i>Spr</i>	ANTHRO 397H	Grassroots Community Development	4
<i>Fall</i>	EDUC 377	Introduction to Multicultural Education (U)	4
<i>Spr</i>	NRC 409	Natural Resource Policy & Administration	3
<i>Spr</i>	PUBHLTH 602	Community Development & Health Education	3
<i>Fall</i>	STOCKSCH 342	Pesticides, Public Policy & the Environment	3

12 CREDITS MAXIMUM OF RESTRICTED ELECTIVES CAN BE SATISFIED BY INTERNSHIP/PRACTICUM APPROVAL REQUIRED OF ACADEMIC ADVISOR AND DEAN OF UNDERGRADUATE AFFAIRS

<i>Fall/Spr</i>	STOCKSCH 396	Independent Study	1-6
<i>Fall/Spr</i>	STOCKSCH 398	Practicum	1-12
<i>Fall/Spr</i>	STOCKSCH 496	Independent Study	1-6
<i>Fall/Spr</i>	STOCKSCH 498	Practicum	1-12

Advanced Courses

SELECT TWO ADDITIONAL STOCKSCH COURSES AT OR ABOVE 500-LEVEL

6 CREDITS MINIMUM

COURSES NOT FROM STOCKSCH MUST BE APPROVED BY ADVISOR

Total Major Requirements 42

Minimum Required Credits

30 STOCKSCH CREDITS MINIMUM

Summary of Requirements

Total Core Requirements 25-31

Biological Science	8
Chemistry	3-4
Ecosystems Studies	3
Food Policy/Education	2-3
Integrative Experience	3
Junior Year Writing	3
Math, Statistics and Reasoning	3-7

Total Major Requirements 42

Agricultural Science and Practice	18
Professional Electives	18
Advanced Courses	6

Grand Total for Sustainable Food and Farming 67-73

SUSTAINABLE HORTICULTURE

CORE REQUIREMENTS OF THE MAJOR

CREDITS

Biological Science

<i>Fall/Spr</i>	STOCKSCH 105	Soils (BS)	4
<i>Fall</i>	STOCKSCH 108	Introductory Botany	4

Chemistry

<i>Fall</i>	CHEM 110	General Chemistry (PS)	4
OR			
<i>Fall/Spr</i>	CHEM 111*	General Chemistry-Science (PS)	4
(*Students selecting Science focus should complete CHEM 111)			

Ecosystems Studies

SELECT ONE OF THE FOLLOWING:

<i>Fall/Spr</i>	BIOLOGY 287	Introductory Ecology	3
<i>Spr</i>	ENVIRSCI 214	Ecosystems, Biodiversity and Global Change	3
<i>Fall</i>	NRC 100	Environment and Society (SI)	4

Integrative Experience

<i>Spr</i>	NATSCI 494I	Global Issues in Applied Biology	3
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Junior Year Writing

<i>Fall/Spr</i>	NATSCI 397A	CNS Junior Writing	3
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Math, Statistics and Reasoning

SELECT COURSE(S) FROM BOTH CATEGORIES 1 & 2:

1. Basic Mathematics (R1)

<i>Fall/Spr</i>	MATH 101+MATH 102	Precalculus Algebra with Functions & Graphs	2
		Analytic Geometry & Trigonometry (R1)	2
OR			
<i>Fall/Spr</i>	MATH 104	Algebra, Analytic Geometry, & Trig (R1)	3

2. Analytical Reasoning (R2)

<i>Fall/Spr</i>	STATISTC 111	Elementary Statistics (R2)	3
OR			
<i>Fall/Spr</i>	STATISTC 240	Introduction to Statistics (R2)	3

Total Core Requirements 27-29

Required Courses

Horticulture

SELECT TWO OF THE FOLLOWING:

<i>Fall</i>	STOCKSCH 200	Plant Propagation	3
<i>Fall</i>	STOCKSCH 230	Introductory Turfgrass Management	4
<i>Fall</i>	STOCKSCH 315	Greenhouse Management	4
<i>Spr</i>	STOCKSCH 340	Advanced Turfgrass Management	3

SUSTAINABLE HORTICULTURE

CREDITS

Pest Management

<i>Fall</i>	STOCKSCH 505	General Plant Pathology	4
AND			
3 CREDITS MINIMUM IN ENTOMOLOGY:			
<i>Spr</i>	STOCKSCH 101	Insects & Related Forms	2
<i>Spr</i>	STOCKSCH 107	Turfgrass Insects	2
<i>Fall</i>	STOCKSCH 109	Insects of Ornamentals	3
<i>Fall</i>	STOCKSCH 326	Insect Biology	3

Plant Nutrition

SELECT ONE OF THE FOLLOWING:

<i>Fall</i>	STOCKSCH 530	Plant Nutrition	4
<i>Spr</i>	STOCKSCH 580	Soil Fertility	3

Plant Physiology

SELECT ONE OF THE FOLLOWING:

<i>Spr</i>	BIOLOGY 510	Plant Physiology	3
<i>Spr</i>	STOCKSCH 384	Introduction to Plant Physiology	3

Restricted Electives

SELECT 15 CREDITS MINIMUM FROM COURSES LISTED BELOW

AT LEAST 6 CREDITS MUST BE AT OR ABOVE 500-LEVEL

6 CREDITS MAXIMUM MAY BE TAKEN OUTSIDE THE DEPARTMENT

COURSES CAN BE MIXED AND MATCHED ACROSS MORE THAN ONE SUBJECT AREA

CREDITS TAKEN TO SATISFY MAJOR REQUIREMENTS IN OTHER AREAS OF THE CORE REQUIREMENTS

FOR THE MAJOR AND FOR OTHER MAJOR REQUIREMENTS **CANNOT** BE COUNTED AS RESTRICTED ELECTIVES

Crop Physiology

<i>Spr</i>	BIOLOGY 510	Plant Physiology	3
<i>Fall</i>	STOCKSCH 520	Physiology of Crop Yield	3
<i>Fall</i>	STOCKSCH 523	Plant Stress Physiology	3
<i>Spr</i>	STOCKSCH 545	Postharvest Biology	4
<i>Spr</i>	STOCKSCH 550	Plant Growth Regulators in Agriculture	3

Food Crops

<i>Fall/Spr</i>	STOCKSCH 120	Organic Farming and Gardening (BS)	4
<i>Spr</i>	STOCKSCH 280	Herbs, Spices & Medicinal Plants (BS)	4
<i>Fall/odd yrs</i>	STOCKSCH 300	Deciduous Orchards Science	3
<i>Fall/even yrs</i>	STOCKSCH 305	Small Fruit Production	3
<i>Fall</i>	STOCKSCH 310	Principles of Weed Management	3
<i>Spr</i>	STOCKSCH 325	Vegetable Production	4
<i>Fall</i>	STOCKSCH 350	Sustainable Soil and Crop Management	3

SUSTAINABLE HORTICULTURE

CREDITS

Greenhouse Horticulture

<i>Spr</i>	STOCKSCH 255	Herbaceous Plants	3
<i>Fall</i>	STOCKSCH 315	Greenhouse Management	4
<i>Spr</i>	STOCKSCH 335	Environmental Physiology and Biology of Spring Greenhouse Crops	4
<i>Fall</i>	SUSTCOMM 335	Plants in Landscape	4

Landscape Horticulture

<i>Fall</i>	NRC 232	Principles of Arboriculture	3
<i>Spr</i>	STOCKSCH 255	Herbaceous Plants	3
<i>Fall</i>	STOCKSCH 310	Principles of Weed Management	3
<i>Fall</i>	SUSTCOMM 335	Plants in Landscape	4

Pest Management

<i>Spr</i>	STOCKSCH 107	Turfgrass Insects	2
<i>Fall</i>	STOCKSCH 109	Insects of Ornamentals	3
<i>Spr/odd yrs</i>	STOCKSCH 510	Management & Ecology of Plant Diseases	3
<i>Spr</i>	STOCKSCH 535	Diagnostic Plant Pathology	4
<i>Spr/odd yrs</i>	STOCKSCH 560	Weed Science	3
<i>Fall</i>	STOCKSCH 597A	Phyto/Bioremediation	3
<i>Spr</i>	STOCKSCH 597V	Integrated Turf Management	3

Plant Nutrition and Soils

<i>Fall</i>	STOCKSCH 515	Microbiology of the Soil	3-4
<i>Fall</i>	STOCKSCH 530	Plant Nutrition	4
<i>Fall</i>	STOCKSCH 575	Environmental Soil Chemistry	4
<i>Spr</i>	STOCKSCH 580	Soil Fertility	3

Turf Management

<i>Fall</i>	STOCKSCH 230	Introductory Turfgrass Management	4
<i>Spr</i>	STOCKSCH 234	Irrigation & Drainage	2
<i>Spr</i>	STOCKSCH 240	Applied Calculations in Turf Management	2
<i>Spr</i>	STOCKSCH 275	Turfgrass Physiology & Ecology	3
<i>Fall</i>	STOCKSCH 310	Principles of Weed Management	3

SUSTAINABLE HORTICULTURE

CREDITS

Focus

SELECT BUSINESS OR SCIENCE FOCUS:

1. Business Focus

SELECT FOUR COURSES IN BUSINESS

THESE COURSES SHOULD BE DISTRIBUTED ACROSS FOUR OF THE FIVE CATEGORIES (a-e) BELOW:

a. <i>Fall/Spr</i>	ACCOUNTG 221	Principles of Financial Accounting	3
	OR	OR	OR
<i>Spr</i>	RES-ECON 324	Small Business Finance	3
b. <i>Fall/Spr</i>	ECON 103	Introduction to Microeconomics (SB)	4
	OR	OR	OR
<i>Fall/Spr</i>	ECON 104	Introduction to Macroeconomics (SB)	4
	OR	OR	OR
<i>Fall/Spr</i>	RES-ECON 102	Introductory Resource Economics (SB)	4
c. <i>Fall/Spr</i>	MANAGMNT 301	Principles of Management	3
d. <i>Fall/Spr</i>	HT-MGT 260	Human Resource Mgt/Hospitality Industry	3
	OR	OR	OR
<i>Fall/Spr</i>	MANAGMNT 314	Human Resource Management	3
e. <i>Fall/Spr</i>	MARKETNG 301	Fundamentals of Marketing	3

2. Science Focus

SELECT FOUR COURSES IN SCIENCE

CHOOSE ONE COURSE FROM EACH OF THE FOUR CATEGORIES (a-d) BELOW:

a. <i>Fall/Spr</i>	BIOLOGY 151	Introductory Biology I (BS)	4
b. <i>Fall/Spr</i>	BIOLOGY 285	Cellular & Molecular Biology	3
	OR	OR	OR
<i>Spr</i>	CHEM 250	Organic Chemistry	3
	OR	OR	OR
<i>Fall/Spr</i>	CHEM 261	Organic Chemistry	3
c. <i>Fall/Spr</i>	CHEM 112	General Chemistry-Science (PS)	4
d. <i>Fall/Spr</i>	MATH 127	Calculus for the Life & Social Sciences I (R2)	3
	OR	OR	OR
<i>Fall/Spr</i>	MATH 131	Calculus I (R2)	4

Total Major Requirements 48-54

Summary of Requirements

Total Core Requirements 27-29

Biological Science	8
Chemistry	4
Ecosystems Studies	3-4
Integrative Experience	3
Junior Year Writing	3
Math, Statistics and Reasoning	6-7

Total Major Requirements 48-54

Required Courses	19-23
Restricted Electives	29-31

Grand Total for Sustainable Horticulture 75-83

TURFGRASS SCIENCE AND MANAGEMENT

CORE REQUIREMENTS OF THE MAJOR

CREDITS

Biological Science

<i>Fall/Spr</i>	STOCKSCH 105	Soils (BS)	4
<i>Fall</i>	STOCKSCH 108	Introductory Botany	4

Chemistry

<i>Fall</i>	CHEM 110	General Chemistry (PS)	4
	OR	OR	OR
<i>Fall/Spr</i>	CHEM 111	General Chemistry-Science (PS)	4

(*Students selecting Science focus should complete CHEM 111)

Ecosystems Studies

SELECT ONE OF THE FOLLOWING:

<i>Fall/Spr</i>	BIOLOGY 287	Introductory Ecology	3
<i>Fall</i>	ENVIRSCI 101	Introduction to Environmental Science (BS)	4
<i>Spr</i>	ENVIRSCI 214	Ecosystems, Biodiversity and Global Change	3
<i>Fall</i>	NRC 100	Environment and Society (SI)	4

Integrative Experience

<i>Spr</i>	NATSCI 494I	Global Issues in Applied Biology	3
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Junior Year Writing

<i>Fall/Spr</i>	NATSCI 397A	CNS Junior Writing	3
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Math, Statistics and Reasoning

SELECT COURSE(S) FROM BOTH CATEGORIES 1 & 2:

1. Basic Mathematics (R1)

<i>Fall/Spr</i>	MATH 101+MATH 102	Precalculus Algebra with Functions & Graphs	2
		Analytic Geometry & Trigonometry (R1)	2
	OR	OR	OR
<i>Fall/Spr</i>	MATH 104	Algebra, Analytic Geometry, & Trig (R1)	3

2. Analytical Reasoning (R2)

<i>Fall/Spr</i>	RES-ECON 212	Introductory Statistics/Social Sciences (R2)	4
	OR	OR	OR
<i>Fall/Spr</i>	STATISTC 111	Elementary Statistics (R2)	3
	OR	OR	OR
<i>Fall/Spr</i>	STATISTC 240	Introduction to Statistics (R2)	3

Total Core Requirements 27-30

TURFGRASS SCIENCE AND MANAGEMENT

MAJOR REQUIREMENTS

CREDITS

Required Courses

Pest Management

<i>Spr</i>	STOCKSCH 101	Insects & Related Forms	2
	OR	OR	OR
<i>Fall</i>	STOCKSCH 326	Insect Biology	3
<i>Spr</i>	STOCKSCH 107	Turfgrass Insects	2
<i>Fall</i>	STOCKSCH 505	General Plant Pathology	4

Plant Nutrition

SELECT ONE OF THE FOLLOWING:

<i>Fall</i>	STOCKSCH 530	Plant Nutrition	4
<i>Spr</i>	STOCKSCH 580	Soil Fertility	3

Plant Physiology

<i>Spr</i>	STOCKSCH 384	Introduction to Plant Physiology	3
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Turf

<i>Fall</i>	STOCKSCH 230	Introductory Turfgrass Management	4
<i>Spr</i>	STOCKSCH 275	Turfgrass Physiology & Ecology	3
<i>Fall</i>	STOCKSCH 310	Principles of Weed Management	3
<i>Spr</i>	STOCKSCH 340	Advanced Turfgrass Management	3

Restricted Electives

CREDITS TAKEN TO SATISFY MAJOR REQUIREMENTS IN OTHER AREAS **CANNOT** BE COUNTED AS RESTRICTED ELECTIVES

SELECT 12 CREDITS MINIMUM FROM COURSES LISTED BELOW
AT LEAST 6 CREDITS AT OR ABOVE 500-LEVEL
MAXIMUM 6 CREDITS MAY BE TAKEN OUTSIDE THE MAJOR

<i>Fall/Spr</i>	BIOLOGY 283	General Genetics	3
<i>Fall</i>	NRC 232	Principles of Arboriculture	3
<i>Fall</i>	STOCKSCH 200	Plant Propagation	3
<i>Spr</i>	STOCKSCH 234	Irrigation & Drainage	2
<i>Spr</i>	STOCKSCH 240	Applied Calculations in Turf Management	2
<i>Spr</i>	STOCKSCH 255	Herbaceous Plants	3
<i>Spr/odd yrs</i>	STOCKSCH 510	Management & Ecology of Plant Diseases	3
<i>Fall</i>	STOCKSCH 515	Microbiology of the Soil	3-4
<i>Fall</i>	STOCKSCH 523	Plant Stress Physiology	3
<i>Fall</i>	STOCKSCH 530	Plant Nutrition	4
<i>Spr</i>	STOCKSCH 535	Diagnostic Plant Pathology	4
<i>Spr</i>	STOCKSCH 550	Plant Growth Regulators in Agriculture	3
<i>Fall</i>	SUSTCOMM 335	Plants in Landscape	4

TURFGRASS SCIENCE AND MANAGEMENT

Restricted Electives (cont.)

			<i>CREDITS</i>
<i>Spr/odd yrs</i>	STOCKSCH 560	Weed Science	3
<i>Fall</i>	STOCKSCH 570	Soil Physics	3
<i>Spr</i>	STOCKSCH 580	Soil Fertility	3
<i>Fall</i>	STOCKSCH 597A	Phyto/Bioremediation	3
<i>Spr</i>	STOCKSCH 597M	Topics in Turf Pathology	3
<i>Spr</i>	STOCKSCH 597V	Integrated Turf Management	3

Focus

SELECT BUSINESS OR SCIENCE FOCUS

1. Business Focus SELECT FOUR COURSES FROM CATEGORIES a-e:

a. <i>Fall/Spr</i>	ACCOUNTG 221	Principles of Financial Accounting	3
	OR	OR	OR
<i>Spr</i>	RES-ECON 324	Small Business Finance	3
b. <i>Fall/Spr</i>	ECON 103	Introduction to Microeconomics (SB)	4
	OR	OR	OR
<i>Fall/Spr</i>	ECON 104	Introduction to Macroeconomics (SB)	4
	OR	OR	OR
<i>Fall/Spr</i>	RES-ECON 102	Introductory Resource Economics (SB)	4
c. <i>Fall/Spr</i>	MANAGMNT 301	Principles of Management	3
d. <i>Fall/Spr</i>	HT-MGT 260	Human Resource Mgt/Hospitality Industry	3
	OR	OR	OR
<i>Fall/Spr</i>	MANAGMNT 314	Human Resource Management	3
e. <i>Fall/Spr</i>	MARKETNG 301	Fundamentals of Marketing	3

2. Science Focus SELECT ONE COURSE FROM EACH CATEGORY (a-d):

a. <i>Fall/Spr</i>	BIOLOGY 151	Introductory Biology I (BS)	4
b. <i>Fall/Spr</i>	CHEM 112	General Chemistry-Science (PS)	4
c. <i>Spr</i>	CHEM 250	Organic Chemistry	3
	OR	OR	OR
<i>Fall/Spr</i>	CHEM 261	Organic Chemistry	3
d. <i>Fall/Spr</i>	MATH 127	Calculus for the Life & Social Sciences I (R2)	3
	OR	OR	OR
<i>Fall/Spr</i>	MATH 131	Calculus I (R2)	4

Total Major Requirements 53-57

Summary of Requirements

Total Core Requirements

Biological Science	8
Chemistry	4
Ecosystems Studies	3-4
Integrative Experience	3
Junior Year Writing	3
Math, Statistics and Reasoning	6-8

Total Major Requirements

Required Courses	27-29
Restricted Electives	26-28

Grand Total for Turf Science and Management 80-87

COURSE DESCRIPTIONS

STOCKBRIDGE SCHOOL

STOCKSCH 100

Botany for Gardeners (BS)

A holistic view of plants including ecology, plant form and function, inheritance and evolution, and the relationship between plants and human life. Taught using world food, agricultural and gardening examples.

4 credits/fall sem

STOCKSCH 101

Insects and Related Forms

With lab. Introduction to insect recognition, development, damage, and control.

Seven-week course; first 7 weeks of the semester.

2 credits/spring sem

STOCKSCH 105 (BS)

Soils

With lab. Interrelationship of soils and higher plants. Physical, chemical, and biological properties of soils. Practical approach to current problems through basic soil principles.

Prerequisite: some knowledge of chemistry

4 credits/both sem

STOCKSCH 107

Turfgrass Insects

Principles and practical methods of controlling turf insect pests.

Prerequisite: STOCKSCH 101 (may be taken concurrently)

2 credits/spring sem

STOCKSCH 108

Introductory Botany

With lab. This introductory botany course covers the unique features of plants, how they function, how they are categorized, and how they fit into the ecosystem. Topics include classification of plants, analysis of cell structure and various plant tissues and organs, and study of sexual and asexual reproduction as well as structure and function of plant systems. In addition, students will develop a basic understanding of the processes of photosynthesis and cellular respiration.

4 credits/fall sem

STOCKSCH 109

Insects of Ornamentals

With lab. The recognition, biology, and control of major insect and mite pests attacking shade trees and woody ornamentals in the northeastern U.S. Emphasis on techniques and knowledge useful to the professional in tree care.

Prerequisite: STOCKSCH 101

3 credits/fall sem

STOCKSCH 117**Agricultural Chemistry**

An introductory course that satisfies the chemistry requirement for the Sustainable Food and Farming major but not the physical science General Education requirement. Topics include matter and energy, chemical bonding and reactions, moles, gaseous and aqueous chemistry and more. Taught in the context of applied agricultural systems.

3 credits/spring sem

STOCKSCH 118**Introduction to Sustainable Food and Farming**

Highly interactive and participatory introduction to the field of Sustainable Food and Farming focused on academic preparation and possible careers.

Prerequisite: Sustainable Food and Farming majors only

1 credit/both sem

STOCKSCH 120**Organic Farming and Gardening (BS)**

With lab. Introduction to principles of soil fertility and crop management by organic procedures that are contrasted and evaluated against conventional chemical methods of farming.

4 credits/both sem

STOCKSCH 182**Principles of Pesticide Management**

Topics include state and federal pesticide laws and regulations, pesticides and the environment, handling and storage of pesticides, classes and formulations of pesticides, safety and application equipment, understanding the pesticide label, toxicity, proper calculation and mixing of pesticides, and history of pesticide use. Includes preparation for the Massachusetts Pesticide Core Exam.

2 credits/spring sem

STOCKSCH 196**Independent Study**

Independent work related to some area of the plant, soil or insect sciences that requires no prerequisite knowledge or prior course work.

Prerequisite: consent of instructor

1-6 credits/both sem

STOCKSCH 197A**Backyard Homesteading**

Explores home-scale food production with a focus on permaculture, intensive mini-farming and urban homesteading. Integrates research and practical applications to create food systems that have the resiliency of natural ecosystems.

Continuing & Professional Education (CPE). Online class.

3 credits/summer

STOCKSCH 197D**Draft Horse Husbandry I**

Students are taught the basics of draft horse husbandry prior to learning skills in working with horses in harness, both on the road and on the farm.

3 credits/both sem

STOCKSCH 197G**Introduction to Permaculture**

Foundation in permaculture history, ethics, principles, design process, and practical applications, rooted in the observation of natural systems. Students are trained as critical thinkers, observers, and analysts of the world(s) around them, and then goes on to provide students with the tools needed to design for inspired and positive change.

3 credits/both sem

STOCKSCH 197MC**Introduction to Mushroom Culture**

The basics of mushroom cultivation, including laboratory skills to grow mycelium, cultivation methods and medicinal value.

1 credit/both sem

STOCKSCH 197PW**Personal Wellness for Farmers & Gardeners**

Development of skills and understanding for maintaining a healthy lifestyle while being a successful farmer or gardener.

Prerequisite: Sustainable Food and Farming majors only

3 credits/spring sem

STOCKSCH 200**Plant Propagation**

With lab. The basic principles and techniques for propagating plants by both sexual and asexual means, including seeds, cuttings, bulbs, and tissue culture. The hormonal and physiological factors affecting rooting, seed dormancy, grafting, budding, and layering.

Prerequisite: STOCKSCH 108 or 100-level biology course

3 credits/fall sem

STOCKSCH 211**Pasture Management**

With lab. Potential of pasture to provide nutritional needs of livestock and the integration of well-managed pasture systems can contribute significantly to the sustainability of the farm. Major topics include a review of major forage species selection, grazing management, establishment of new pastures, and pasture renovation.

3 credits/fall sem

STOCKSCH 230**Introductory Turfgrass Management**

With lab. Basic principles of selecting and managing turfgrass for home lawns, parks, golf courses, and other turf areas. Topics include: climatic adaptation, grass identification, establishment practices, pest control, fertility, environmental stresses, etc.

Prerequisites: STOCKSCH 105 and STOCKSCH 108 (may be taken concurrently)

4 credits/fall sem

STOCKSCH 234**Irrigation & Drainage**

Principles of hydraulics and system design for turf and landscapes with an emphasis on golf courses. Irrigation systems, equipment performance, installation practices, operation procedures and troubleshooting. Drainage of sports turf also included.
2 credits/spring sem

STOCKSCH 235**Pruning Fruit Crops**

With lab. Theory and practice of pruning deciduous fruit plants/trees. Emphasis on practical, hands-on experience.
2 credits/spring sem

STOCKSCH 240**Applied Calculations in Turf Management**

Calculations involving area and volume measurements, fertilizer and pesticide requirements, cost analysis, seed calculations, irrigation calculations, and calculations relating to spreader and sprayer calibrations.
Prerequisite: STOCKSCH 230
2 credits/spring sem

STOCKSCH 255**Herbaceous Plants**

Study and identification of herbaceous plants; their uses as ornamental plants for home, park, and business.
3 credits/spring sem

STOCKSCH 258**Urban Agriculture**

Explores innovative urban farming systems through the evaluation of case studies. Students will practice critical research skills, including information gathering, and data analysis and assessment to learn about the opportunities and challenges associated with contemporary urban farming systems.
3 credits/spring sem

STOCKSCH 262**Introduction to Teaching Agricultural Education**

Methodological insights and understanding for teaching technical subject matter; emphasis on observing programs, developing, conveying, and evaluating agricultural-based curricula.
3 credits/fall sem

STOCKSCH 265**Sustainable Agriculture**

With lab. Exploration of ethical, practical and scientific aspects of agricultural sustainability, including economic, social and environmental impacts of food and farming. Uses systems thinking tools to compare industrial and ecological agriculture.
Prerequisite: Sustainable Food and Farming and Sustainable Horticulture majors only or permission of instructor
3 credits/both sem

STOCKSCH 275**Turfgrass Physiology & Ecology**

First half of the semester: an introduction to basic concepts in agricultural chemistry as related to the growth and culture of turf grasses. Second half: the overall growth and development of grasses, including such areas as soil fertility and mineral nutrition.
Prerequisite: STOCKSCH 230
3 credits/spring sem

STOCKSCH 280**Herbs, Spices, & Medicinal Plants (BS)**

With lab. Introduction to the growth, culture, and science related to the production and use of herbs, spices, and medicinal plants. Emphasis on plants used in the home; discussion of bioactivity of plant extracts. Practice in seeding, growing, oil extraction, and utilization of these plants.
4 credits/spring sem

STOCKSCH 281**Topics in Herbalism I**

Introduction to the broad field of herbalism through the eyes of a clinical and community herbalist, a survey course in multiple format (lecture, experiential, indoor, outdoor), topics including historical overview; comparison of major health models of allopathy and holism, introduction to diverse herbal-based health models (Western, Asian, Indigenous), in-depth information on medicinal plants, plant ID, gathering/growing/preparation skills, diverse tools of an herbalist, food as medicine; ethics, politics, and legalities of herbalism.
2 credits/fall sem

STOCKSCH 282**Topics in Herbalism II**

This class introduces students to the depth and diversity of herbalism, comparing different types of herbal practice, including phytotherapy, clinical herbalism, community herbalism, aromatherapy, flower essence/plant-spirit medicine, and homeopathy.
2 credits/spring sem

STOCKSCH 288**Land Use Policies and Sustainable Farming**

Exploration of the political, economic and societal forces that influence land use decisions, an understanding of the history of land use policies and planning in the U.S. as they relate to agriculture, a working knowledge of current land use policies and programs tied to agriculture and farming, and an opportunity through case studies to dissect and debate land use issues and conflicts surrounding agriculture.
Continuing & Professional Education (CPE). Online class.
3 credits/summer & fall sem

STOCKSCH 290W**Organic Weed Control**

Sustainable food and farming students will learn about organic weed control by exploring various systems and approaches to weed management to reduce losses to crop yield and quality.
3 credits/spring sem

STOCKSCH 296**Independent Study**

Sophomore-level project for students who have completed introductory courses in biology/botany, soils and/or entomology.

Prerequisite: permission of instructor

1-6 credits/both sem

STOCKSCH 297AL**Agricultural Leadership & Community Education**

Learn to work with community groups and schools as a community educator.

Prerequisite: Sustainable Food and Farming majors only or permission of instructor

3 credits/fall sem

STOCKSCH 297C**Traditional Herbal Medicine Systems I**

An examination of indigenous medicinal systems from around the world (including Ayurvedic, Chinese, African, Middle Eastern, European, Central Asian, Native American and Amazonian).

Students will be exposed to the use of medicinal plants in different cultures around the globe.

Companion course to STOCKSCH 297F. These courses can be taken in any sequence.

1 credit/fall sem

STOCKSCH 297F**Traditional Herbal Medicine Systems II**

An examination of indigenous medicinal systems from around the world to understand the choices of herbal medicines used by traditional healers and the similarities and differences in the approach of treatments. Students will be exposed to a wide range of cultures including Ayurvedic, Chinese, African, Middle Eastern, European, Central Asian, Native American, and Amazonian.

Companion course to STOCKSCH 297C. These courses can be taken in any sequence.

1 credit/spring sem

STOCKSCH 297MP**Small Farm Husbandry: Cows, Sheep, & Goats for Meat Production**

Learn to work with community groups and schools as a community educator.

Prerequisite: Sustainable Food and Farming majors only or permission of instructor

3 credits/spring sem

STOCKSCH 297P**Small Farm Husbandry II: Pigs & Poultry**

A farmer's perspective on the management, production and marketing of poultry and pigs on a small farm. The advantages of having pigs and poultry will be addressed. Basic care, processing options, regulations and marketing will be reviewed. The course will be structured around lectures, farm visits, guest lectures and acquiring hands on skills. At the end of this course, students will be able to utilize pigs and poultry as an integral part of their small farm plan.

3 credits/fall sem

STOCKSCH 297PD**Permaculture Design and Practice**

This course offers students a deepened practice in permaculture design process and techniques; includes in-class lectures, field trips, design studio and a hands-on field component. The course culminates with students completing their own permaculture design for a site in the Pioneer Valley.

Prerequisite: STOCKSCH 197G; Sustainable Food and Farming majors only or permission of instructor

3 credits/spring sem

STOCKSCH 297R**Raising Dairy Goats Sustainably**

Sustainable and natural methods of raising dairy goats, current research on goat health, breeding and birthing, sustainable management practices, and the basics of making cheese and soap.

Continuing & Professional Education (CPE). Online class.

3 credits/fall sem

STOCKSCH 297T**Alternative Medicine for Animals and Humans**

Description unavailable.

1 credit/fall sem

STOCKSCH 297V**Organic Vegetable Production**

Focus on organic insect, disease, and weed control, greenhouse production and construction, irrigation practices, planting and fertility, harvesting and marketing techniques, as well as how to manage money, people and natural resources.

Continuing & Professional Education (CPE). Online class.

3 credits/fall sem

STOCKSCH 297W**Herbal Approaches to Women's Health**

Use of medicinal herbs and foods for health and well being through all stages of a woman's life.

Introduction to basic medicine making, anatomy and physiology of the female reproductive system.

2 credits/spring sem

STOCKSCH 298G**Gardenshare Practicum**

Student-led practicum experience utilizing a plot of land on campus to grow edible and ornamental crops. Specific garden activities depend on the season of the year. Students may enroll more than once for credit. Mandatory Pass/Fail.

1 credit/both sem

STOCKSCH 300**Deciduous Orchards Science**

With lab. Principles and practices involved in the establishment and management of deciduous orchards.

Prerequisite: STOCKSCH 108 (may be taken concurrently) or basic botany course suggested

3 credits/fall sem/odd yrs

STOCKSCH 305**Small Fruit Production**

With lab. Principles and practices governing the establishment and management of small fruit plantings.

Prerequisite: STOCKSCH 108 (may be taken concurrently) or basic botany course suggested

3 credits/fall sem/even yrs

STOCKSCH 310**Principles of Weed Management**

With lab. History of weed control; importance of weeds and their relationship to people and the environment; ecology of weeds, competition, persistence and survival mechanisms; reproduction, seed germination, and dormancy; methods of weed control, cultural, biological, chemical, and integrated pest management strategies; classification of herbicides and their selectivity; soil factors affecting herbicide performance, persistence and degradation; application equipment and calibration of sprayers; weed management systems for various crops and non-crop areas.

Prerequisite: STOCKSCH 108 or 100-level biology course

3 credits/fall sem

STOCKSCH 315**Greenhouse Management**

With lab. Introduction to the greenhouse environment and the technology used in production of greenhouse crops. Greenhouse experiments in crop production; exercises on greenhouse structures, heating and cooling, growing media, crop nutrition, photoperiod control and lighting, and crop scheduling; field trip to local greenhouses.

Prerequisites: STOCKSCH 108 (may be taken concurrently) or 100-level biology course; Plant, Soil and Insect Science, Sustainable Food and Farming, and Sustainable Horticulture majors only or permission of instructor

4 credits/fall sem

STOCKSCH 325**Vegetable Production**

With lab. Principles of sustainable production of vegetable crops. Topics include specific practices used for the major vegetable crops grown in New England, water and soil fertility management, season extenders, and crop rotation. Course intended for students who want to grow vegetable crops or work in the vegetable industry.

Prerequisite: STOCKSCH 108 or plant science course

4 credits/spring sem

STOCKSCH 326**Insect Biology**

With optional lab and field trips. How insects solve their problems of maintenance, survival, reproduction, etc., and how entomologists apply this knowledge in managing them. Other topics include insect evolution, plant and insect interactions, biodiversity and conservation of insects, behavior, and insect pest management. Emphasis on various insect models (e.g., *Drosophila*) as they relate to major research in biology.

3 credits/fall sem

STOCKSCH 335**Environmental Physiology and Biology of Spring Greenhouse Crops**

With lab. Greenhouse culture of spring greenhouse crops.

Prerequisites: STOCKSCH 315 and STOCKSCH 321

4 credits/spring sem

STOCKSCH 340**Advanced Turfgrass Management**

Management of environmental stress in turfgrass. Special practices in managing high-quality turfgrass areas such as golf courses, athletic fields, and ornamental areas.

Prerequisite: STOCKSCH 275

3 credits/spring sem

STOCKSCH 342**Pesticides, Public Policy & the Environment**

Current issues associated with pesticide use; includes discussion of role of pesticides in agriculture, public health, and other related areas; fate of pesticides in the environment; and public perception of pesticides. Case studies examine benefits and risks of pesticide use; environmental cancer; and role of media and public interest groups in pesticide decisions. Alternatives to current heavy reliance on chemical technology in pest control. Current and pending federal, state, and local legislation.

3 credits/fall sem

STOCKSCH 350**Sustainable Soil and Crop Management**

With lab. Maintenance and enhancement of long-term productivity and sustainability of soil in food and feed production. Students will gain an integrated knowledge of soil and crop influences on cropping systems. Lab includes several farm visits, farmer and student presentations.

Prerequisite: STOCKSCH 105 or permission of instructor

3 credits/fall sem

STOCKSCH 355**Community Food Systems**

With lab. Examines the movement of food from seed to table. Participants explore local and global food systems, and specific food related issues that impact health of communities. Topics include examining the economic and political decisions that frame our food chain, direct marketing, commercial agriculture, processing, food justice, hunger, health, food security, peak oil, school food systems and school gardens, Community Supported Agriculture, farmers markets, small scale farming and homesteading. Examination of the opportunities and challenges required in making community food projects that create real lasting systems change.

Prerequisite: STOCKSCH 265

3 credits/fall sem/odd yrs

STOCKSCH 356**Food Justice and Policy**

With lab. Examines the role of policy and politics in determining what we eat, who experiences barriers to access safe, healthy foods, and how we create equity and sustainability in our food system.

Prerequisite: STOCKSCH 265

3 credits/fall sem/even yrs

STOCKSCH 362**Vocational Agricultural Education Seminar**

Characteristics of an effective teacher will be identified; tools required by first-year teachers to be successful will be featured. Focus will be on techniques for establishing effective classroom routines and procedures, student instruction and assessment, and for maintaining a positive classroom/shop climate that conveys high expectations. Students will be able to identify elements of a course/program curriculum and learn how to develop a lesson plan, assign and grade homework, and collaborate with colleagues to improve instruction, assessment, and student achievement.

3 credits/spring sem

STOCKSCH 370**Tropical Agriculture**

Tropical regions of the world, their environment and classification; influence of climate, population, and socio-economic conditions on agriculture; major crops and cropping systems of sub-humid tropics; introduction to dry land agriculture; importance of rainfall and irrigation on productivity; green revolution; desertification; present and future research needs of region, and state of agricultural technology.

3 credits/spring sem

STOCKSCH 375**Soil & Water Conservation**

With lab. Soil management and control of water and wind erosion. Environmental aspects of soil and water conservation. Discussion of cropping and tilling systems and their effect on soil loss. Principles of soil drainage and irrigation for agricultural and engineering practices.

Prerequisite: STOCKSCH 105 or equivalent

3 credits/fall sem

STOCKSCH 379**Agricultural Systems Thinking**

An opportunity to learn and practice systems thinking tools to deepen the understanding of complex food and farming systems and integrate the learning acquired from discipline-focused courses. Satisfies the Integrative Experience requirement for BS Sustainable Food and Farming majors.

Prerequisite: STOCKSCH 265 or consent of instructor

3 credits/fall sem

STOCKSCH 382**Writing for Sustainability**

Satisfies the Junior Year Writing requirement for Sustainable Food and Farming majors. Practice and improve writing while clarifying career goals and improving professional communication skills.

Prerequisites: ENGLISH 120 or ENGLWRIT 112, and STOCKSCH 265

3 credits/spring sem

STOCKSCH 384**Introduction to Plant Physiology**

Students will be introduced to fundamental concepts of physiological processes governing plant growth and development, from cell to whole plant responses. The course blends concepts from traditional plant physiology and recent research advances to help provide insight on plant growth and function under various environmental conditions.

Prerequisite: STOCKSCH 108 or any introductory plant science course or CHEM 110 or CHEM 111

3 credits/spring sem

STOCKSCH 391B**Turfgrass Science & Management**

A practical review of key subjects in turfgrass science and management. Specifically designed to prepare students for National Collegiate Turf Bowl competitions in the areas of golf course and sports turf management. Students from across the country participate in these annual competitions to gain recognition for their university's turf programs and to network with industry professionals.

Prerequisites: STOCKSCH 105, STOCKSCH 107, STOCKSCH 240 and STOCKSCH 275

1 credit/fall sem

STOCKSCH 396**Independent Study**

Upper-level project for students who have completed introductory courses in biology/botany, soils and/or entomology, and at least two mid-level STOCKSCH courses.

Prerequisite: permission of instructor

1-6 credits/both sem

STOCKSCH 397FV**Postharvest Handling**

An introduction to the environmental and biological factors that contribute to postharvest loss of fruits and vegetables, commercial procedures of harvesting, handling, and storage of horticultural commodities, and specific handling steps for commodities of various plant organs. Small-scale handling practices will be emphasized.

Continuing & Professional Education (CPE). Online class.

3 credits/summer

STOCKSCH 397GF**Global Food Systems**

This course covers social aspects of the agri-food systems as well as the political economy of food, agriculture and sustainability. From rural development to the controversy of GMOs, from land conservation to the politics of globalization, from local food systems to global food justice, students use interdisciplinary perspectives to comprehend, analyze and visualize improved global and local food systems.

Continuing & Professional Education (CPE). Online class.

3 credits/both sem

STOCKSCH 397NP**Non-Profit Management of Community Food Programs**

Covers the foundations of nonprofit work focused on local food systems, including how to start a nonprofit organization, planning successful programs, working with a community, grant writing, fundraising, board development, advocacy and marketing. Learn the basics of how community-based nonprofits are on the forefront of sustainable and local food initiatives across the nation.

Continuing & Professional Education (CPE). Online class.

3 credits/winter sem

STOCKSCH 397S

Sustainable Site Design & Planning

An exploration into the fundamentals of landscape design with particular attention to integrating both existing and new buildings sustainably into their landscapes. Students investigate sustainable design strategies that address the ecological, water, energy and food system links between buildings and their supporting sites, as exemplified by the LEED (Leadership in Energy and Environmental Design) rating system and Sustainable Sites Initiative. Lecture format leading to a student design project to be presented digitally.

Continuing & Professional Education (CPE). Online class.

3 credits/spring sem & summer

STOCKSCH 398

Practicum

Internship or other pre-professional work experience in the field of plant and soil sciences.

Prerequisite course work in plant biology, soil science, and at least two mid-level STOCKSCH courses required.

Prerequisite: permission of faculty advisor

1-12 credits/both sem

STOCKSCH 398E

Farm Enterprise Practicum

Guided practicum experience providing students with practical experience in growing crops, as well as managing and marketing these crops in support of their educational goals. Students will develop, use and evaluate crop plans, including all aspects of production and marketing. Practical experience in management of soil fertility, water, and pests using IPM and organic methods. Weekly seminar and field work participation required. Enrollment limited.

Prerequisites: STOCKSCH 105 and STOCKSCH 325, junior standing, and permission of instructor

3-6 credits/spring sem

STOCKSCH 398G

Greenhouse Practicum

Practicum focusing on greenhouse venting and temperature control, maintaining outdoor gardens, harvesting of floricultural crops, post-harvest handling of floricultural crops, fertilization, propagation (by seed, cuttings, division), greenhouse maintenance, operation of greenhouse equipment (fertilizer injector).

Prerequisite: permission of instructor

1-18 credit/both sem

STOCKSCH 398T

Turf Practicum

Internship or other pre-professional work experience in the field of turfgrass management, including but not limited to golf course management, athletic field maintenance, and professional lawn care.

Prerequisites: STOCKSCH 230 and permission of faculty advisor

1-12 credits/both sem

STOCKSCH 485

Sustainable Food and Farming Capstone

This course offers seniors an opportunity to study a current sustainable food and/or farming problem, review the literature related to the problem, develop management tactics and strategies to address the problem, and communicate their conclusions with others in a professional setting.

Prerequisites: STOCKSCH 265; Sustainable Food and Farming majors only

3 credits/spring sem

STOCKSCH 496

Independent Study

Research or other independent upper-level project in plant and soil sciences. Student must have completed course work in plant biology, soil science, chemistry, and at least one upper-level STOCKSCH course.

Prerequisite: permission of instructor

1-6 credits/both sem

STOCKSCH 498

Practicum

Internship or other pre-professional work experience in the field of plant and soil sciences.

Prerequisite: permission of instructor

1-12 credits/both sem

STOCKSCH 498E

Farm Enterprise Practicum II

Continuation of guided practicum experience (STOCKSCH 398E), with students maintaining crops planted in the Spring semester and preparing fields for winter. Students will harvest, clean, store and market their crops. Participation in weekly seminar required. Written report required covering all aspects of the production and marketing components of target crops and presentation of results/recommendations to the group.

Prerequisites: STOCKSCH 398E and permission of instructor

3-6 credits/fall sem

STOCKSCH 505

General Plant Pathology

With lab. Causes, nature, and control of plant diseases. Diagnosis of plant diseases. Mechanisms, biochemistry, and genetics of plant disease induction, development, and control.

Prerequisite: MICROBIO 310 or STOCKSCH 384/397PP or 100-level biology course or permission of instructor

4 credits/fall sem

STOCKSCH 510

Management & Ecology of Plant Diseases

The ecology of plant, microbe, and human interactions in plant diseases, from wilderness to industrial farms. Epidemics, traditional farming, environmental impacts and sustainability issues. Ways in which agriculture, particularly plant production and plant disease management, change ecosystems. Independent project.

Prerequisite: BIOLOGY 151 or equivalent

3 credits/spring sem/odd yrs

STOCKSCH 515**Microbiology of the Soil**

Microbial processes in the soil and sediment environment; ecology of the various microbial communities; decomposition of organic matter, carbon transformation, nitrogen, sulfur, phosphorus and other mineral transformations. Chemistry of these reactions and their biogeochemical implications. Biological equilibrium, the rhizosphere, and microbial associations.

Prerequisites: CHEM 250 or CHEM 261 and basic biology and organic chemistry courses

3-4 credits/fall sem

STOCKSCH 520**Physiology of Crop Yield**

Physiology of crop plants, carbon fixation, partitioning, growth and development, competition in crops, environmental factors and yield relationships of crops.

3 credits/fall sem

STOCKSCH 523**Plant Stress Physiology**

An advanced course focusing on plant responses to major abiotic stresses. Current research topics in stress physiology will be discussed.

Prerequisite: STOCKSCH 384/397PP or BIOLOGY 510

3 credits/fall sem

STOCKSCH 525**Mycology**

Biology, ecology, classification and identification of fungi and fungal-like organisms. Includes consideration of fungi as causes of diseases in animals, humans, and plants, and their uses in biotechnology applications.

Prerequisite: BIOLOGY 151

4 credits/fall sem/odd yrs

STOCKSCH 530**Plant Nutrition**

With lab. The acquisition, translocation, distribution, and function of the essential inorganic elements in plants. Genetic control of plant nutrition and ecological adaptation to nutritional variables.

Diagnosis of plant nutritional disorders.

Prerequisites: STOCKSCH 105 and CHEM 110 or CHEM 111 or equivalent

4 credits/fall sem

STOCKSCH 535**Diagnostic Plant Pathology**

Methods of diagnosing plant diseases caused by fungi, bacteria, viruses, nematodes, and abiotic agents considered using specimens collected by students.

Prerequisite: STOCKSCH 505

4 credits/spring sem

STOCKSCH 545**Postharvest Biology**

The basic biochemical and physiological processes occurring in fruits, vegetables, and flowers after harvest; postharvest treatments to modify these processes.

Prerequisites: STOCKSCH 384/397PP and CHEM 110 or CHEM 111

4 credits/spring sem

STOCKSCH 550**Plant Growth Regulators in Agriculture**

The influence of naturally occurring plant hormones on regulating physiology, growth, and development in plants. Uses and potential uses of synthetic plant growth regulators, cultural techniques, and horticultural practices to improve the production of food, fiber and ornamental plants.

Prerequisites: STOCKSCH 108 or 100-level biology course; STOCKSCH 384/397PP recommended

3 credits/spring sem

STOCKSCH 560**Weed Science**

Ecological concepts in weed management; historical and ecological perspectives. Weed-crop competition and allelopathy; reproductive strategy; seed dormancy, seed production, allocation of resources in perennial weeds. Physiology and biochemistry of herbicides in plants and their relationships with the soil environment.

Prerequisite: STOCKSCH 310 or permission of instructor

3 credits/spring sem/odd yrs

STOCKSCH 570**Soil Physics**

Physical properties of soils and how they relate to water and solute movement in hydrologic systems, energy exchange, plant-soil-water relations, environmental problems, and soil-water management.

Prerequisites: basic courses in math, chemistry, and physics, or permission of instructor

3 credits/fall sem

STOCKSCH 575**Environmental Soil Chemistry**

With lab. Fundamental chemical concepts/processes in soils, such as ion exchange, precipitation/dissolution, redox reactions, partitioning and adsorption, and solution speciation and nature of soil minerals and organic matter. Computer models used to examine current environmental, agricultural, and engineering problems. Examination of how chemical processes affect fate, transport, availability, and remediation of trace elements, heavy metals and organic contaminants in soils and sediments. Discussion on current environmental issues and problems.

Prerequisites: CHEM 110 or CHEM 111 or permission of instructor; STOCKSCH 105 strongly recommended

4 credits/fall sem

STOCKSCH 580**Soil Fertility**

The role of mineral elements in the growth of plants; plant response to fertilizers and other soil amendments; soil reaction, mineral deficiencies and toxicities; environmental impact of soil fertility management practices.

Prerequisites: STOCKSCH 105 and CHEM 110 or CHEM 111 or equivalent

3 credits/spring sem

STOCKSCH 585**Inorganic Contaminants in Soil, Water, and Sediment**

Physical, chemical, and biological factors affecting the fate and transport of inorganic contaminants (including heavy metals) in soil, water and sediment. Sources, chemistry, pedogenic and geochemical behavior of these contaminants and methods used for their analysis. Risk assessment, and remediation technologies, options, and goals.

Prerequisites: CHEM 111 and CHEM 112, knowledge of college algebra, basic soil science, and transition metal chemistry, or permission of instructor

3 credits/spring sem

STOCKSCH 597A**Phyto/Bioremediation**

Various aspects of phytoremediation - the use of plants (both natural hyper-accumulators and transgenic) and their associated microbes with the purpose of environmental clean-up of contaminated soil, sediments and water. Various strategies for phytoremediation of a wide range of toxic pollutants, both organic and elemental, with a special emphasis on toxic metals will be discussed.

Prerequisite: BIOLOGY 151 or STOCKSCH 384/397PP

3 credits/fall sem

STOCKSCH 597C**Plant Nutrition**

Additional discussion period to enhance student learning in STOCKSCH 530. Review and discussion of laboratory exercises and problem sets for STOCKSCH 530. Instruction for writing scientific journal articles and abstracts. Review of current journal literature related to plant nutrition.

Prerequisite: concurrent enrollment in STOCKSCH 530

1 credit/fall sem

STOCKSCH 597M**Topics in Turf Pathology**

Review and discussion of concepts and issues related with turfgrass diseases. Reading of scientific papers and trade journals required each week. Guest speakers from turfgrass industry present many of the topics and lead subsequent class discussion.

Prerequisite: STOCKSCH 505

3 credits/spring sem

STOCKSCH 597V**Integrated Turf Management**

This capstone course stresses concepts of Integrated Pest Management and reviews stress management and pest management strategies. Students will develop an IPM plan for a turf setting.

Prerequisites: STOCKSCH 107, STOCKSCH 310, STOCKSCH 340 and STOCKSCH 505

3 credits/spring sem

STOCKSCH 597W**Artificial Treatment of Wetlands**

Aquatic plant selection, sizing, and design techniques. Pollution parameters of primary concern include BOD, suspended solids, nutrients, heavy metals, pathogens, and organics. Treatment applications include primary and secondary effluents and sludges; storm water and agricultural runoff; solid and hazardous waste leachates, liquid industrial wastes. Field trips, student projects.

Prerequisites: college algebra, introductory chemistry, introductory physics, biology or permission of instructor

3 credits/fall sem

**STOCKBRIDGE SCHOOL OF AGRICULTURE
2015-2016 Academic Calendar**

FALL 2015

September 8	Tuesday	First day of classes
September 21	Monday	Last day to ADD or DROP any class with no record
October 12	Monday	Holiday (Columbus Day)
October 13	Tuesday	Monday class schedule will be followed
October 22	Thursday	Mid-Semester Date (Last day to Drop with 'W' and select 'P/F')
November 11	Wednesday	Holiday (Veterans' Day)
November 12	Thursday	Registration begins for Spring 2016
November 25	Wednesday	Thanksgiving recess begins after last class
November 30	Monday	Classes resume
December 11	Friday	Last day of classes
December 12	Saturday	Reading Period begins
December 13	Sunday	Reading Period ends
December 14	Monday	Final examinations begin
December 19	Saturday	Last day of final examinations
December 21	Monday	Snow day for December 19 exams; semester ends
December 28	Monday	Final grades due by Midnight

SPRING 2016

January 19	Tuesday	First day of classes
February 1	Monday	Last day to ADD or DROP any class with no record
February 15	Monday	Holiday (Presidents' Day)
February 16	Tuesday	Monday class schedule will be followed
March 3	Thursday	Mid-Semester Date (Last day to Drop with 'W' and select 'P/F')
March 12	Saturday	Spring recess begins after last class
March 21	Monday	Classes resume
April 4	Monday	Registration begins for Fall 2016
April 18	Monday	Holiday (Patriot's Day)
April 20	Wednesday	Monday class schedule will be followed
April 27	Wednesday	Last day of classes
April 28	Thursday	Reading Day
April 29	Friday	Final examinations begin
May 1	Sunday	Second Reading Day
May 2	Monday	Final examinations resume
May 5	Thursday	Last day of final examinations; semester ends
May 6	Friday	Undergraduate Commencement
May 10	Tuesday	Final grades due by Midnight

