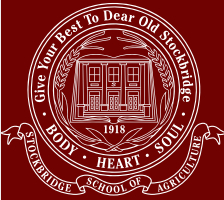


STOCKBRIDGE SCHOOL OF AGRICULTURE

2017-18

B.S. DEGREE





STOCKBRIDGE
SCHOOL *of* AGRICULTURE

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AMHERST

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ACADEMIC MAJORS

Plant and Soil Sciences

Through theoretical and practical training, the Plant and Soil 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: plant science or soil 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 practical, 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 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.

Horticultural Science

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 and Soil Sciences, Sustainable Food and Farming, Horticultural Science, 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 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).

Analytic Reasoning 1 course

ONE COURSE (R2)

3 credits

Basic Mathematics 1 course

ONE COURSE (R1)

3 credits

OR

PASSING SCORE ON THE TIER 1 MATH EXEMPTION EXAM

0 credits

Biological & Physical World 2 courses

ONE 4-CREDIT COURSE FROM EACH CATEGORY

1. BIOLOGICAL SCIENCE (BS)

Fall/Spr BIOLOGY 151

Introductory Biology I (BS)

4 credits

OR

OR

OR

STOCKSCH 105

Soils

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

<i>Fall/Spr</i>	INTEGRATIVE EXPERIENCE (IE)		3 credits
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Social & Cultural Diversity 2 courses

ONE COURSE FROM EACH CATEGORY

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

ONE 4-CREDIT COURSE FROM EACH CATEGORY

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

ONE COURSE FROM EACH CATEGORY

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 387 CNS Junior Writing 3 credits
OR
STOCKSCH 382 Writing for Sustainability 3 credits

Notes:

- From your major department:
 - only one course counts 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 AND SOIL 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

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

Biological Science

<i>Fall/Spr</i>	BIOLOGY 151	Introduction to Biology I (BS)	4
<i>Fall/Spr</i>	BIOLOGY 152	Introduction to 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 & Global Change	3
<i>Fall</i>	NRC 100	Environment and Society (SI)	4
<i>Fall/Spr</i>	STOCKSCH 378	Agroecology	3

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

Integrative Experience

<i>Spr</i>	NATSCI 494I	Global Issues in Applied Biology	3
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PLANT AND SOIL SCIENCES

CREDITS

Junior Year Writing

<i>Fall/Spr</i>	NATSCI 387	CNS Junior Writing	3
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Experimental Techniques Course or Independent Study

SELECT 2-4 CREDITS FROM THE FOLLOWING SUGGESTED COURSES:

<i>Fall/Spr</i>	BIOLOGY 153	Introductory Biology Lab	2
<i>Spr</i>	BIOLOGY 383H	Gene and Genome Analysis	4
<i>Fall/Spr</i>	CHEM 269	Organic Chemistry Lab	2
<i>Spr</i>	MICROBIO 385	Introduction to Biotechnology Laboratory	4
<i>Fall/Spr</i>	NRC 585	Introduction to GIS	4
<i>Fall/Spr</i>	STOCKSCH 390A	Plant Biotechnology and Tissue Culture	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 335	Prin & Practices of Greenhouse Cultivation	4
<i>Fall</i>	STOCKSCH 350	Sustainable Soil and Crop Management	3
<i>Fall</i>	STOCKSCH 505	General Plant Pathology	4
<i>Spr</i>	STOCKSCH 510	Management & Ecology of Plant Diseases	3
<i>Fall</i>	STOCKSCH 530	Plant Nutrition	4
<i>Spr</i>	STOCKSCH 545	Postharvest Biology	4
<i>Spr</i>	STOCKSCH 550	Plant Hormones & Applied Plant Physiology	3
<i>Fall</i>	STOCKSCH 575	Environmental Soil Chemistry	4
<i>Spr</i>	STOCKSCH 580	Soil Fertility	3

Plant Biotechnology

<i>Fall/Spr</i>	BIOLOGY 284	General Genetics Lab	2
<i>Spr</i>	BIOLOGY 383H	Gene and Genome Analysis	4
<i>Spr</i>	BIOLOGY 379H	Genomics and Bioinformatics	3
<i>Spr</i>	BIOLOGY 510	Plant Physiology	4
<i>Fall</i>	STOCKSCH 530	Plant Nutrition	4
<i>Fall</i>	STOCKSCH 587	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</i>	STOCKSCH 510	Management & Ecology of Plant Diseases	3
<i>Fall</i>	STOCKSCH 523	Plant Stress Physiology	3
<i>Spr</i>	STOCKSCH 545	Postharvest Biology	4

PLANT AND SOIL SCIENCES

CREDITS

Soil Science

<i>Spr</i>	GEO-SCI 519	Aqueous Envrn Geochemistry	4
<i>Fall/even yrs</i>	GEO-SCI 563	Glacial Geology	4
<i>Spr</i>	GEO-SCI 587	Hydrogeology	4
<i>Spr</i>	NRC 568	Wetland Soils	2
<i>Spr/odd yrs</i>	NRC 590W	Wetlands Assessment and Field Techniques	3
<i>Fall</i>	STOCKSCH 350	Sustainable Soil & 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,& Sedimnt	3
<i>Fall</i>	STOCKSCH 587	Phyto/Bioremediation	3
<i>Spr</i>	STOCKSCH 590M	Microbe-Mineral-Organic Matter/Soils	3

Total Major Requirements 53-57

SUMMARY OF REQUIREMENTS

Total Core Requirements 15

Total Major Requirements 53-57

Basic Mathematics	3-4
Biological Science	13
Chemistry	8
Ecosystems Studies	3-4
General Science	6
Integrative Experience	3
Junior Year Writing	3
Experimental Techniques Course or Independent Study	2-4
Restricted Electives	12

Grand Total for Plant and Soil Sciences 68-72

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>Summer</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</i>	STOCKSCH 186	Introduction to Permaculture	3
<i>Fall/Spr</i>	STOCKSCH 378	Agroecology	3

Food/Land Policy or Agricultural Education

SELECT ONE OF THE FOLLOWING:

<i>Fall</i>	STOCKSCH 297AL	Agricultural Leadership & Community Educ	3
<i>Spr</i>	STOCKSCH 397AL	Agricultural Leadership & Community Educ II	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 387	CNS Junior Writing	3
	OR	OR	OR
<i>Spr</i>	STOCKSCH 382	Writing for Sustainability	3

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

SUSTAINABLE FOOD AND FARMING

CREDITS

2. Analytical Reasoning (R2)

Advisor Approval Required

3

Total Core Requirements 26-31

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>Spr</i>	STOCKSCH 101	Insects and Related Forms	2
<i>Spr</i>	STOCKSCH 111	Introductory Plant Pathology	2
<i>Fall/Spr</i>	STOCKSCH 120	Organic Farming and Gardening (BS)	4
<i>Spr</i>	STOCKSCH 166	Practical Beekeeping	3
<i>Spr</i>	STOCKSCH 182	Principles of Pesticide Management	2
<i>Fall</i>	STOCKSCH 186	Introduction to Permaculture	3
<i>Spr</i>	STOCKSCH 190P	Personal Wellness for Farmers & Gardeners	3
<i>Fall</i>	STOCKSCH 197CP	Crop Planning for Diversified Vegetable Farms	1
<i>Spr</i>	STOCKSCH 197MC	Introduction to Mushroom Culture	1
<i>Fall</i>	STOCKSCH 198M	Mushroom Practicum	1-3
<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>Spr</i>	STOCKSCH 258	Urban Agriculture	3
<i>Fall</i>	STOCKSCH 265	Sustainable Agriculture	3
<i>Spr</i>	STOCKSCH 280	Herbs, Spices & Medicinal Plants (BS)	4
<i>Spr</i>	STOCKSCH 286	Permaculture Design and Practice	3
<i>Spr</i>	STOCKSCH 290D	Small Farm Husbandry: Meat	3
<i>Fall</i>	STOCKSCH 290E	Small Farm Husbandry II-Pigs	3
<i>Spr</i>	STOCKSCH 290W	Organic Weed Control	3
<i>Fall</i>	STOCKSCH 297AL	Agricultural Leadership & Community Educ	3
<i>Fall</i>	STOCKSCH 297T	Alternative Medicine for Animals & Humans	1
<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>Summer</i>	STOCKSCH 320	Organic Vegetable Production	3
<i>Fall</i>	STOCKSCH 326	Insect Biology	3
<i>Fall</i>	STOCKSCH 350	Sustainable Soil & Crop Management	3
<i>Fall/even yrs</i>	STOCKSCH 356	Food Justice and Policy	3
<i>Spr</i>	STOCKSCH 370	Tropical Agriculture	3
<i>Fall/Spr</i>	STOCKSCH 378	Agroecology	3
<i>Spr</i>	STOCKSCH 384	Introduction to Plant Physiology	3
<i>Spr</i>	STOCKSCH 397AL	Agricultural Leadership & Community Educ II	3
<i>Spr</i>	STOCKSCH 397VP	Sustainable Grape Production	2
<i>Spr</i>	STOCKSCH 398E	Farm Enterprise Practicum	3-6
<i>Fall/Spr</i>	STOCKSCH 398G	Greenhouse Practicum	1-18

SUSTAINABLE FOOD AND FARMING

CREDITS

Agricultural Science and Practice (con't.)

<i>Fall</i>	STOCKSCH 498E	Farm Enterprise Practicum II	1-6
<i>Fall</i>	STOCKSCH 505	General Plant Pathology	4
<i>Spr</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
	Most STOCKSCH courses		3-4

2. Economic Systems

EXAMPLES

<i>Fall</i>	ECON 308	Political Economy of the Environment	3
<i>Fall/Spr</i>	ECON 366	Economic Development	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>	MANAGMNT 301	Principles of 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>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

3. Social Systems

EXAMPLES

<i>Spr</i>	EDUC 377	Introduction to Multicultural Education (U)	4
<i>Fall/Spr</i>	NRC 409	Natural Resource Policy & Administration	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

SUSTAINABLE FOOD AND FARMING

CREDITS

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

26-31

Biological Science	8
Chemistry	3-4
Ecosystems Studies	3
Food/Land Policy or Agricultural Education	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 68-73

HORTICULTURAL SCIENCE

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)	3
<i>Fall/Spr</i>	STOCKSCH 378	Agroecology	3

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

Total Core Requirements 27-29

MAJOR REQUIREMENTS

Horticulture

SELECT TWO OF THE FOLLOWING:

<i>Fall</i>	STOCKSCH 200	Plant Propagation	3
<i>Fall</i>	STOCKSCH 315	Greenhouse Management	4
<i>Spr</i>	STOCKSCH 335	Prin & Practices of Greenhouse Cultivation	4
<i>Fall/odd yrs</i>	STOCKSCH 360	Landscape Plant Production	4

HORTICULTURAL SCIENCE

CREDITS

Pest Management

<i>Fall</i>	STOCKSCH 505	General Plant Pathology	4
	AND	AND	AND
3 CREDITS MINIMUM IN ENTOMOLOGY:			
<i>Spr</i>	STOCKSCH 101	Insects & Related Forms	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	4
<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	4
<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 Hormones & Applied Plant Physiology	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>Summer</i>	STOCKSCH 320	Organic Vegetable Production	3
<i>Fall</i>	STOCKSCH 350	Sustainable Soil & Crop Management	3

HORTICULTURAL SCIENCE

CREDITS

Greenhouse Horticulture

<i>Spr</i>	STOCKSCH 255	Herbaceous Plants	3
<i>Fall</i>	STOCKSCH 315	Greenhouse Management	4
<i>Spr</i>	STOCKSCH 335	Prin and Practices of Greenhouse Cultivation	4
<i>Fall/odd yrs</i>	STOCKSCH 360	Landscape Plant Production	4
<i>Fall/even yrs</i>	STOCKSCH 397PT	Plant Trends in Landscape Horticulture	3
<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>Spr</i>	STOCKSCH 335	Prin and Practices of Greenhouse Cultivation	4
<i>Fall/odd yrs</i>	STOCKSCH 360	Landscape Plant Production	4
<i>Fall/even yrs</i>	STOCKSCH 397PT	Plant Trends in Landscape Horticulture	3
<i>Fall</i>	SUSTCOMM 335	Plants in Landscape	4

Pest Management

<i>Fall</i>	STOCKSCH 109	Insects of Ornamentals	3
<i>Spr</i>	STOCKSCH 510	Management & Ecology of Plant Diseases	3
<i>Fall</i>	STOCKSCH 587	Phyto/Bioremediation	3

Plant Nutrition and Soils

<i>Fall</i>	STOCKSCH 515	Microbiology of the Soil	3
<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

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>	HT-MGT 260	Human Resource Mgt/Hospitality Industry	3
		OR	OR	OR
	<i>Fall/Spr</i>	MANAGMNT 314	Human Resource Management	3

HORTICULTURAL SCIENCE

CREDITS

1. Business Focus (cont.)

d. <i>Fall/Spr</i>	MANAGMNT 301	Principles of 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 and Social Sciences I (R2)	3
	OR	OR	OR
<i>Fall/Spr</i>	MATH 131	Calculus I (R2)	4

Total Major Requirements 47-53

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 47-53

Required Courses	20-23
Restricted Electives	27-30

Grand Total for Horticultural Science 74-82

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 387	CNS Junior Writing	3
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Math, Statistics and Reasoning

SELECT COURSE(S) FROM EACH CATEGORY:

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</i>	STOCKSCH 510	Management & Ecology of Plant Diseases	3
<i>Fall</i>	STOCKSCH 515	Microbiology of the Soil	3
<i>Fall</i>	STOCKSCH 523	Plant Stress Physiology	3
<i>Fall</i>	STOCKSCH 530	Plant Nutrition	4
<i>Spr</i>	STOCKSCH 550	Plant Hormones & Applied Plant Physiology	3
<i>Spr</i>	STOCKSCH 580	Soil Fertility	3
<i>Fall</i>	STOCKSCH 587	Phyto/Bioremediation	3
<i>Spr</i>	STOCKSCH 597M	Topics in Turf Pathology	3
<i>Fall</i>	SUSTCOMM 335	Plants in Landscape	4

TURFGRASS SCIENCE AND MANAGEMENT

CREDITS

Restricted Electives (cont.)

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>	HT-MGT 260	Human Resource Mgt/Hospitality Industry	3
	OR	OR	OR
<i>Fall/Spr</i>	MANAGMNT 314	Human Resource Management	3
d. <i>Fall/Spr</i>	MANAGMNT 301	Principles of 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 CATEGORY (a-d) BELOW:

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 51-56

SUMMARY OF REQUIREMENTS

Total Core Requirements 27-30

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 51-56

Required Courses	27-29
Restricted Electives	24-27

Grand Total for Turf Science and Management 78-86

COURSE DESCRIPTIONS

STOCKBRIDGE SCHOOL

STOCKSCH 100

Botany for Gardeners (Gened 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 104

Plant Nutrients

Functions of mineral nutrients in plants, effects of mineral deficiencies, and sources of these nutrients to prevent or alleviate deficiencies in crop production.

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

Prerequisite: STOCKSCH 105

2 credits/spring sem

STOCKSCH 105 (Gened 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 111

Introductory Plant Pathology

Applied introduction to plant pathology in horticultural crops. Identification, description, and management of diseases in modern horticultural production. Chemical, biological, cultural, and genetic controls and their integration.

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

Prerequisite: STOCKSCH 108 or 100-level biology course

2 credits/spring sem

STOCKSCH 117

Agricultural Chemistry

Satisfies the chemistry requirement for the Sustainable Food and Farming major but not the physical science General Education requirement. An introduction to chemical processes integral to understanding soils, agriculture and the environment, focused on basic chemistry principles as they effect carbon and nitrogen cycling, soil fertility, water contamination, organic matter and energy relations.

Continuing & Professional Education (CPE) Summer Session. Online class.

3 credits/summer

STOCKSCH 118

Introduction to Sustainable Food and Farming

Highly interactive and participatory introduction to the Sustainable Food and Farming major, focused on academic preparation, internships and careers. Especially for first year students and transfers into the major.

Prerequisite: Sustainable Food and Farming majors only

1 credit/both sem

STOCKSCH 120

Organic Farming and Gardening (Gened 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 166

Practical Beekeeping

The practical aspects of beekeeping understood in terms of the life cycle of the bee and the bee colony, and the place of bees in our world. Learn how to acquire, set up, and manage bee colonies. Dissection may be required.

Prerequisite: Sustainable Food and Farming majors only

3 credits/spring sem

STOCKSCH 170

Pesticide Certification

Independent preparation for the state pesticide certification examination and licensure. The State Pesticide Exam Study Manual is used and available for purchase either online or at the UMass Extension Bookstore. Exams are given at various times throughout the state. Students must apply to take the exam; applications must be submitted by the deadline date (one week prior to the exam). Refer to www.mass.gov/agr/pesticides or call 617-626-1841 for dates of Massachusetts exams.

Prerequisite: consent of instructor

1 credit/both sem

STOCKSCH 171

Plagues, Food and People: Ecology of Food and Disease (Gened BS, G)

The ecology of major diseases related to food, from ergotism and the Salem Witch Trials to the Irish Potato famine to celiac disease and diabetes. How people, microbes and farming change our health and the environment.

4 credits/spring 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 186 (formerly 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 to be critical thinkers, observers, and analysts of the world(s) around them and are provided with the tools necessary for designing and inspiring positive change.

3 credits/fall sem

STOCKSCH 190M

Introduction to Mushroom Cultivation

Introduction to the kingdom of fungi and how we can integrate fungi into our lives. Students will learn skills to find, identify, and cultivate mushrooms. Different methods of cultivation with varying levels of experience and equipment needed will be explored.

1 credit/fall sem

STOCKSCH 190P

Personal Wellness for Farmers & Gardeners

Development of skills and understanding for maintaining a healthy lifestyle while being a successful farmer or gardener. Students will learn basic anatomy for safe and sustainable manual labor and practice applying safe body mechanics to typical farming labor tasks.

Prerequisite: Sustainable Food and Farming majors only

3 credits/spring sem

STOCKSCH 196

Independent Study

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

Prerequisite: consent of instructor

1-6 credits/both sem

STOCKSCH 197CP

Crop Planning for Diversified Vegetable Farms

How to set up and operate successful systems for crop planning for a diversified vegetable farm. All aspects from system design, data entry, mapping, scheduling, to record keeping will be addressed.

Prerequisite: Sustainable Food and Farming majors only

1 credit/fall sem

STOCKSCH 197F

Financial Management for Diversified Vegetable Farms

How to set up and operate successful systems for financial management of a diversified vegetable farm. All aspects from system design, budgeting, financial recording, reporting, to data entry, will be addressed.

Prerequisite: Sustainable Food and Farming majors only

1 credit/spring sem

STOCKSCH 197MC

Introduction to Mushroom Culture

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

Prerequisite: Sustainable Food and Farming majors only

1 credit/spring sem

STOCKSCH 197S

Soils Lab

For students who have completed STOCKSCH 106, and who wish to complete the lab component of STOCKSCH 105 that is required for completing the major or minor in this program.

Prerequisite: STOCKSCH 106

1 credit/spring sem

STOCKSCH 197W

Food Waste and Recovery for a More Sustainable Food System

Weekly discussion exploring the root causes of excessive food waste as well as sustainable solutions including avoiding of the generation of excess, feeding people in need, livestock feed, industrial uses, and composting.

1 credit/both sem

STOCKSCH 198M

Mushroom Practicum

Students will gain a hands-on, in-depth experience of small-scale commercial mushroom production.

1-3 credits/fall sem

STOCKSCH 198P

Permaculture Gardening at UMass

Students will learn about permaculture basics while maintaining UMass on-campus permaculture demonstration gardens.

Prerequisite: consent of instructor

1 credit/both 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.

Prerequisite: Stockbridge students only

3 credits/spring sem

STOCKSCH 258

Urban Agriculture

Explores innovative production methods and critical social, economic, and environmental dimensions of modern day urban agriculture.

Prerequisite: Sustainable Food and Farming majors only

3 credits/spring sem

STOCKSCH 260

Growing Plants Indoors

Introduction to the indoor culture of tropical plants and other species. Artificial lighting, acclimatization, moisture requirements, soils and nutrition, and diagnosing plant problems.

Information applicable to professional indoor plant maintenance, retail marketing, and growing plants in the home. Seven week course; last 7 weeks of the semester

Prerequisite: Stockbridge students only

2 credits/spring 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 majors only or consent of instructor

3 credits/fall 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 (Gened 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. Topics include 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

Introduction 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 286 (formerly STOCKSCH 297PD)

Permaculture Design & Practice

Deepened and applied practice in permaculture design process and techniques. Development of a permaculture design and community engagement process.

Prerequisites: STOCKSCH 186 (formerly STOCKSCH 197G); Sustainable Food and Farming majors only or consent of instructor

3 credits/spring sem

STOCKSCH 290D

Small Farm Husbandry: Meat

With lab. A farmer's perspective on the sustainable management of cows, sheep and goats on a small farm. Focus on the planning and management of cows, sheep and goats for meat production. All aspects from breeding to marketing will be addressed. Students will gain a rudimentary plan on how to incorporate ruminants into their small farm plan.

Prerequisites: STOCKSCH 118; Sustainable Food and Farming majors only or consent of instructor

3 credits/spring sem

STOCKSCH 290E

Small Farm Husbandry II-Pigs

With discussion. A farmer's perspective on the management, production and marketing of poultry and pigs on a small farm. This course will address the advantages of having pigs and poultry and will review basic care, processing options, regulations and marketing. Lectures, farm visits, guest lectures and hands-on skills. At the end of this course, students will be able to incorporate pigs and poultry as an integral part of their small farm plan.

Prerequisites: STOCKSCH 118; Sustainable Food and Farming majors only

3 credits/fall sem

STOCKSCH 290W

Organic Weed Control

Focus on 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 educational project with a faculty member related to some area of the food crops or green industries.

Prerequisite: consent of instructor

1-6 credits/both sem

STOCKSCH 296T

Stockbridge School Teaching Experience

Students gain experience teaching introductory level (100-200) courses. Students will be expected to demonstrate specific competencies related to labs and assisting students; lead review sessions; gain experience in all aspects of teaching a Stockbridge School class.

Prerequisites: successful completion of the course intended to serve as TA; consent of instructor

1-2 credits/both sem

STOCKSCH 297AL

Agricultural Leadership & Community Education

Focus on learning to work with community groups and schools as a community educator.

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

3 credits/fall sem

STOCKSCH 297B

Forest Gardens: Perennial Agriculture for Ecological Regeneration

Focus on deepened understanding of forest gardens, with a focus on northeast temperate climates. Exploration of the resilience and benefits of forest systems and how they could be tweaked for the creation of forest gardens.

Prerequisite: Sustainable Food and Farming majors only

3 credits/fall sem

STOCKSCH 297C

Traditional Herbal Medicine Systems I

An examination of indigenous medicinal systems from around the world. Exposure to the use of medicinal plants in different cultures around the globe. Companion course to STOCKSCH 297F; may be taken in any sequence.

1 credit/fall sem

STOCKSCH 297MP

Small Farm Husbandry

Farmer's perspective on the sustainable management of cows, sheep and goats on a small farm. All aspects from breeding to marketing will be addressed.

Prerequisite: Sustainable Food and Farming majors only

3 credits/spring sem

STOCKSCH 297T

Alternative Medicine for Animals & Humans

Description unavailable.

1 credit/fall sem

STOCKSCH 298

Practicum

Pre-professional work experience related to some area of the food crops and green industries.

Prerequisite: consent of instructor

1-6 credits/both sem

STOCKSCH 298A

Agricultural Practicum

Description unavailable.

Prerequisite: consent of instructor

1-6 credits/both sem

STOCKSCH 298FS

USDA Farm Services Agency Practicum

Participants will work under the direction of USDA Farm Service Agency personnel, providing assistance to the farm loan process, participating in government assistance programs, and working with USDA FSA outreach.

Prerequisite: consent of instructor

1-5 credits/both sem

STOCKSCH 298G

Gardenshare Practicum

Student-led practicum experience utilizing a plot of land on campus to grow edible and ornamental crops. Although offered every semester, specific garden activities depend on the season of the year. Students may enroll more than once for credit.

Prerequisite: consent of instructor

1 credit/fall sem

STOCKSCH 298P

Permaculture Practicum

Hands-on, in-depth experience on how to manage and implement an installation of a permaculture design.

Prerequisite: consent of instructor

1-6 credits/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.

Prerequisite: STOCKSCH 108 (may be taken concurrently) or 100-level biology course

4 credits/fall sem

STOCKSCH 320

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) Summer Session. Online class.

3 credits/summer

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. 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

Principles and Practices of Greenhouse Cultivation

With lab. Greenhouse culture of spring greenhouse crops.

Prerequisites: STOCKSCH 108; Plant and Soil Science and Horticultural Science majors only

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 350

Sustainable Soil & 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.

Prerequisite: STOCKSCH 105 or consent of instructor

3 credits/fall sem

STOCKSCH 355

Community Food Systems

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. Focus on the opportunities and challenges required in making community food projects that create real lasting systems change. The course requires participants to be motivated to develop meaningful projects in the community.

3 credits/fall sem

STOCKSCH 356

Food Justice and Policy

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

Prerequisites: STOCKSCH 265; Sustainable Food and Farming majors only or consent of instructor

3 credits/fall sem/even yrs

STOCKSCH 360

Landscape Plant Production

With lab. Cultural practices of field and container production; how these practices and environmental factors influence nursery crop growth and development. Topics include: site selection, planting and spacing, mineral nutrition, harvesting, irrigation practices, pest management, and overwintering. Basic economic management of nursery crops production and marketing reviewed.

Prerequisites: STOCKSCH 105; SUSTCOMM 335 highly recommended

4 credits/fall sem/odd yrs

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 378

Agroecology

Introduction to ecological principles related to agricultural ecosystems and the ways these principles work in modern industrialized agriculture, in traditional agricultural systems, and in alternative systems such as organic agriculture. Focus on the ways by which ecological principles determine the sustainability of agroecosystems and used to make them more sustainable.

Prerequisite: STOCKSCH 100 or STOCKSCH 108 or BIOLOGY 151 or consent of instructor

3 credits/both 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: ENGLWRIT 112 and STOCKSCH 265; Sustainable Food and Farming majors only

3 credits/spring sem

STOCKSCH 384

Introduction to Plant Physiology

Introduction to fundamental concepts of physiological processes governing plant growth and development, from cell to whole plant responses. Blending of concepts from traditional plant physiology and recent research advances to help provide insight on plant growth and function under various environmental conditions.

Prerequisites: STOCKSCH 108 and CHEM 110 or CHEM 111

3 credits/spring sem

STOCKSCH 387 (formerly STOCKSCH 397GF)

Global Food Systems

Focus on the social aspects of the agri-food systems as well as the political economy of food, agriculture and sustainability. Students use interdisciplinary perspectives to comprehend, analyze and visualize improved global and local food systems.

3 credits/spring sem

STOCKSCH 390A

Plant Biotech & Tissue Culture

With lab. Focus on the basic knowledge of plant tissue culture, recombinant DNA and gene expression technology required for transformation and assessment of genetically engineered crops. Students will be introduced to the application of biotechnology to address global food and nutritional security issues and controversies about the genetically modified crops (GMOs).

Prerequisites: BIOLOGY 151 or BIOLOGY 152, and CHEM 111 or CHEM 112

4 credits/spring sem

STOCKSCH 390F

Student Farm Management I

How to create crop plans, establish markets, select cultivars, order seeds and supplies, and plan planting schedules.

Prerequisites: STOCKSCH 105; to be taken concurrently with STOCKSCH 398E

3 credits/spring sem

STOCKSCH 391B

Turfgrass Science & Management

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.

Prerequisite: consent of instructor

1-6 credits/both sem

STOCKSCH 397AL

Agricultural Leadership & Community Education II

Continuation of STOCKSCH 297AL. Increase students' understanding of teaching methodologies and community-building strategies for Sustainable Food and Farming majors.

Prerequisite: STOCKSCH 297AL

3 credits/spring sem

STOCKSCH 397GB

Grapevine Biology

With lab. Viticultural practices, culture and grapevine biology related to fall production. Emphasis will be on the challenges and opportunities of the local cold climate and sustainable practices.

Prerequisites: STOCKSCH 105 and STOCKSCH 108 or consent of instructor

3 credits/fall sem

STOCKSCH 397PT

Plant Trends in Landscape Horticulture

Description unavailable.

Prerequisite: STOCKSCH 108

3 credits/fall sem/even yrs

STOCKSCH 397R

Social Permaculture: Building Resilient Communities and Organizations

How to apply permaculture ethics and principles to a variety of social systems. Use of methods and strategies that build capacity and resilience while leading to long term systemic change.

3 credits/spring sem

STOCKSCH 397VP

Sustainable Grape Production

With lab. Exploration of grape origins, domestication, and fundamental principles of grape growing, both domestically and globally. Practices specific to the winter such, as pruning, will be included.

Seven-week course; first seven weeks of the semester

2 credits/spring sem

STOCKSCH 397W

Food Systems in Cuba

Class requires two semesters of participation. Fall semester will be preparatory classes and the following winter session will be traveling to Cuba.

3 credits/fall sem

STOCKSCH 398

Practicum

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

Prerequisites: course work in plant biology, soil science, and minimum two mid-level STOCKSCH courses; consent 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. Enrollment limited.

Prerequisites: STOCKSCH 105; STOCKSCH 390F (may be taken concurrently); consent of instructor

1-6 credits/spring sem

STOCKSCH 398G

Greenhouse Practicum

Focus 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: consent of instructor

1-18 credits/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 consent of instructor

1-12 credits/both sem

STOCKSCH 485

Sustainable Food and Farming Senior Capstone

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 the conclusions with others in a professional setting.

Prerequisites: STOCKSCH 265 or STOCKSCH 379; Sustainable Food and Farming seniors only

3 credits/spring sem

STOCKSCH 490F

Student Farm Management II: Harvest, Marketing & Management

Practical application of harvesting and marketing techniques used for the sale of organic vegetable crops. Students will complete a financial analysis of the current growing season and make recommendations for the next production cycle.

Prerequisites: STOCKSCH 390F; should be taken concurrently with STOCKSCH 498E; consent of instructor

2 credits/fall sem

STOCKSCH 496

Independent Study

Research or other independent upper-level project in plant and soil sciences.

Prerequisites: course work in plant biology, soil science, chemistry, and minimum one upper-level STOCKSCH course; consent of instructor

1-6 credits/both sem

STOCKSCH 496A

Plant Science

Plant science research in laboratory or greenhouse.

Prerequisites: course work in plant biology, soil science, chemistry, and minimum one upper-level STOCKSCH course; consent of instructor

1-6 credits/both sem

STOCKSCH 496B

Soil Science

Soil science research in laboratory or field setting.

Prerequisites: course work in plant biology, soil science, chemistry, and minimum one upper-level STOCKSCH course; consent of instructor

1-6 credits/both sem

STOCKSCH 496C

Teaching Assistant

Assist with instruction/classroom preparation for Stockbridge School courses.

Prerequisite: consent of instructor teaching the course

1-6 credits/both sem

STOCKSCH 497P

Pharmacognosy

Exploration of plant chemical constituents and their role in clinical treatment.

3 credits/fall sem

STOCKSCH 498

Practicum

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

Prerequisite: consent of instructor

1-12 credits/both sem

STOCKSCH 498E

Farm Enterprise Practicum II

Continuation of STOCKSCH 398E. Students maintain crops planted in the spring semester and prepare fields for winter. Students will harvest, clean, store and market their crops.

Prerequisites: STOCKSCH 398E; should be taken concurrently with STOCKSCH 490F (formerly STOCKSCH 497SF); consent of instructor

1-6 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 (formerly STOCKSCH 397PP) or 100-level biology course or consent 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.

Prerequisite: BIOLOGY 151 or equivalent

3 credits/spring sem

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 course

3 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 (formerly STOCKSCH 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 STOCKSCH 108, and either CHEM 110 or CHEM 111 or equivalent

4 credits/fall 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 (formerly 397PP) and either CHEM 110 or CHEM 111

4 credits/spring sem

STOCKSCH 550

Plant Hormones & Applied Plant Physiology

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 (formerly 397PP) recommended

3 credits/spring 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. 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; 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 102 and STOCKSCH 105 (or equivalent) and either CHEM 110 or CHEM 111

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 consent of instructor

3 credits/spring sem

STOCKSCH 587

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 special emphasis on toxic metals will be discussed.

Prerequisite: BIOLOGY 151, BIOLOGY 152, or STOCKSCH 384 (formerly STOCKSCH 397PP)

3 credits/fall sem

STOCKSCH 590M

Microbe-Mineral-Organic Matter Interactions in Soils

Fundamental interactions between microbes, minerals, and organic matter responsible for carbon cycling, mineral weathering, and nutrient dynamics in soils. Examination of the importance of these interactions for soil development, carbon storage, and fertility.

Prerequisites: STOCKSCH 105 and either CHEM 110 or CHEM 111; CHEM 261, MICROBIO 310 and STOCKSCH 575 are recommended

3 credits/spring sem

STOCKSCH 591A

Plant Biotech Journal Club

Open to both advanced undergraduate students and graduate students who have an interest in reviewing the current scientific literature in the field of plant biotechnology.

1 credit/both 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

**STOCKBRIDGE SCHOOL OF AGRICULTURE
2017-2018 Academic Calendar**

FALL 2017

September 5	Tuesday	First day of classes
September 18	Monday	Last day to ADD or DROP any class with no record
October 9	Monday	Holiday (Columbus Day)
October 10	Tuesday	MONDAY CLASS SCHEDULE will be followed
October 19	Thursday	Mid-Semester Date (Last day to Drop with 'W' and select 'P/F')
November 6	Monday	Registration begins for Spring 2018
November 11	Saturday	Holiday (Veterans' Day)
November 19	Sunday	Thanksgiving recess begins
November 27	Monday	Classes resume
December 12	Tuesday	Last day of classes
December 13	Wednesday	Reading Day
December 14	Thursday	Final examinations begin
December 16	Saturday	Second Reading Day
December 20	Wednesday	Last day of final examinations
December 21	Thursday	Snow day for exams; semester ends
January 2	Tuesday	Final grades due by Noon

Number of class meetings: MTuWThF: 13

SPRING 2018

January 22	Monday	First day of classes
February 5	Monday	Last day to ADD or DROP any class with no record
February 19	Monday	Holiday (Presidents' Day)
March 7	Wednesday	Mid-Semester Date (Last day to Drop with 'W' and select 'P/F')
March 11	Sunday	Spring recess begins
March 19	Monday	Classes resume
April 2	Monday	Registration begins for Fall 2018
April 16	Monday	Holiday (Patriot's Day)
April 17	Tuesday	MONDAY CLASS SCHEDULE will be followed
May 1	Tuesday	Last day of classes
May 2	Wednesday	Reading Day
May 3	Thursday	Final examinations begin
May 5	Saturday	Second Reading Day
May 10	Thursday	Last day of final examinations; semester ends
May 11	Friday	Undergraduate Commencement
May 15	Tuesday	Final grades due by Midnight

Number of class meetings: MTuWThF: 13



STOCKBRIDGE
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