Undergraduate Education Strategic Plan

November 2015

1. Overview

The Stockbridge School of Agriculture has had a long and proud history of excellence in undergraduate education and a commitment to experiential learning. Today, Stockbridge offers both Associate and Bachelor of Science degree programs which emphasize sustainability and environmental health designed to help launch students in careers related to sustainable farming and marketing, turf management, horticultural plant production, equine management, arboriculture, and landscape management.

The Stockbridge School has four Bachelor's Degree majors:

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

The Stockbridge School offers six Associate Degree majors:

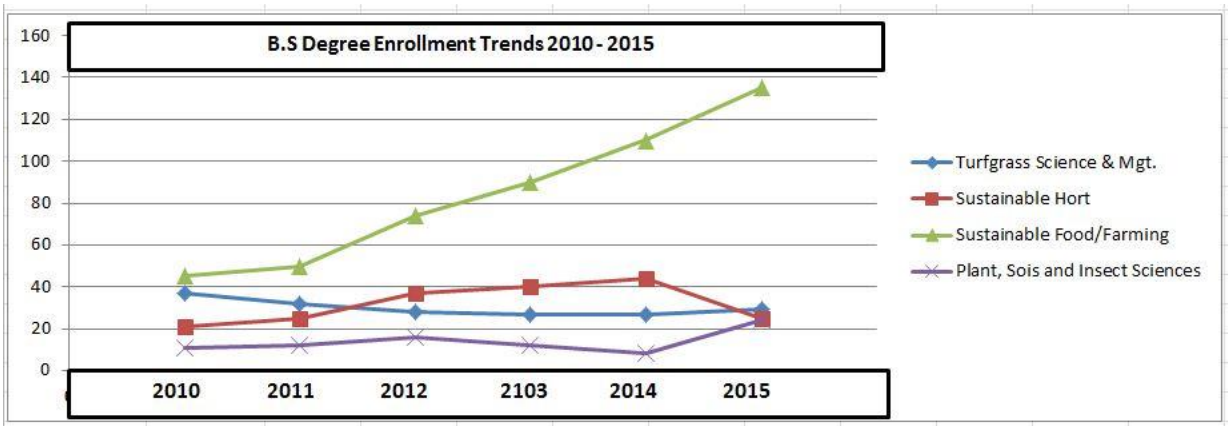
- Arboriculture & Community Forest Management
- Equine Management
- Landscape Contracting
- Sustainable Food & Farming
- Sustainable Horticulture
- Turfgrass Management

The Stockbridge Associate of Science Degree program, which dates back to 1918, is unique within the University of Massachusetts System. Graduates in these 6 applied degrees have a 100% job placement rate. Graduates of the Bachelor's program rate their career preparation, guidance, advising and overall satisfaction with the program among the very highest in the University.

The Stockbridge School of Agriculture is the only university program in New England that offers both Associates and Bachelor's degrees in agriculture. The School is well recognized for the progressive nature of its undergraduate programs, including creating new focus areas such as permaculture, community-based agricultural education, herbal medicinals, and sustainable farming and marketing. In addition to offering students an opportunity to gain hands-on experience, the program has a solid science foundation coupled with the liberal education of a major university.

Expanded field laboratories, a new greenhouse complex, and a new laboratory building make Stockbridge the "go to" university for several agricultural majors, particularly Sustainable Food & Farming which is the largest of its kind in the nation. The location of UMass in the heart of a sustainable agriculture "movement" in the Pioneer Valley provides students with easy access to some of the most progressive farms and marketing businesses in the U.S. This allows students access to internship and volunteer opportunities. The Sustainable Food & Farming B.S. degree program has demonstrated remarkable

growth over the past 10 years, mirroring the interest in local food, organic farms and healthy diets nationwide.



Experiential learning is a core value for the Stockbridge School of Agriculture. Graduating Senior Survey data show that a very high percentage of Stockbridge students participate in apprenticeships and internships on the many progressive farms and horticultural businesses in the region. In addition, students are supported in structured experiential opportunities such as the national award-winning Turf Club, the very popular and nationally recognized Student Farm and Market, and managing the Stockbridge Stables.

The Stockbridge School of Agriculture has excellent Graduating Senior Survey data results for both advising and career preparation. Each major has an experienced and dedicated faculty adviser, committed to working with students on course selection and career development. In addition, students in the largest major, Sustainable Food & Farming, have a choice of taking the Integrated Experience General Education requirement and the Junior Writing requirement either with a diverse set of students in the College sponsored class or within a major-specific class.

Although the number of General Education students taught is down over the past few years, the Stockbridge School has a plan to offer new and progressive General Education classes, such as the Plagues, Food, & People: An Ecology of Food & Disease, Introduction to Permaculture, and Botany for Gardeners. Courses in the Stockbridge School have very high satisfaction rating from students in the majors. To continue to improve, the School has also made a commitment to maintaining enrollments between 12 and 24 students for upper division courses offered in the major. This will ensure efficient use of faculty time while allowing a close working relationship between faculty and students.

Stockbridge does need to build undergraduate teaching resources. Following the restructuring of the former Plant, Soil, and Insect Sciences Department and the voluntary reassignment of faculty members, Stockbridge was left with limited teaching capacity in the areas of entomology and applied ecology. In addition, access to critical classes in related CNS departments such as Food Science, Environmental Conservation, and Biology is often limited to majors only in those departments. Finally, there has been an increased demand for courses in applied animal agriculture, but access to many Animal Science classes is limited. Stockbridge is also anxious to expand course offerings in the plant sciences across the University, and looks forward to working with Biology, ECo, and Biochem. & Mol. Bio. towards that end. We propose to meet with other CNS departments to discuss these concerns, and identify ways to improve course offerings that are mutually beneficial.

The Stockbridge School supports the creation of the School of Earth & Sustainability to increase both the attractiveness and the effectiveness of undergraduate programs at UMass Amherst. In addition, we support a new interdisciplinary undergraduate major focused on sustainability to meet the substantial and growing student demand for an academic program in this subject matter area.

2. Recent Curricular Changes and Updates

The Stockbridge School of Agriculture has formulated a three-phase assessment plan, building upon the creation of three new majors, in addition to the existing Plant, Soil & Insect Sciences major, that were approved by the Massachusetts Board of Higher Education in March, 2013. Since the creation of the three new majors, the following steps were taken:

1. *Phase I (2013-14): Review curricula, course syllabi, and determine content to be changed.*
   Results:
   - Seventeen courses previously offered as Special Topics were reviewed and three were discontinued. Others were approved as regular courses by the College of Natural Sciences and the UMass Faculty Senate.
   - The Stockbridge School of Agriculture developed an international online presence in Sustainable Food & Farming. Specifically:
     > A 15-credit Certificate Program is being offered with over 700 registrants.
     > Ten departmental courses offered on campus were converted to online.
     > Ten new courses were created for the online program.

2. *Phase II (2014-15): Collection of student feedback through surveys and focus groups, evaluation of career opportunities, review of progress of recent graduates, and collection of input from stakeholder groups.*
   Results:
   - Changes in the Sustainable Food & Farming curriculum were submitted and approved by the College Curriculum Committee and Faculty Senate. This allowed students to focus on careers in public policy, community development, and agricultural education, in addition to farming and marketing.
   - Addition of new courses to the Sustainable Food & Farming program including: Agroecology, Small Farm Husbandry I & II, Practical Beekeeping, Agricultural Leadership and Community Education I & II, Sustainable Grape Production, and Grapevine Biology.
   - Addition of new courses to the Sustainable Horticulture program including: Plant Trends in Landscape Horticulture and Nursery Management.
   - A 60-credit fully online Associate of Science degree has been proposed and will be offered beginning in 2016

3. *Phase III (ongoing): Review of results by Undergraduate Curriculum Committee; to be repeated annually to make recommendations for program modifications to better meet Student Learning Outcomes.*

3. Student Learning Objectives

Student Learning Objectives for the overall Stockbridge School of Agriculture were developed in 2013 and reviewed in 2015. The following represents an updated set of learning objectives for the unit as well as the four B.S. degree programs.

Overall Stockbridge Student Learning Objectives

- Graduates will have a strong background in those areas of fundamental and applied sciences that are relevant to the discipline of their program selection.
- Graduates will understand basic ecological principles pertaining to the interconnectedness of natural ecosystems and the impacts of human activities on the ecosystems that supply human society with critical goods and services.
- Graduates will understand scientific methodology and how to apply the scientific method of investigation, hypothesis generation, and testing.
- Graduates will demonstrate the ability to think clearly and creatively and to apply critical thinking skills when evaluating information.

- Graduates will possess written and oral communication skills necessary to clearly present information to professional peers, constituents, and stakeholders within their disciplinary specialty.
- Graduates will demonstrate the application of scientific principles and problem solving skills relevant to their chosen discipline.
- Graduates will demonstrate mathematical skills sufficient to interpret and critically evaluate scientific information published for general audiences and to function efficiently and safely within the farming and green industries.
- Graduates will have the knowledge and skills to locate information (from written, web-based, or other information sources), judge its efficacy and usefulness, and apply the information to crop management decisions.
- Graduates will demonstrate an appreciation of the value social, racial and ethnic diversity and how differences among people are reflected in many intersecting ways from socio-economic status and religious beliefs to gender, sexual identity, disability, and veteran status.
- Graduates will understand the world's most pressing and enduring issues and appreciate how their actions affect both local and global communities.

Sustainable Food & Farming

Students will demonstrate thinking, communication and leadership skills

- Systems thinking to understand and improve complex social and ecosystems
- Speaking, listening and writing skills
- Strategic planning and meta-analysis skills
- Leadership and collaboration skills

Students will demonstrate knowledge of agricultural production and marketing:

- Fruit, vegetable and grain crop and livestock production and care
- Ecological land and soil management, and IPM
- Postharvest physiology, handling, and food safety
- Energy needs and technology for small farms
- Market analysis and entrepreneurial enterprises

Students will demonstrate a comprehension of agroecological principles:

- Basic knowledge of botany and soil science
- Ecological principles as applied to agricultural ecosystems
- Principles of sustainability and organic agriculture
- Rural and urban agriculture
- Permaculture principles and practices
- Basic understanding of animal husbandry and integrated farming systems

Students will demonstrate knowledge of management of a business or non-profit organization:

- Financial record-keeping, personnel and management systems, and market development
- Direct-to-consumer sales strategies
- Working with restaurants, chefs, schools and other institutions
- Working with community-based coalitions & community development
- Grass-roots policy development & community change
- Community food systems and food security issues

Sustainable Horticulture

Students will demonstrate knowledge of sustainable horticultural practices:

- Greenhouse and nursery operation and plant production
- Landscape plant materials identification and utilization

- Invasive plant management and desirable native plant alternatives
- Landscape plant installation and maintenance
- Sustainable energy and water use principles and technology
- Compost-based growing media and non-chemical fertilizers

Students will demonstrate an understanding of basic plant and soil science principles:

- A knowledge of botany and plant physiology
- Plant propagation principles and practices
- Basic principles of general soil science, soil fertility, and plant nutrient management
- Principles of plant pathology and entomology as applied to landscape plants
- Integrated pest management and biological control practices

Students will demonstrate knowledge of managing a business:

- Small business management and finance
- Marketing and retail sales of sustainable landscape products and services
- Basic principles of personnel management
- Tax policy and government regulations affecting businesses and their employees

Plant, Soil, & Insect Sciences

Students will demonstrate knowledge from a broad range of disciplines:

- Botany and plant physiology
- Genetics, cell and molecular biology, genes and genomes and bioinformatics
- Soil science and soil fertility
- Plant pathology and diagnostic plant pathology
- Stress physiology and Postharvest biology

Students will demonstrate strong research aptitude:

- Plant pathology, mycology and diagnostic plant pathology
- Biotechnology laboratory
- Individual research projects in research laboratories
- Data analysis and interpretation
- Environmental Science

Students will demonstrate growth in cognitive complexity and interpersonal skills:

- Critical thinking skills
- Problem solving skills
- Reasoning
- Oral and written communications
- Collaboration
- Leadership

Turfgrass Science & Management

Students will demonstrate knowledge of sustainable turfgrass management practices:

- A knowledge of integrated environmental management, cultural practices and associate technologies for sustainable turf management under reduce water, nutrient, and energy input
- Suitability of various species and cultivars for golf, sports and lawn turf
- Educational experience in the turfgrass industry by successfully completing an internship at an approved turf facility or research laboratory

Students will demonstrate an understanding of basic plant and soil science principles:

- A knowledge of botany and plant physiology
- Principles of soil science, fertility, and plant nutrient management and their interactions
- Principles of weed biology, plant pathology, and entomology in turfgrass systems
- Integrated pest management and biological control practices

Students will demonstrate knowledge of facility management:

- Basic management principles of golf course or sports field turfgrass
- Basic business management and accounting for economically feasible turf management
- Management and interaction with employees and other stakeholders
- Ability to understand and work with individuals of diverse opinions

4. Curricular Coherence and Accessibility

Bachelor of Science degrees

The Stockbridge School of Agriculture restructured the B.S. degree programs in 2012 so that coherence and accessibility for students in all four Stockbridge majors is not a concern. Each major has an appropriate degree of flexibility to prevent bottlenecks and barriers to graduation in a timely manner. Students meet regularly with a faculty adviser to create a custom-designed program of study based on their personal career goals. Only the Sustainable Food & Farming major has more advisees than can be easily managed by a single adviser, and steps are in place to hire a new Instructor to correct this situation.

Recommendation: Continue to monitor the situation and make changes as needed.

Associate of Science degrees

Due to the technical nature of the six Associate of Science degrees offered by the Stockbridge School of Agriculture and the shorter two-year time frame, there is less flexibility in several of these degree programs than in the B.S. degrees. Students who complete the two-year degree and do not continue into the B.S. degree experience a coherent program with no bottlenecks or barriers to graduation.

At the same time, students who continue from the A.S. into the B.S. degree program complain that much of their junior year is comprised of General Education classes, while students who attend Massachusetts Community Colleges and transfer with the Mass Block Transfer agreement have completed most of their General Education requirements. Some of the Stockbridge A.S. degree programs have become less competitive over time as Massachusetts Community Colleges have added agricultural courses to their offerings at a lower cost.

Some of the required courses that are taught in the Associate of Science program have low enrollments but continue to be offered each year, because the degree requires the classes be taken during a particular semester. Sequencing of courses in some of the A.S. program is ridged, providing little flexibility.

Recommendations:

1. Students who know they plan to continue into the 4-year B.S. degree should be encouraged to do so following their first year in the A.S. program to allow them to take some General Education requirements in addition to MATH 104 earlier in their career.
2. The Director of the Stockbridge School should instruct the A.S. Program Coordinators to review the problem of internal articulation with the B.S. degrees, and competition with Massachusetts Community Colleges, and make a recommendation for changes in the A.S. curriculum, and transfer rules from the A.S. to B.S. degree.
3. The Director should review the problem of low enrollments in some courses and take corrective action as appropriate. This may include discontinuing some classes, combining classes, or offering classes in alternate years.

5. Clarity of Communication

Communication with students is a recognized strength of the Stockbridge School of Agriculture. Stockbridge has made a commitment to insuring the quality of undergraduate advising by assigning fulltime faculty members to serve as advisers. All students meet regularly with faculty advisers to discuss career goals, expectations, and opportunities. Each student in the A.S. program has a clearly identified path to graduation. Each student in the B.S. program develops a custom designed program of study based on their personal career goals.

In addition, the department has updated and revised the main web page to include:

- A review of all majors
- Application information
- Career guidance
- News and updates
- Background on the faculty

The department has made a commitment to social media and maintains several Facebook groups to communicate with students. The Sustainable Food & Farming major maintains an active blog to improve communication with current and potential students averaging nearly 1000 "hits" per month. Regular communication is maintained by email lists with all students.

All students in the A.S. degree program and B.S. students in the Sustainable Food & Farming major are offered an "orientation" seminar during their first semester.

> **Recommendation**: Create introductory seminar classes for students in the Sustainable Horticulture, Plant, Soils, and Insect Sciences, and Turfgrass Science and Management, B.S. degree programs.

6. Class Size Goals

The Stockbridge School of Agriculture has made a commitment to ensuring that most upper division classes in all majors have small class sizes (12-25 students) and that General Education and 100 level classes will range from 100 to 300 students.

Specifically:

- The class size of General Education classes, STOCKSCH 100 Botany for Gardeners, STOCKSCH 120 Organic Farming and Gardening, and STOCKSCH 171 Ecology of Food and Disease, will all be increased.
- A new General Education class will be offered in Climate Change once a recently hired faculty member arrives on campus.
- Under-enrolled classes will either be combined with other classes or moved to alternate years to maintain a minimum of 12 students per class.
- STOCKSCH 379 – Agricultural Systems Thinking fulfills the IE-GenED requirement for Sustainable Food & Farming major. It has had over-enrolled classes (>25) for the past few years. Multiple sections of this class will be offered in the future to maintain optimum class size.
- STOCKSCH 382 – Writing for Sustainability fulfills the Junior Writing requirement for the Sustainable Food & Farming major. It has had over-enrolled classes (>25) for the past few

years. Multiple sections of this class will be offered in the future to maintain optimum class size.

- Capstone classes are offered in Turfgrass Science and Management and Sustainable Food & Farming are offered each spring. These classes are of an appropriate size (12-25). The capstone experience results in professional presentations in the Massachusetts Undergraduate Research Conference for many students. Capstone classes in Plant, Soils and Insect Sciences and Sustainable Horticulture are under discussion.

7. Improved Collaboration with Other Departments

The Stockbridge School of Agriculture is committed to working in collaboration with other departments in the College of Natural Sciences to improve the undergraduate educational experience for all students in the College. Specifically, we recommend:

1. Meet with department heads and Chief Undergraduate Advisers of Food Science, Biology, Biochemistry & Molecular Biology, Environmental Conservation and Veterinary and Animal Sciences to identify duplication or overlap of classes and to discuss access of students to classes currently restricted to majors only.

There appears to be duplication of subject matter offered by departments in the biological and ecological sciences. This situation should be examined and addressed.

As noted earlier, following the restructuring of PSIS and voluntary reassignment of faculty members, Stockbridge was left with limited teaching capacity in the areas of entomology and applied ecology. In addition, access to critical classes in other CNS departments is often limited to majors only in those departments. For example, there has been an increased demand for courses in applied animal agriculture, but many Vet & Animal Science (VASCI) classes are restricted to majors only. Finally, while expertise and interest in teaching courses relevant to plant sciences and agriculture in general exists in several departments, faculty members are constrained by individual departmental teaching rules, and as a result may not be able to offer a potentially valuable course. We propose meetings to be arranged with other CNS departments to discuss these concerns.

Specific areas for discussion:

- Biology – basic biology and botany, as well as genetics/plant breeding
- Environmental Conservation – applied ecology and forestry
- Animal Sciences – basic animal sciences and applied husbandry classes
- Food Science – food safety
- Microbiology – biotechnology
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Stockbridge would propose to lead an effort in a more integrated, science-oriented undergraduate major in the plant sciences, based on the present PSIS major. Such a major would have more opportunity to develop expertise in biotechnology and molecular biology related to the plant sciences.

2. "Field laboratories" used for teaching, particularly at the Hadley Farm and the Agricultural Learning Center, need investment and improved collaboration with other departments that use these facilities.

Although the College, through the Center for Agriculture manages the Hadley Farm, classes offered in applied animal agriculture are currently limited to Animal Science majors only. An expansion of teaching facilities would allow access to other agricultural majors. The Undergraduate Agricultural Learning Center is intended to provide opportunities for students from across the university. These facilities need to be enhanced to provide more access to non-majors.

We support the statement in the VASCI strategic plan that prioritizes improving large animal facilities at the Hadley Farm. This investment includes the general physical plant, as well as lighted, heated, and

plumbed amphitheater classroom and laboratory areas in which to conduct animal management classes safely without regard to weather and season.

The Undergraduate Agricultural Learning Center has begun to develop infrastructure to support the teaching program but needs additional investment. Examples of current and planned programs and needs include:

- UMass Student Farm (fencing, storage, greenhouses, equipment sheds)
- Food for All Garden Project (secure storage)
- Pollinator Habitat Garden (secure storage)
- New Micro-Farm Greenhouse and Demonstration Facility
- General classes for undergraduates (classroom and wet lab)
- Public Education (meeting/conference space)

3. Establish the School of Earth & Sustainability to increase both the attractiveness and the effectiveness of undergraduate programs at UMass Amherst.

UMass Amherst offers a wide array of academic programs in earth, sustainability and environmental sciences. Yet these programs reside in different departments across the campus and are largely uncoordinated. The SES would unify programs and provide the framework to:

- Improve program effectiveness for our students (retention, graduation timeline, employment rate etc.)
- Maximize attractiveness to prospective students
- Create cohesion across our undergraduate programs
- Improve our capacity to develop new and expand existing interdisciplinary programs

The School would be established within the College of Natural Sciences to serve as the central hub for academic programs in earth, sustainability and environmental sciences. It will focus on undergraduate programs including single unit majors and interdisciplinary majors.

The School will be a creative partnership with multiple units from across campus.

One way SES would contribute to growth in undergraduate education would be the **development of a new interdisciplinary undergraduate major focused on sustainability to meet the substantial and growing student demand**. By creating a new undergraduate program in sustainability, UMass Amherst will be the "destination of choice" for prospective students in the Northeast and beyond. In several recent national Princeton Review Polls, over 60% of prospective college-bound students indicated that an institutions commitment to sustainability issues contributes to decisions to apply to or attend a school. The Stockbridge School of Agriculture would be a key department in developing this major.

8. Reorganization within Stockbridge School including Action Steps

1. Reduce the number of small undergraduate classes taught by tenure track faculty and increase the number of large General Education classes.

In Stockbridge we need to use limited faculty resources wisely. We must increase the number of students taught and at the same time continue to provide access to faculty, maintain reasonably sized classes and improve the student experience. This might be achieved by increasing large service GenEd's, reducing the number of undergraduate classes with fewer than 12 students, and offering classes on alternate years to ensure that required courses in the major have about 25 students.

Specifically we plan to:

- Re-introduce General Education class, STOCKSCH 100 - Botany for Gardeners – **DONE**
- Increase enrollment in GenEd classes, STOCKSCH 100, 120 and 171 – **IN PROGRESS**
- Submit STOCKSCH 197P - Introduction to Permaculture as a GenEd – **IN PROGRESS**

- Ask the director to review the need for classes taught with less than 12 students – **IN PROGRESS**
- Review the A.S. program to eliminate small classes (combine or move to alternate years) and allow more flexibility for those students planning on continuing into the B.S. degree programs – **IN PROGRESS**
- Introduce more hands-on experience lab and field courses – **IN PROGRESS**
  - > We have significantly expanded the Student Farming at the Agricultural Learning Center (ALC)
  - > We have added several new student projects at the ALC:
    - Art Garden
    - Food for All Garden
    - Poultry Production
    - Pollinator Garden
    - Herb Spiral
    - Permaculture Food Forest
  - > We plan to add a grape vineyard at the ALC
  - > We will plant a small apple orchard at the ALC
  - > We have begun the establishment of a utility arboretum at the ALC
  - > We plan to create a Landscape Horticulture project at the ALC
- STOCKSCH 118 (Intro to the SFF Major) was approved by the Faculty Senate and satisfies the required freshmen seminar for all new students in SFF
- We plan to strengthen the career development components of classes to support Sustainable Horticulture, Turfgrass Science and Management, and PSIS majors
- A new position in Sustainable Food & Farming will be created to monitor and manage internship experiences to insure educational quality and optimize the experience for students in SFF

2. Address the current weaknesses in our educational offerings.

The restructuring of PSIS and unfilled retirements has created a situation in which there are several disciplinary weaknesses. Specifically we commit to the following changes:

- More classes in applied ecology – Specifically:
  - > Teach Agroecology every year **– DONE**
- Add classes in IPM, Biocontrol and Entomology
  - > Add new IPM class **– IN PROGRESS**
  - > Ask ECO to allow access to Stockbridge students – **DIRECTOR TO INITIATE**
- Applied physiology in the areas of turf and greenhouse are strong but there is a gap in the area of applied physiology in food crops. We will enhance the applied aspects of the current Plant Physiology course with specific examples that engage Food & Farming students – **IN PROGRESS**
- We are currently weak in plant genetics, plant breeding and the practical aspects of seed selection and saving. This is an opportunity to attract new students – **NEW HIRE**
- Add classes in business management, marketing and finance or improve access to suitable classes taught by other departments – **DIRECTOR TO INITIATE CONVERSATION WITH RESOURCE ECONOMICS AND GREENFIELD COMMUNITY COLLEGE**
- New classes with an urban and particularly a soil health (in urban areas) focus are needed perhaps with financial support from state government – **DIRECTOR ASSIGN FACULTY MEMBERS**
- Classes and study abroad opportunities to support the international certificate – **IN PROGRESS**
  - > A new winter term class will be offered on food systems in Cuba
  - > A 3+2 (fifth year) curriculum for international students is being developed

- Build our capacity in teaching integrated plant/animal agriculture by offering new classes and/or gaining access to Animal Science classes for our students – **IN PROGRESS**
  - > New classes are being offered in Small Farm Husbandry
  - > A poultry production project has been initiated at the ALC
- We need additional courses in food safety and food security – **CURRICULUM COMMITTEE WILL REVIEW OPPORTUNITIES IN FOOD SCIENCE AND NUTRITION DEPARTMENTS**
- New courses in the rapidly expanding major of Sustainable Food & Farming are being taught by part-time instructors paid by revenues from the online CPE program. While this will work in the short-term a long-term solution must be developed. Specifically full-time Instructors should be hired in the areas of:
  - > Agricultural Education
  - > Small Farm Animal Husbandry
  - > Permaculture Design
  - > Food & Farming Policy
  - > Sustainable Agriculture Production

This proposal requires further study – **DIRECTOR TO ASSIGN A COMMITTEE TO STUDY**

3. Develop summer opportunities for applied agriculture classes.

Classes offered at the Hadley Farm and the Agricultural Learning Center to the both agricultural and non-agricultural students will serve as recruitment mechanisms for the majors while generating income. For example, summer classes are currently being planned in:

- Clean Energy Technologies for Sustainable Agriculture (with HCC) - **DONE**
- Equine Management (summer college) - **DONE**
- Sustainable Farming and Food Systems (summer college) – **DONE**
- Summer courses in other majors should be considered – **THE DIRECTOR TO ASSIGN TO THE PROGRAM COORDINATORS**

4. Creatively reposition our PSIS major to attract more students.

This major has very few students. We need a new strategy to build enrollment. While students can focus on basic sciences and graduate school preparation in the other three majors, this major should attract students less interested in a commodity or production focus.

- We need a more aggressive campaign to make other students in CNS aware of this applied biology and applied ecology option. - **DIRECTOR TO ASSIGN TO A COMMITTEE**
- Rename the PSIS major – **DIRECTOR TO ASSIGN TO A COMMITTEE**

5. Create a bachelor's degree in Equine Management.

Currently the rapidly growing A.S. major in Equine Management sends students to BDIC for a B.S. degree. We need to maintain a strong equine program to support this important economic driver in Massachusetts agriculture. To be successful we need to strengthen the equine assisted therapy, leadership, and community building aspects of the Equine program. **- IN PROGRESS**

6. Provide more support for undergraduate students as they work toward a career.

The Chancellor is committed to "student success". This includes both retention and job placement. Senior Survey data is one of the criteria being used.
Specifically, we are currently offering:

- An introduction to the major seminar in Sustainable Food & Farming (SFF) which introduces students to the culture and values of the major, internship and career opportunities, helps them to select classes, and allows them to meet seniors and graduate of the program who have been successful. - **DONE**
- Seniors are given the opportunity to participate in the undergraduate research conference as part of the Sustainable Food & Farming capstone class. Approximately 20 graduating SFF seniors participate each year. More students should take advantage of this opportunity.
- The Turf Club offers a forum for professional development and national recognition. These opportunities should be expanded to Horticulture students. - **DONE**

7. Change the requirement for the International Agriculture Certificate.

Students completing the Special Program in Agriculture will have it noted on their transcript and will receive a letter to that effect. Students choose a major from among those offered in the College of Natural Sciences (or an approved area of agricultural study). In addition to courses required for the student's major, they will take courses to prepare them to work effectively in other cultures and areas of the world. Students will take at least one course that takes place in a county outside of the United States and is related to agriculture. This international course must approved by the International Agriculture Committee of the Stockbridge School of Agriculture.

To help build recognition for the revived International Agriculture Certificate, we will:

- Assign a faculty member to manage the Certificate Program
- Dr. Frank Mangan will offer a new course - Food Systems in Cuba: Production, Logistics and Marketing (SSA 397), which will be taught in Cuba every year during the winter break. This course will meet the requirement of an agricultural course that takes place outside of the United States
- The Tropical Agriculture course offered through SSA needs to be revised to accommodate the needs of students and also broaden it by encouraging SSA faculty to participate and teach.
- An internship abroad can also be used to satisfy the need of the International Agriculture Certificate.
- International students visiting UMass and USA can be eligible to get the International Agriculture Certificate after taking a course at UMass and satisfying other requirements.

This proposal requires further study and action steps – **IN SSA COMMITTEE ON INTERNATIONAL AGRICULTURE**

8. SSA students will gain international exposure and experience.

- UMass faculty and SSA in particular will develop courses that can be offered in other countries. Dr. Wick is teaching Plant Diagnostics in Bangladesh, which can be modified to accommodate our students. Dr. Mangan's course in Cuba is another example. Summer courses taught in other countries should be developed to run 3 to 6 weeks, and give students experience in specific topics such as organic vegetable production, grape production, sustainable agricultural practices etc.
- A course that is offered abroad by UMass faculty can be set up through CPE to offer opportunities to our students and generate revenues for the college and department.
- SSA will develop ties with Agricultural Schools in other countries so that our students can visit, take courses and internships abroad to enhance their International exposure and experience. We have established official ties with universities in Germany (Freiburg,

Heidelberg, Mannheim, Konstanz, Tübingen, Hohenhim, Stuttgart, Karlsruhe, & Ulm). Perhaps other established agreements? See 4.

- SSA faculty should develop more courses in collaboration with other International universities in Asia, Southeast Asia, Europe and South America. These courses ranging from 3 to 5 weeks can be taught along with students and faculty from host institutions during winter and summer breaks. Several SSA faculty already have active collaborations in India, China, Bangladesh, Chile, Brazil, Cuba, among others. and these collaborations and links should be exploited to develop joint courses and create opportunities for SSA majors to get International exposure, cultural exchange and experience.
- UMass has developed strategic partnership with the Jawaharlal Nehru University (JNU) in India and SSA will utilize this opportunity to initiate student and faculty exchange, offering short duration courses jointly taught by SSA and JNU faculty. Similar model will be expanded to other Agricultural University in India and SSA. Also SSA faculty (Baoshan Xing and Om Parkash) are developing a special collaborative arrangement for student/faculty exchange with the Fujian Agricultural and Forestry University (FAFU) in China. These strategic collaborations will provide International exposure/experience opportunities for SSA students.
- SSA faculty should be giving 'knowledge seminars' about their experience in other countries and encouraging students to apply for Fulbright scholarship and other opportunities

This proposal requires further study and action steps – **IN SSA COMMITTEE ON INTERNATIONAL AGRICULTURE**