Undergraduate Program Assessment

Stockbridge School of Agriculture

Overall 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 must 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.

Sustainable Horticulture Student Learning Objectives

• Students will demonstrate knowledge of sustainable horticultural practices:
  o Greenhouse and nursery operation and plant production
  o Landscape plant materials identification and utilization
  o Invasive plant management and desirable native plant alternatives
  o Landscape plant installation and maintenance
  o Sustainable energy and water use principles and technology
  o Compost-based growing media and non-chemical fertilizers

• Students will demonstrate an understanding of basic plant and soil science principles:
  o A knowledge of botany and plant physiology
  o Plant propagation principles and practices
  o Basic principles of general soil science, soil fertility, and plant nutrient management
  o Principles of plant pathology and entomology as applied to landscape plants
  o Integrated pest management and biological control practices

• Students will demonstrate knowledge of managing a business:
  o Small business management and finance
  o Marketing and retail sales of sustainable landscape products and services
  o Basic principles of personnel management
  o Tax policy and government regulations affecting businesses and their employees

Turfgrass Science & Management

• Students will demonstrate knowledge of sustainable turfgrass management practices:
  o A knowledge of integrated environmental management, cultural practices and associated technologies for sustainable turf management under reduce water, nutrient, and energy input
  o Suitability of various species and cultivars for golf, sports and lawn turf
  o 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:
  o A knowledge of botany and plant physiology
  o 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

**Sustainable Food & Farming**
- Students will demonstrate knowledge of agricultural production:
  - Fruit, vegetable and grain crop and livestock production and care
  - Ecological land and soil management
  - Postharvest physiology and handling
  - Organic gardening/farming systems
  - Energy needs and technology for small farms
- Students will demonstrate a comprehension of agroecological principles:
  - Basic knowledge of botany
  - Ecological principles as applied to agricultural ecosystems
  - Principles of sustainability and organic agriculture
  - Rural and urban agriculture
  - Permaculture principles and practices
- 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

**Assessment tools**
- Indirect:
  - Extra questions on SRTI course evaluation forms for selected courses (planned).
  - In-house designed Junior Survey (planned).
  - Input from industry/stakeholder groups.
- Direct:
  - Discipline-specific faculty panels for evaluation of written assignments and work products within capstone or key courses.
  - Capstone courses planned for programs that do not currently have capstone courses (currently, only Sustainable Horticulture does not have a true capstone course).

**Highlighted recent activities**
- The Department has formulated a three-phase assessment plan, building upon three new majors which were approved by the Massachusetts Board of Higher Education in March, 2013.
  - Phase I (2013-14): Review course syllabi, and determine content to be consolidated or repackaged and created
  - Phase II (ongoing): Collection of student feedback, faculty assessment of student work and input from industry/stakeholder groups (see Assessment tools above, some data already routinely collected).
  - 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.