Educational Policies Committee Program Proposal, College of Agriculture and Applied Sciences, May 18, 2012

Utah State University

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Utah State University

Sustainable Systems Minor
CIP Code: 30.3201

Section I: Request

The six departments in the College of Agriculture (COA) and the three departments in the College of Natural Resources (CNR) request the creation of a Sustainable Systems Minor. A committee of nine faculty members developed the concept and requirements of the minor outlined herein. These requirements were then reviewed and agreed to by the faculty of the nine departments. Students in any University major can declare the Sustainable Systems Minor at any point in their undergraduate program or when they submit their graduation paperwork. Diplomas of students meeting the requirements of the minor will include the title of their degree and “Sustainable Systems Minor.”

Students completing the minor will take 18 credits in six different areas (see Figure 1). Six of the credits are required of all students and covered in two 3-credit courses, specifically Foundations of Sustainable Systems, a lecture course, and Communicating Sustainability, a capstone course. A list of existing classes appropriate for the remaining four areas (Agriculture, Food, and Environmental Systems; Energy and Earth Systems; Water Systems; Social Systems) is provided as Appendix A. Students must take at least one course from each of the four areas. Additional courses appropriate for the four system areas may be developed, identified, or adapted after establishment of the minor.

Landscape Architecture and Environmental Planning (LAEP) in COA and Environment and Society (ENVS) in CNR will serve as the lead departments. As lead departments, LAEP and ENVS will ensure that the required courses are available for students wanting to complete the minor or develop a plan for viable course substitutes that ensure that the goals of the minor are being met in any given year. In addition, LAEP and ENVS will be responsible for offering the required Foundations and Capstones courses, respectively (see below). Departments within COA or CNR will certify on the graduation application that a student within their department has successfully completed the requirements of the minor, whereas LAEP and ENVS will handle the graduation applications for students outside COA and CNR.

Section II: Need

For purposes of this minor, sustainability is defined according to the spirit of stewardship and inclusivity of the United Nation’s 1987 Brundtland Commission findings, which held that “sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs.” Thus, the Sustainable Systems minor will present concepts in sustainability that can be applied in a system approach, leading to resilience in society’s use of the earth’s land, water and air. In addition, the minor will prepare students to understand how to address the challenge of sustainability in ways that account for the interconnectedness of biological, physical, social and economic systems.
While five land-grant institutions in the western U.S. have established sustainability degrees, only three (Arizona State University, University of New Mexico, and University of Wyoming) offer minors in sustainability and only the latter two reside in a College of Agriculture and/or College of Natural Resources. Within Utah, the University of Utah markets two undergraduate degrees as “sustainability-related”: Civil and Environmental Engineering; and Environmental and Sustainability Studies. The latter is somewhat similar in structure to the USU Sustainability Systems minor but emphasizes policy decisions on the environment and it is a degree program, not a minor. Westminster University and Weber State University have bachelor’s degrees in Environmental Studies, both of which are marketed as “undergraduate degrees in sustainability.” In contrast to those degrees, the USU degree specifically links sustainability to water, agricultural, or natural resource management systems – all of which are strengths of Utah State University.

At USU, the Environmental Studies degree in ENVS is designed to offer a broad introduction to human-environmental interactions and prepares students to understand biological, physical, social, and political aspects of natural resource problems and environmental issues. While graduates of the Environmental Studies degree will be able to deliver information to stakeholders on “living more sustainably”, the ENVS program is not specifically directed toward sustainability. USU also offers a minor in Climate Change and Energy administered by the Plants, Soils, and Climate Department in COA and includes some of the same courses as the proposed Sustainable Systems minor. However, the Sustainable Systems minor will incorporate sustainability into agricultural and water systems, and specifically require students to understand how sustainability can be applied to biological, physical, and social systems.

During the 2011 USU Spring Career Fair, representatives from 15 companies at the Career Fair were asked to respond on the desirability of students who graduated with a sustainability minor. All potential employers indicated their interest in graduates with this emphasis. In 2010-11, the College of Agriculture had 67 students enrolled in the Interdisciplinary Studies (ITDS) degree. Of those 67 students, 11% designed a program focused on sustainability. Students in several traditional programs in agriculture have also expressed their desire for stronger focus on sustainability to their academic advisors. A survey of 42 students enrolled in an introductory course entitled Professional Orientation for Environment and Society (ENVS 1990) in Fall 2011, found that 22 (52%) hoped to pursue careers related to sustainability in ways that link human and natural systems. This represents a significant shift from past years when most ENVS majors sought careers in land management or environmental protection.

In sum, Utah State University is providing an educational opportunity not currently available to undergraduate students in Utah and in the greater Mountain West. We estimate 20 to 25 students will graduate with the minor each year, with enrollment growing over time.

**Section III: Institutional Impact**

The addition of this minor to USU’s educational offering requires no change in administrative structure, no additional faculty, no new physical facilities, no modification or purchase of equipment, and no additional library support. Existing advisors in the Student Services offices of the Colleges of Agriculture and Natural Resources will handle the advising responsibilities of students requesting the minor. The two required courses (Foundations of Sustainable Systems and
Communicating Sustainability) have been added to faculty assignments as part of the instructors’ teaching load.

Section IV: Finances

The availability of the minor is likely to have no to minimal impact on enrollment in the existing classes. Required courses are assigned as part of load within COA and CNR, with teaching assignments of the faculty involved in the courses adjusted appropriately. Elective courses have been designated because of their availability and appropriateness for inclusion in the minor. Thus, no new funding for this minor is requested.
Figure 1. Overview of the Proposed Sustainable Systems Minor

- **Sustainable Systems Minor** (18 credits)
  - **Foundations of Sustainability**
    - Common Intro. Course (Ecology, Planning, Systems Thinking)
  - **Agriculture, Food & Environmental Systems**
  - **Energy and Earth Systems**
  - **Water Systems**
  - **Social Systems**
  - **Communicating Sustainability**
    - Common Capstone Course (Education, Communication, & Society)

Overview courses = 12 credits from currently existing courses (3 credits from each category)

- **LAEP 2309: Common Intro. Course = 3 cr.**
- **ENVS 4700: Common Capstone course = 3 credits. A project experience will be included.**
APPENDIX A
Sustainable Systems Minor Requirements

Required Courses (6 credits)
- LAEP 2039 – Foundations of Sustainability (3 credits)
- ENVS 4700 – Communicating Sustainability (3 credits)

Agriculture, Food and Environmental Systems: Select 3 credits from the following:
- ADVS 5030 – Sustainable Agriculture Production Systems with Animals 3*
- ASTE 2900 – Humanity in the Food Web (BSS) 3
- ASTE 5260 – Environmental Impacts of Agricultural Systems (CI) 3
- NDFS 1240 – Food Literacy 3
- PSC 2800 – Fundamentals of Organic Agriculture 3
- PSC 4400 – Modern Vegetable Production 3*
- PSC 5200 – Site-Specific Agriculture and Landscape/Horticulture Management 3
- WATS 1200 – Biodiversity and Sustainability (BLS) 3
- WILD 2200 – Ecology of our Changing World (BLS) 3

Energy and Earth Systems: Select 3 credits from the following:
- GEO/PHYS 3150 – Energy in the 21st Century (DSC/QI) 3*
- LAEP 1030 – Introduction to Landscape Architecture (BCA) 3
- PHYS 1020 – Energy (BPS) 3
- PSC 3820 – Climate Change (DSC/QI) 3*
- PSC 4820 – Challenges in Climate Change and Energy 3*

Water Systems: Select 3 credits from the following:
- PSC 2010 – Soils, Water, and the Environment (BPS) 3
- PSC 4000 – Soil and Water Conservation 4
- PSC 4100 – Landscape Water Conservation 2
- WATS 3700 – Fundamentals of Watershed Science (CI) 3
- WATS 4490 – Small Watershed Hydrology 4*
- WATS 4530 – Water Quality and Pollution 3

Social Systems: Select 3 credits from the following:
- APEC 3012 – Introduction to Natural Resource and Regional Economics (DSS) 3
- ENVS 3010 – Fundamentals of Natural Resource and Environmental Policy 3
- ENVS 3330 – Environment and Society 3
- ENVS 5550 – Sustainability: Concepts and Measurement 3
- ENVS 5570 – Sustainable Living 3
- PHIL 3510 – Environmental Ethics (DHA) 3
- SOC 4620 – Sociology of the Environment and Natural Resources (DSS) 3
- SOC/ENVS 5640/6640 – Conflict Management in Natural Resources (CI) 3

* Prerequisite or Course Restriction
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