

February 13, 2012

A PROPOSAL TO THE UNIVERSITY OF UTAH UNDERGRADUATE COUNCIL,  
GRADUATE COUNCIL, ACADEMIC SENATE, AND BOARD OF TRUSTEES TO  
ESTABLISH AN

INTERDISCIPLINARY UNDERGRADUATE SUSTAINABILITY CERTIFICATE

**Section I: The Request**

The University of Utah Office of Undergraduate Studies requests approval to offer an integrated interdisciplinary undergraduate Sustainability Certificate effective in Fall 2012.

**Section II: The Program**

Sustainability

In recent years the word *sustainability* has taken on a variety of meanings as it is applied across a broad range of contexts by people working from multiple perspectives. The simple dictionary definition, *a state or process that can be maintained indefinitely*, is impossible to achieve in the context of interest to us but represents a fundamental desire to preserve the integrity and quality of human and natural environments. In defining *sustainable development* as that which “meets the needs of the present without compromising the ability of future generations to meet their own needs” the Brundtland Commission (1987) argues that a more sustainable future requires the rights of tomorrow’s people and ecosystems to be considered when making decisions today. Approaches to creating a more sustainable future often require that a balance be achieved between the competing interests of environmental stewardship, economic stability and social justice. These ‘three pillars’ of sustainability are ‘glued together’ by the good governance that recognizes the interwoven political, social, technical, and economic challenges of preserving natural ecosystems while using the Earth’s resources to support humanity. These are the core principles that frame the interdisciplinary undergraduate Sustainability Certificate proposed for the University of Utah.

Program Description

Completing the interdisciplinary undergraduate Sustainability Certificate requires completion of a minimum of 23 credit hours of course work. All students will complete an integrated curriculum comprised of an interdisciplinary introductory course, approved sustainability electives, a final project, and a capstone integrative learning seminar. The electives to be used in fulfilling the remaining 15 hours of the 23 hour Sustainability Certificate must be drawn from the list of Approved Sustainability Electives or be individually approved by the Sustainability Certificate Advisory Committee (SCAC) (see below for description of SCAC). The approval process for the final project and the elective course work are further explained below.

### Purpose

The purpose of the integrated interdisciplinary undergraduate Sustainability Certificate Program is to enable students to gain and use knowledge and skills in the scientific, technological and human dimensions of sustainability needed to aim their future actions as individuals and professionals toward developing a responsible global worldview and creating a more sustainable world. First, the program will deliver an integrated interdisciplinary sustainability-focused team-oriented experience to increase the awareness and knowledge of the diverse perspectives, experiences and skills needed to foster greater sustainability. Second, the program will guide students to integrate their newly emerging appreciation and understanding of sustainability into the development of skill sets that will be of value in their future lives as professionals in their chosen major and as engaged citizens. The combination of awareness and experience with sustainability issues cultivated through the certificate program with the foundational skills from their specific majors will provide students with greater opportunities for career development and positively influencing their local communities.

### Audience

There is no single profession or discipline that exclusively focuses on fostering sustainability. Multiple professionals, including those from architecture, urban planning, business, education, engineering, health care, law, media/communication, public health, public administration, recreation, hospitality, tourism and social work are increasingly seeking to enrich their knowledge and understanding of issues and policies affecting the three elements of sustainability: environmental stewardship, economic security and social responsibility. Students graduating with the certificate will be able to apply their knowledge about sustainability in multiple roles, including but not limited to, manager, co-worker, teacher, planner, lawyer, policy maker, designer, engineer, business owner, operator, service provider, constructor, community member, and neighbor.

The career opportunities for individuals who are knowledgeable about and comfortable with sustainability are significant. Essentially all members of professions and communities must understand and appreciate the complex intersection of public policy, social interaction, science, technology and sustainability. Therefore, this proposal seeks to complement the undergraduate programs of students from a variety of colleges and academic units across the University of Utah. Since sustainability, in one way or another touches the lives of all people, students from all undergraduate programs could theoretically benefit from participating in this elective interdisciplinary undergraduate Sustainability Certificate Program.

### Accreditation

The interdisciplinary undergraduate Sustainability Certificate Program is not designed to meet the accreditation standards of any single entity. Instead, the Sustainability Certificate is designed to increase the knowledge and skills in sustainability to allow undergraduate students to integrate a sustainability focus into existing undergraduate programs and thus benefit future professional and personal endeavors.

## Requirements

Program requirements include:

- Completing an approved 3 credit hour interdisciplinary gateway course, such as:
  - a. ENVST 2100 Environmental and Sustainability Studies
  - b. CMP 2010 Foundations in Urban Ecology
  - c. Or other course approved by the SCAC that meets established criteria and provides the foundational integrative learning experiences
- Completing a 1 credit hour Sustainability Certificate Integrative Introductory Seminar that accompanies the introductory course. The objective of this seminar is to bring together students from the separate introductory courses, establish the cohort, and facilitate the foundation of the integrated learning curriculum.
- Completing 15 credit hours of approved electives (see Appendix A for a list of courses and a description of the criteria used for course approval). Electives shall include:
  - a. At least 6 credits from the list of Approved Sustainability-Focused Electives; remainder can come from either the Related or Focused lists
  - b. At least 9 credits at the 3000 or above level
  - c. At least 6 credit hours in sustainability must be taken outside of the student's home college
  - d. Courses not included in the list of Approved Sustainability Electives but individually approved by the SCAC
- Completing the 3 credit hour Sustainability Certificate Final Project approved by the SCAC that may include:
  - a. A 3 credit hour course or independent study providing a comprehensive project-based learning experience in sustainability
  - b. A study abroad program focused on sustainability
  - c. A service learning experience focused on sustainability
  - d. An undergraduate research project, e.g., UROP
  - e. Other experience approved by the SCAC that meets the established criteria
- Completing the 1 credit hour Sustainability Certificate Integrative Capstone Seminar at the same time the student is completing the Final Project.
- Participating in the integrative activities (online and occasional personal interaction) with other Sustainability Certificate students throughout the program.

Requests to obtain approval for the courses proposed to fulfill the requirements of the Sustainability Certificate Final Project and any electives not included in the list of Approved Sustainability Certificate Electives must be submitted to the SCAC. In some cases, students may use elective and core courses within their majors drawn from the list of Approved Sustainability Certificate Electives or individually approved by the SCAC.

## Justification for the Number of Credits

The proposed 23 credit hour requirement is necessary to provide the breadth and depth for a fundamental comprehension of sustainability and for most an ability to apply those fundamentals in their major. It also is a reasonable number of credit hours for a student to complete, especially since a significant fraction of the courses may also count towards the student's major.

### Admission Requirements

All matriculated undergraduate students formally working on an undergraduate degree at the University of Utah may enroll in the interdisciplinary undergraduate Sustainability Certificate Program.

### Program Administration

A Sustainability Certificate Advisory Committee (SCAC) shall be created to administer certificate policies and review paperwork, petitions, and requested approvals. Membership on the SCAC will be voluntary consisting of an odd number of at least 7 and not more than 12, the majority of which shall be regular faculty members at the University of Utah. Membership terms will be staggered in two-year increments. Faculty representation on the SCAC will be encouraged from all colleges offering coursework that supports the Program, including Architecture + Planning, Business, Engineering, Health, Humanities, Mines and Earth Sciences, Science, and Social and Behavioral Sciences. One member of the committee shall be a representative from the Office of Undergraduate Studies, initially the Associate Dean for Undergraduate Studies administering the certificate.

The SCAC will be created in a two-step process. Nominations of potential committee members will be invited from Deans, Department Chairs, or other faculty members. Self-nominations will also be encouraged. In the first year, nominations will be sought and vetted by the current Sustainability Curriculum Directors working in collaboration with the Associate Dean of Undergraduate Studies and the Senior Associate Dean of Undergraduate Studies. A slate of candidates, some identified as serving a one year term and others as serving two year terms, will be presented to the Undergraduate Council for confirmation and then to the Associate Vice President for Academic Affairs for approval.

After the first year, the SCAC will seek and vet nominations for seats vacated by rotation. A slate of candidates will be presented to the Undergraduate Council for confirmation and to the Associate Vice President for Academic Affairs for approval. .

The Chair of the SCAC will be appointed by the Associate Vice President for Academic Affairs.

The SCAC will meet at least once a semester to review proposed introductory courses, student and faculty applications for elective course approval, student applications for final project credit, and final graduation applications for the Sustainability Certificate. In addition, they will establish approval requirements and process for these matters.

The limited level of administrative support needed to support the activities of the SCAC will be provided by the Office of Undergraduate Studies.

### Student Advising

The student advising will initially be provided by the Office of Undergraduate Studies until a permanent, centralized administrator is created with advising capacity. Materials describing program requirements, sample Academic Program Completion forms, course

schedules, and faculty specializations will be maintained and be available to students in both digital and tangible forms.

#### Enrollment Limitation

There will be no firm limit to enrollment. The SCAC and Office of Undergraduate Studies will monitor enrollment annually and respond accordingly. The broader goal of sustainability curriculum development at the University of Utah is to expand sustainability-related education and is supported by involving as many students in this certificate program as possible.

#### Need

The mission of the University of Utah is to serve the people of Utah and the world through the discovery, creation and application of knowledge. The interdisciplinary undergraduate Sustainability Certificate Program has been designed to extend the university's effort to foster greater campus sustainability and contribute to local, national and global efforts to foster environmental stewardship, economic security, environmental justice, and social equity.

In recognizing the need for educational institutions to foster greater sustainability, the Association for the Advancement of Sustainability in Higher Education (AASHE) has adopted the following vision that motivates our request to approve a Sustainability Certificate at the University of Utah.

*“Our vision is to see higher education take a leadership role in preparing students and employees to achieve a just and sustainable society. The campus itself would serve as a model of sustainability, with curriculum and operations reflecting an integrative approach to learning and practice. The process of education would emphasize active, experiential, inquiry based learning and real-world problem solving.”*

*“On the model campus all sectors would work collaboratively to advance sustainability, and the content and context of learning would reflect a focus on systemic, interdisciplinary thinking with respect to human health, ethics, future generations, and planetary stewardship.”*

### **Section III: Impact on Existing Programs**

#### Similar Programs

Although nationally there are at least 30 undergraduate certificate programs in sustainability, most are focused within specific disciplines or topics (e.g. Aquinas College's Sustainable Business Certificate, University of Wisconsin's Certificate in Engineering for Energy Sustainability, and University of Utah's Certificate in Sustainable Tourism). The following table identifies U.S. undergraduate certificate programs that take a broader, more interdisciplinary approach to sustainability studies.

<b>Institution</b>	<b>Undergraduate Program</b>	<b>Credit Hours</b>
Salt Lake Community College	Sustainability Certificate	24
Temple University	Certificate in Environmental Sustainability	15-16
University of Iowa	Certificate in Sustainability	24
Washington University in St. Louis	Certificate in Sustainable Environment and Science	21
Wellesley, Olin, & Babson Colleges*	Sustainability Certificate	14

\*A multi-institutional program requiring students to take courses at each participating institution.

The 23 credit hour requirement for the proposed interdisciplinary undergraduate Sustainability Certificate is similar to the number of credit hours required for existing undergraduate certificate programs nationally and at the University of Utah.

### Collaboration

Other institutions in the Utah System of Higher Education offer some undergraduate programs and coursework that relate to or focus on sustainability themes (see table below). However, the only institution in Utah that offers an undergraduate Sustainability Certificate Program is Salt Lake Community College. Yet, because this program's curriculum does not include upper-level coursework, and does not provide seminars and activities that facilitate integrative learning, there remains a niche – and a need – within Utah for an undergraduate certificate in sustainability that offers students more advanced coursework and greater interdisciplinary training. The Office of Sustainability is already exploring opportunities for collaborative efforts within Utah that can help grow the certificate to other institutions.

<b>Institution</b>	<b>Undergraduate Program</b>	<b>Degree(s)</b>
Brigham Young University	Conservation Biology Environmental Science Geography with Emphasis in Environmental Studies Geography with Emphasis in Urban & Environmental Planning Geology with Emphasis in Environmental Geology Wildlife and Wildlands Conservation Urban and Environmental Planning	BS BS, Minor BS BS BS BS Minor
Dixie State College of Utah	None	-
LDS Business College	None	-
Salt Lake Community College	Environmental Biotechnology Environmental Technology Environmental Topics Sustainability	NA* NA NA Certificate
Snow College	None	-
Southern Utah University	Sustainability Studies	Minor
University of Utah	Civil and Environmental Engineering Environmental and Sustainability Studies Sustainable Tourism Urban Planning	BS BA, BS Certificate BS, Minor
Utah State University	Applied Environmental Geoscience	BS

	Climate Change and Energy Conservation and Restoration Ecology Environmental Engineering Environmental Soil/Water Science Environmental Studies Watershed and Earth Systems Watershed Science Wildlife Science	Minor BS BS BA, BS BA, BS, Minor BS Minor BS
Utah Valley University	Environmental Science and Management Water and Waste Water Operations	BS Certificate
Weber State University	Environmental Geosciences (Applied) Geography with Environmental Emphasis	BS, Minor BS
Westminster College	Earth Systems Science Program Environmental Studies	NA BA, BS

\*NA indicates only coursework available

### Community Involvement

Although not explicitly required, in some cases the final project or experience will involve student teams in studying an on-campus or community-related sustainability issue. The U. of Utah Office of Sustainability, Bennion Center, and other campus entities maintain networks of campus and community partners that will help to provide a ready source of appropriate projects and experiences.

## **Section IV: Courses**

### New Courses

The interdisciplinary undergraduate Sustainability Certificate Program will not require the creation of new courses. There are sufficient existing courses currently at the U. of Utah. Two new 1 credit hour seminars, the Integrative Introductory Seminar and Integrative Capstone Seminar, will be created with support from the Office of Undergraduate Studies. Voluntary development of new courses and modification of existing courses is expected to meet the approval requirements for listing as Sustainability Certificate Electives, Introductory Course, and Final Project.

### Sustainability Certificate Final Project

The required Sustainability Certificate Final Project will be completed by enrolling in an existing approved course, study abroad program, service learning course, undergraduate research experience, internship or other approved project-based experience that meet the requirements defined by the SCAC. Potentially eligible projects can be, but are not limited to, successful completion of: a departmental senior design class, a final paper or thesis, an independent study, or other projects approved by the SCAC.

### Electives

*Course Selection Option* for the Academic Program Completion Plan for the Sustainability Certificate will allow the student to choose from among a list of Approved Sustainability Certificate Electives. The list will initially be developed by the Sustainability Curriculum Directors and maintained by the SCAC. A letter has already

been sent to many University faculty members inviting them to submit undergraduate course syllabi that the faculty member believes are suitable for an interdisciplinary undergraduate Sustainability Certificate Program. The Sustainability Curriculum Co-Directors have reviewed the initial set of submitted course syllabi and classified them as Sustainability-Related and Sustainability Focused (see Appendix A).

Additional courses will be considered as they are submitted to the Sustainability Curriculum Directors and eventually the SCAC. Students may propose electives that are not included in the list of Approved Sustainability Certificate Electives; however, each course must be individually approved by the SCAC using the approved criteria.

## **Section V: Assessment**

### Summative Assessment

The graduation rates of students in the interdisciplinary undergraduate Sustainability Certificate Program will be tracked. Every two years, program alumni will be asked to respond to a survey aimed at learning how they used the knowledge gained in completing the Certificate.

### Formative Assessment

As students progress through the introductory course and Final Project they will be assessed for their performance abilities, their substantive knowledge and their capacity for theoretical and critical reflection using embedded indicators. Assessment will consider the certificate learning outcomes and the Essential Learning Outcomes approved by the Undergraduate Council.

## **Section VII: Budget**

The interdisciplinary undergraduate Sustainability Certificate Program will have a minimal budget to be allocated. The Sustainability Certificate will build on existing courses and encourage development of new courses and modification of existing courses at the discretion of individual faculty members and departments. Advising needs will be limited, while approvals of paperwork and revisions will be accomplished by a volunteer committee chaired by an Associate Dean of Undergraduate Studies.

As enrollment in the program grows new budget may be required to support a part-time staff position to administer the certificate paperwork, advertise and market the certificate, and coordinate the virtual and personal interaction of Sustainability Certificate students that achieves the integrative learning sought for this program. This staff person would answer to the Associate Dean of Undergraduate Studies administering the program.

## Appendix A

### Criteria and Listing of Sustainability-Related and Sustainability-Focused Electives (Last Updated January 11, 2012)

Approved sustainability certificate elective courses are classified into two categories: sustainability-related and sustainability-focused. Courses designated as *sustainability-related* shall have sustainability as a key sub-theme of the course that is incorporated in a significant number of lessons, activities, and assignments. Courses designated as *sustainability-focused* shall have sustainability as a central theme of the course that is incorporated in most if not all of the lessons, activities, and assignments. Specifically, sustainability-related and sustainability-focused courses should address one or more of the following:

- knowledge to *explore* aesthetic, ethical, and philosophical dimensions of sustainability
- knowledge from multiple disciplines to comprehensively *analyze* interconnected relationships among human, environmental, and economic systems;
- methods to *analyze* life-cycle benefits and impacts of resource management decisions in terms of social, economic, and environmental metrics;
- skills to *assess* and *communicate* alternative policy strategies for the use of natural, human, and fiscal resources that are compatible with the constraints on these resources; and/or
- skills to *innovate and design* practical solutions to socioeconomic and environmental challenges, including those that relate to water, energy, infrastructure, ecosystems, community, policy, and governance.

These criteria were used by the Sustainability Curriculum Co-Directors and Research Assistant to conduct a first-order evaluation of courses supplied by numerous instructors identified as potentially being sustainability focused. The course listing is expected to increase substantially in the near future as the certificate is implemented, students and faculty submit courses for approval, and new courses are introduced and existing courses are modified to align with the sustainability certificate.

FOCUSED COURSES		CREDITS	COLLEGE	Fulfills GE
ARCH 4112	Site Planning and Urban Design (Sustainable Urban Design and Site Planning)	3	ARCH	
ARCH 4350	Environmental Controls I*	3	ARCH	
BIOL 3440	Global Change Ecology*	3	SCIENCE	
BIOL 3460	Global Environmental Issues	3	SCIENCE	SF and IR
BIOL 5440	Urban Ecology*	3	SCIENCE	
CH EN 5307	Green Engineering*	3	COE	
CMP 2010	Foundations of Urban Ecology	3	ARCH	
CMP 4960	Special Topics: Empathic Sustainability	3	ARCH	
CMP 5370	System Dynamics and Environmental Policy	3	ARCH	
GEO 5340			CMES	
CMP 5390	Sustainability Planning	3	ARCH	
CMP 5420	Open Space Design	3	ARCH	
CMP 5962	Special Topics: Green Communities	3	ARCH	
COMM 4360	Consuming the Earth	3	HUM	
COMM 5360	Environmental Communication	3	HUM	
COMM 5370	Environmental Communication, Special Topics ( <i>approval depends on topic</i> )	1-3	HUM	
CVEEN 5920	Sustainable Infrastructure	6	COE	
ECON 3250	Introduction to Environmental and Natural Resource Economics*	3	CSBS	BF
ECON 3960	Special Topics: Communicating the Climate Emergency	1-3	CSBS	
ECON 5250	Environmental and Natural Resource Economics*	3	CSBS	
ECON 5260	Energy Policy Options for Utah	3	CSBS	
EDU 5175	Techniques of Environmental Education	3	EDU	SF
PRT 5175			HEALTH	
ENVST 2000	Field Experience: Environment and Sustainability	1	CSBS	
ENVST 2100	Introduction to Environmental and Sustainability	3	CSBS	HF or BF
ENVST 3365	Environmental Justice	3	CSBS	
ENVST 4800	Internship: Environment and Sustainability	1-3	CSBS	
FCS 5630	Healthy Communities	3	CSBS	
GEO 1001	Energy Resources in a Sustainable World	3	CMES	SF
GEOG 1001			CSBS	
MET E 1001			CMES	
GEOG 3210	Global Climate Change*	3	CSBS	SF
GEOG 3350	Resource Conservation and Environmental Management	3	CSBS	BF
GEOG 3370	Utah's Energy Landscape*	3	CSBS	
GEOG 3375	Sustainable Transportation	3	CSBS	
HIST 4380	U.S. Environmental History	3	HUM	
ME EN 5060	Sustainable Products and Processes**	3	COE	
ME EN 5800	Sustainable Energy Engineering**	3	COE	
PHIL 3530	Environmental Ethics	3	HUM	HF
PHIL 5530	Environmental Philosophy*	3	HUM	
PHIL 5540	Hydrotopia: Water Management in the West	3	HUM	
CVEEN 6480			COE	
POLS 3390	Introduction to Environmental and Sustainability Policy	3	CSBS	BF
POLS 5322	Environmental and Sustainability Policy	3	CSBS	
PRT 5420	Ecology and Management of Wildland Recreation Settings*	3	HEALTH	
PRT 5975	Issues in International Ecotourism and Sustainable Tourism	6	HEALTH	
SOC 3480	Environmental Sociology	3	CSBS	
SOC 3486	Comparative Environmental Sociology	3	CSBS	

RELATED COURSES		CREDITS	COLLEGE	Fulfills GE
ANTH 4186	Human Ecology	3	CSBS	
ATMOS 1020	Climate Change	3	CMES	SF
ATMOS 3100	Atmospheric Chemistry and Air Pollution*	3	CMES	
BIOL 1330	Plants and Society	3	SCIENCE	AS
BIOL 1400	Introduction to Environmental Science	3	SCIENCE	SF
BIOL 2400	Principles of Wildlife Ecology and Conservation	3	SCIENCE	AS
BIOL 5460	Plant Ecology*	3	SCIENCE	
CMP 4710	Introduction to Transportation Planning	3	ARCH	
CMP 4960	Special Topics: Ethics in Shaping Communities	3	ARCH	
CVEEN 3610	Introduction to Environmental Engineering I*	3	COE	
ENGL 5080	Studies in Environmental Literature*	3	HUM	HF
FCS 5600 PSY 5600	Environments and Human Behavior	3	CSBS	
GEO 3300	The Water Planet	3	CMES	SF
GEOG 1100	Exploring the World Through Google Earth	3	CSBS	SF
GEOG 3330	Urban Environmental Geography	3	CSBS	SF
HIST 4855	Environmental History of India	3	HUM	
HONOR 3235	Introduction to Ecology in an Urban Setting: An Integrated Approach*	3	HONOR	
PHYS 3150	Energy and Sustainability: A Global Perspective*	3	SCIENCE	
PRT 2100	Wilderness in America	3	HEALTH	BF
SOC 3653	Global Population Problems	3	CSBS	
WRTG 4080	Nonfiction Environmental Writing	3	HUM	HF and CW

\* Indicates that the course has prerequisites or recommended prerequisites. See the University course catalog for details.

\*\*Indicates that the course is open to majors