Sustainability and General Education

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Abstract

The topics of sustainability, environmental literacy, and climate change are becoming part of many university educational programs. This presentation will present some of the national programs that are incorporating sustainability and the climate change. In addition, the presenters will give an update on the revisions being proposed to the UNLV General Education core, which may include incorporating sustainability into an educational outcome related to ethics and sustainability as dimensions of responsible citizenship.
Presentation Overview

- UNLV Urban Sustainability Initiative
- Sustainability Programs and General Education (other places)
- General Education at UNLV
USI Mission

To reach out and collaborate with faculty, students, community groups, and national/international leaders in finding solutions for the quality of life challenges confronting the Las Vegas metropolitan area, Nevada, the Southwest, the nation, and world.
USI Goals

- Facilitate interdisciplinary and multidisciplinary research, scholarship, and creative activity
- Promote sustainability education
- Conduct targeted outreach to community and beyond
- Encourage campus sustainability
USI Listserve Faculty

- Division of Health Sciences
- Unknown
- College of Liberal Arts
- Greenspun College of Urban Affairs
- College of Sciences
- College of Fine Arts
- William S. Boyd School of Law
- College of Education
- Howard R. Hughes College of Engineering
- William F. Harrah College of Hotel Administration
- College of Business
USI Activities

- Three (3) Graduate Students (PhD and MS) in Sociology, Geoscience, and Economics
- Two (2) Interns from Life Sciences working with the Recycling Program on waste management issues.
- Five (5) interdisciplinary research teams working on hospitality, energy, water, recycling, and health related issues
- Conferences related to sustainability and climate change education, North American energy, and regional transportation.
Other Programs and Resources

- Association of Advancement of Sustainability in Higher Education (AASHE)

[Image of AASHE website]

AASHE Features

AASHE 2008 Conference & Expo
Over 1,700 people turned out for AASHE’s second national conference. The conference featured 400 presentations, compelling keynotes, exhibits, campus tours, and lots of fun. View the conference website or View photos and blog posts uploaded by participants.

Program Highlights

- American College & University Presidents’ Climate Commitment
- Disciplinary Associations Network for Sustainability (DANS)
- Higher Education Associations Sustainability Consortium (HEASC)

[Links to additional resources]
## Undergraduate Programs

<table>
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<th>Major</th>
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Sustainability as a General Education Requirement

- About ¼ of universities in 2008 had some type of requirement (down from 1/3 in 2001).
- Require Courses in
  - Environmental literacy along with..
  - Social responsibility or civic engagement requirement
- Infusing sustainability across curriculum
  - Aligned with writing and critical thinking across curriculum
  - Faculty support for development
  - Ponderosa Project (Northern Arizona University)
  - Discipline-specific
Sustainability education at UNLV

- It’s not a universal requirement, but there are many opportunities for interested students
- Options in the following areas
  - General Education
  - Majors
  - Co-curricular or Extra-curricular
  - Solar and Renewable Energy Minor
Current UNLV General Education

- Core+Distribution model - 34-37 credits
- 7 Outcomes:
  - English Composition Distribution
  - World Literature Multicultural
  - Constitutions International
  - Mathematics
- Current outcomes do not specifically mention sustainability
Solar and Renewable Energy Minor - Policy Track

- All Bachelors majors - 21 credits
- 3 Core outcomes - One course each in
  - Familiarity with solar energy utilization
  - Background in global envtl problems
  - Competence sustainable building design
- Electives - Four courses to support
  - Outcome: competence in environmental history, policy and science
  - Courses in architecture, envtl studies, geology, history, natural resources political science
Solar Minor - Engineering and Sciences track

- Primarily engineering and sciences majors - 21-23 credits
- 4 Core outcomes. 3 Policy track +
  - develop competence in design of solar thermal and photovoltaic systems
- Electives - 2-3 courses to support
  - Outcome: develop technical depth in the scientific fundamentals or engineering design principles of renewable energy
  - courses must be in addition to major requirements
Minor core courses

- EGG 150/450 - Introduction to solar energy utilization
- ENV 101 - Introduction to Environmental Science
- AAE 330 - Design with climate
- AAE 435 - Developing sustainable design
UNLV Gen Ed Model

- Core + Distribution model - 33-35 credits
- Core meets specific NSHE requirements
  - English Composition - 6 credits
  - US / Nevada Constitutions - 4-6 credits
  - Mathematics - 3 credits
- Builds knowledge of
  - World Literature - 3 credits
- Sustainability not usually included in Gen Ed core curriculum/course goals or content
Distribution requirements
18-19 credits

- Three areas
  - Humanities and Fine Arts
  - Social Sciences
  - Life and Physical Sciences / Analytical thinking

- Student required to take 3 courses in each of 2 areas OUTSIDE own major distribution area
Life and Physical Sciences/Analytical Thinking

- 9-10 credits, allows course offerings to address sustainability topics
  - Science gen ed electives exist that address sustainability topics
  - Offerings in Chemistry, Biology, Geography, Geology
  - Interested students in non-science majors could take at least one sustainability course in sciences
Humanities and Fine arts - Distribution

- 9 credits - usually satisfied with 3-credit courses
- Example offerings that address environmental issues
  - Architecture (AAE 100)
  - History (HIST 441)
  - Philosophy (PHIL 249)
Social Sciences Distribution area

- 9 credits - usually satisfied with 3 3-credit courses
- Example elective offerings including environmental issues:
  - Economics (ECON 307)
  - Environmental Studies - many
  - Political Science (PSC 403A,B or D)
  - Sociology (SOC 407)
- Student must satisfactorily complete 1 lower division course to take upper division course with environmental coverage
In majors, sustainability usually elective requirement

- Architecture
- Biology
- Civil Engineering
- Construction Management
- Environmental Studies - required
- Geosciences
- Mechanical Engineering
- If elective, student could graduate without studying sustainability
# Example UNLV Undergraduate Courses

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<tr>
<th>Course Code</th>
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<td>ENV 206</td>
<td>Introduction to Climate Change</td>
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<td>ENV 430</td>
<td>Land Use Management</td>
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<td>GEOL 110</td>
<td>Global Warming</td>
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<td>GEOL 303</td>
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<td>Facility Systems Design and Construction 1</td>
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<td>CEM 480</td>
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<td>CEE 454</td>
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<td>Conversations With Earth</td>
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Co- or Extra-curricular options

- Employment - Research projects, UNLV Recycle Center
- Field trips / outdoor adventures
- Volunteer associations - Habitat for Humanity, Engineers without Borders, Student Conservation Association
What’s coming up?

- Proposed outcome-based Universal Undergraduate Education
- Theme could be Sustainability or Human Services
- 5 broad proposed outcomes to be attained across student’s academic career, in
  - general education and
  - the majors
- Intentional design of educational experiences to meet outcomes
- Increased support of students and faculty in attaining the outcomes
The Five proposed outcomes

1. Intellectual Breadth and Life-Long Learning
2. Inquiry, Critical Thinking, and Information Literacy
3. Communications
4. Global and Multicultural
5. Citizenship and Ethics
Intentional Design

- Revisions to methods used in class instruction - eg
  - Lecture/seminar/discussion/lab emphases
  - Assignment design

- Revisions to course content or format
  - Revisions to course descriptions or syllabi
  - New courses
  - Team-taught courses
  - Integration with co-curricular experiences
  - Learning communities
Examples

• Written communications outcome -
  – Short peer-graded writing exercises in science classes
  – Report about both topical area and links to sustainability from biology or geology field camp
Where could sustainability “fit”?

- Course-based attainment
- Intellectual breadth and life-long learning outcome
  - For example, natural sciences - global warming class in geology, or biology or chemistry lab exercises/experiences
- Ethics and citizenship outcome
  - For example - environmental ethics topical coverage, or GIS course evaluating sustainability impacts of sea level rise
Are there other ways?

- Linked experiences in the majors
- Examples: Through case-studies link experiences in
  - economics and conservation biology
  - Social work and urban planning
- Link co-curricular and course experiences
  - Engineers without borders field experience and practicum requirement in civil engineering, with project
  - on sanitation improvements in Pacific Islands might meet sustainability and communications outcomes
What’s the timeline for making changes?

- **2009-2010 - depts and students**
  - Evaluate outcomes and how majors attain them
  - Initiate pilot changes to attain outcomes

- **2009-2010 - develop**
  - Improved student support systems for
    - Intake testing, advising, placement, course selection
  - Improved faculty support for
    - Cross-disciplinary team teaching and scholarship
    - Improving student educational experiences

- **2010-2011 - discuss and implement**
  - Intentional curriculum design to attain outcomes
What might this look like at the end?

- Sustainability could be framework or specific topical objective
  - Economic, Environmental/energy, Social
- Attained
  - in any of the several broad outcome areas
  - through intentional design of educational experiences (courses, course topics, learning experiences, assignment design)
Thank you!

- Questions?