Graduate Certificate in Sustainability

Greening The Curriculum at New Mexico State University

David M. Boje
Purpose Today

• Seek Graduate Council Approval for University-wide Graduate Certificate

• Already have Registrar’s approval to put into course catalogue for Marketing purposes

• With Graduate Committee approval, we then go to Graduate College, then ADAC’s final approval on \textit{university-wide Graduate Certificate in Sustainability}
Strategy

To develop a Graduate Certificate Program consisting initially of courses this is HOUSED in College of Business - MBA program with some options in other colleges: A&S, ACES ...
Sustainability Definitions for Curriculum:

• Sustainable Development meets the needs of the present without compromising the ability of future generations to meet their own needs. Sustainability in the curriculum encourages students to make connections between the knowledge and skills addressed in traditional, discipline-based course offerings with their applications by practitioners, policy makers, and consumers to help create a sustainably configured economy, society, and environment. Sustainability curriculum provides students with the background and skills necessary to address problems related to energy, the environment, culture and society, and economic development as interdependent and interconnected processes that transcend individual disciplines.
Define Sustainability-Focused Courses

**Sustainability-focused courses** con on the concept of sustainability, including its socio-cultural, economic, and environmental dimensions, or examine an issue or topic using sustainability as a lens. To be considered sustainability-focused, the course should include three or more of the sustainability educational objectives listed below, and put the leaf above in your course materials.
Define Sustainability-Related Courses

Sustainability-related courses incorporate sustainability as a distinct course component or module, or concentrate on a single sustainability principle or issue. To be considered sustainability-related, a course should include one or more of the sustainability educational objectives listed below, and please put the leaf in your department and course materials.
Learning Objectives

1. Understand and be able to effectively communicate the concept of sustainability.
2. Develop and use an ethical perspective in which they explain how sustainability relates to their lives and values, and how their actions impact issues of sustainability.
3. Become aware of and explain how economy, society, culture, energy, and the environment are interrelated, making connections between their chosen course of study and sustainability.
4. Develop technical skills or expertise necessary to implement sustainable solutions.
5. Explain the ways in which sustainable thinking and decision-making contributes to the process of creating solutions for current and emerging social, environmental, and economic crises.
6. Apply concepts of sustainability locally (e.g. to change daily habits and consumption patterns) and globally by engaging in the challenges and solutions of sustainability in a world context.
7. Synthesize understanding of the interconnections among social, cultural, economic, energy, and environmental systems and reason holistically.
Requirements

• A 3.0 minimum cumulative GPA in sustainability courses will be required for award of the Sustainability Graduate Certificate Program.
Benefits of Graduate Certificate

• The University-wide Graduate Certificate helps masters students prepare for a career in sustainability.

• The Graduate Certificate draws upon disciplines of study across the College of Business, and the university.

✔ Advising is currently available in Management Department.
Who has Gold Star in Sustainability:

- Colorado State University: GOLD
- Iowa State University: GOLD
- Kansas State University: NONE
- Montana State University: NONE
- New Mexico State University: GOLD
- Oklahoma State University: BRONZE
- Oregon State University: GOLD
- Texas Tech (Lubbock): NONE
- University of Arizona: NONE
- University of Idaho: NONE
- University of Nevada: SILVER
- University of New Mexico: NONE
- University of Texas at El Paso: NONE
- Utah State University: NONE
- Washington State University: GOLD
- University of Wyoming: NONE
TOTAL 12 Credits: Choose 9 credits from A List & 3 credits from B List

### A LIST:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Prerequisite(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>BCIS 502</td>
<td>Business-Information-Systems</td>
<td>Prerequisite: graduate students only</td>
</tr>
<tr>
<td>HRTM 450</td>
<td>Special Topics – Summer [Study Costa Rica] in English (must have 2.5 GPA).</td>
<td></td>
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<tr>
<td>HRTM 492</td>
<td>Special Research in Sustainability Topic</td>
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</tr>
<tr>
<td>MGT 590</td>
<td>Strategic Management</td>
<td>Prerequisite: M.B.A. student in his or her final semester. Restricted to majors.</td>
</tr>
<tr>
<td>MGT 655</td>
<td>Systems Theory &amp; Sustainability</td>
<td>Prerequisites: doctoral status or permission of instructor for masters students.</td>
</tr>
<tr>
<td>MGT 685</td>
<td>Storytelling Consulting Doctoral Seminar</td>
<td>Prerequisites: doctoral status or permission of instructor for masters students.</td>
</tr>
<tr>
<td>MGT 690</td>
<td>Independent Study in Sustainability Management</td>
<td></td>
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<tr>
<td>ECDV 671</td>
<td>Sustainable Economic Development</td>
<td>Prerequisites: AEEC 501, AEEC 502 and AEEC 540</td>
</tr>
<tr>
<td>ECON 573</td>
<td>Regulatory Policy and Industry Analysis: Electricity II Consent of instructor required. Prerequisite(s): ECON 571 or consent of instructor</td>
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</tbody>
</table>

### B LIST: Choose 3 credits (usually one course)

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
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<tbody>
<tr>
<td>ANTH 536</td>
<td>Anthropology of Development</td>
</tr>
<tr>
<td>ANTH 538</td>
<td>Plants, Culture, and Sustainable Development</td>
</tr>
<tr>
<td>BLAW 530</td>
<td>American Indian Law and Policy</td>
</tr>
<tr>
<td>HORT 485</td>
<td>Vegetable Crop Management</td>
</tr>
</tbody>
</table>

**Note:** is for Focused Course; is for Related Course. See Definitions Page. **Note:** Check prerequisites in Graduate Catalogue. Requirements: A 3.0 minimum cumulative GPA in Sustainability courses (above) will be required for award of the Sustainability Graduate Certificate. Visit [nmsu.edu/gradschool](http://gradschool.nmsu.edu/) for details on the certificate. Please read [http://gradschool.nmsu.edu/certificates.html](http://gradschool.nmsu.edu/certificates.html) and then complete [Online Application](http://gradschool.nmsu.edu/certificates.html) for Completion of Graduate Certificate.
Next Step

• When done, Please Read http://gradschool.nmsu.edu/certificates.html and then Complete Online Application for Completion of Graduate Certificate
## Table 1: Measures/Targets for Greening the Curriculum @ NMSU relate to Vision 2020 University Goals

<table>
<thead>
<tr>
<th></th>
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</thead>
<tbody>
<tr>
<td>Departments participating in sustainability programs</td>
<td>Set baseline database</td>
<td>+5%</td>
<td>+10%</td>
</tr>
<tr>
<td>Sustainability program enrollment diversity</td>
<td>Set baseline database</td>
<td>+3%</td>
<td>+5%</td>
</tr>
<tr>
<td>Female</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Sustainability program enrollment diversity</td>
<td>Set baseline database</td>
<td>+2%</td>
<td>+5%</td>
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<tr>
<td>Hispanic ( &amp; others TBD)</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Courses with international sustainability service and outreach components</td>
<td>Set baseline database</td>
<td>10%</td>
<td>15%</td>
</tr>
<tr>
<td>Courses with Energy savings Projects</td>
<td>Set baseline database</td>
<td>+5%</td>
<td>+10%</td>
</tr>
<tr>
<td>Estimated savings of those projects</td>
<td>Set baseline database</td>
<td>$20,000</td>
<td>$40,000</td>
</tr>
<tr>
<td>Courses with sustainability projects</td>
<td>Set baseline database</td>
<td>+10%</td>
<td>+15%</td>
</tr>
<tr>
<td>Faculty with sustainability related donations, grants and contracts</td>
<td>Set baseline database</td>
<td>+10%</td>
<td>+15%</td>
</tr>
<tr>
<td>Sustainability related jobs found by students</td>
<td>N/A (set baseline database)</td>
<td>+5%</td>
<td>+10%</td>
</tr>
<tr>
<td>Table 2: 7 Vision 2020 Goals and SUSTAINABILITY MINOR outcomes &amp; measures</td>
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<td>-------------------------------------------------</td>
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<tr>
<td>1. Graduation – Teaching, Learning &amp; Programs - <em>Provide effective academic programs, stellar teaching and learning, and enhanced student engagement to advance highly capable graduates</em></td>
<td>Increases in enrollment from 3% form Baseline by 2014: graduating students; 5% increases from the current course offerings; 5% increase in departments participating with course offerings that are sustainability-focused or sustainability-related.</td>
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<tr>
<td>2. Diversity – <em>Be a model of student, faculty and staff diversity at all levels</em></td>
<td>Increase in diversity enrollment by 3% by FY 2014: NMSU currently has 45% Hispanic enrollment, which we intend to increase in this program; includes 3% increase in female enrollment in the sustainability-focused or sustainability-related courses.</td>
<td></td>
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<tr>
<td>3. Internationalization - <em>Effectively prepare students for a global society</em></td>
<td>Increase 10% in International courses that are sustainability-focused or sustainability-related; includes 10% increase in course projects that focus on international cases and service projects. Talloires Declaration signed by NMSU, item 9 is to broaden service and outreach of sustainability both nationally and internationally</td>
<td></td>
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<tr>
<td>4. Research &amp; Creative Activity-- <em>Be the catalyst for promoting discovery, encouraging innovation, sparking economic advancement, and inspiring creative achievement</em></td>
<td>Measure is number of these energy saving projects, and secondly the estimate dollar savings to NMSU and its communities. FY 2014 goal is $20,000 in reported project savings to university and/or community</td>
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<tr>
<td>5. Economic Development -- <em>Be a driving force for economic progress in New Mexico</em></td>
<td>We will assess number of projects in courses students are taking as part of Sustainability minor, and in sustainability-focused or sustainability-related courses.</td>
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</tr>
<tr>
<td>6. Resource Stewardship -- <em>Increase philanthropy and alternative revenue to support teaching, research and service</em></td>
<td>Alumni donations increase of 10% in FY 2014, specifically for sustainability efforts to support teaching, research, and service. Currently 106/694 (15%) faculty are doing grants and research related to sustainability</td>
<td></td>
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</tr>
<tr>
<td>7. Community - Service, Extension &amp; Outreach -- <em>Be a model for community engagement at all levels through innovative</em></td>
<td>This is measured by students picking sustainability careers. Part of our project is to work with career center, have boths in 3 career expos in FY 2014, training for advising</td>
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</tbody>
</table>
Career Fair - Feb 4-5 2014 @ NMSU
Greening the Curriculum ~ Thinking About A Greener Future

Student Participation by College

- Total Participants: 1017
- Engineering: 333
- Arts and Sciences: 148
- Education: 114
- Health and Social Services: 99
- Graduate: 99
- Business: 99
- Community College: 99
- Agriculture Consumer Env. Science: 43
- Guests: 26
- Others: 16
# Jobs in International Sustainability Careers

- Wind Energy Jobs (135)
- Environmental Jobs (91)
- Consulting Jobs (62)
- Solar Power Jobs (52)
- Energy Efficiency Jobs (36)
- Biofuels and Bioenergy Jobs (32)
- Hydro Power Jobs (24)
- Environmental Jobs (91)
- Consulting Jobs (62)
- Solar Power Jobs (52)
- Energy Efficiency Jobs (36)
- Biofuels and Bioenergy Jobs (32)

- Energy Policy Jobs (23) • Waste to Energy Jobs (11)
- Combined Heat and Power (CHP) Jobs (10)
- Geothermal Energy Jobs (9)
- Electrical Energy Storage Jobs (9)
- Tidal Energy Jobs (8)
- Wave Power Jobs (7)
- Thermal Energy Storage Jobs (6)

- Green Transport Jobs (2) • Hydrogen Production & Storage Jobs (2)
- Carbon Capture and Storage CCS Jobs (1)
GREEN MBA Program concentration is in line with National Trends

- Fast Company Magazine did a reprint of Princeton Review and Entrepreneur Magazine just released their first rankings of the top 16 green MBA programs in the U.S.

- OUR PEER INSTITUTION, Colorado State University offers Green MBA in Global Social & Sustainable Enterprise  
  Source
16 top Green MBA programs

1. Babson College F.W. Olin Graduate School of Business - 12 green-themed classes

2. Bentley University McCallum Graduate School of Business - Paid sustainability research projects to help local companies develop sustainability business plans

3. Brandeis University International Business School - Launched the MBA in Socially Responsible Business (Global Green MBA) with classes in business and the environment, managing the triple bottom line, and investing in energy

4. Claremont Graduate University Drucker School of Business - Special topics courses on sustainability and a 11 day program in Costa Rica

5. Clark University Graduate School of Management - Dual MBA/MA Environmental Science and Policy program with courses in Green Business Management, Management of Environmental Pollutants and Climate Change, Energy, and Development. The school reduced paper output by 80%

6. Columbia University Columbia Business School - A Green Curriculum, with courses in Business and Society, Sustainable leadership and ethics (Doing Well by Doing Good), and topics in Finance and Sustainability, Business in Society

7. Duke University The Fuqua School of Business - A Green Curriculum in a 3-year MBA/Master of Environmental Management joint program, and is placing graduates of the MBA in most sought-after sustainability positions in industry and non-governmental organizations.

8. New York University Leonard N. Stern School of Business - Classes in Corporate Branding and Corporate Social Responsibility, Introduction to Environmental and Social Sustainability, and Foundations of Social Entrepreneurship. 60% of the MBA courses integrate sustainability content.
9. Portland State University School of Business put in a sustainability MBA program throughout the curriculum that includes courses in Product Design and Stewardship, Metrics for Sustainability Enterprise, and Social Sustainability.

10. Stanford University Graduate School of Business has a Green Public Management Certificate in socially responsible business and a joint MS/MBA in Environment and Resources.

11. University of Michigan Stephen M. Ross School of Business has the Erb Institute for Global Sustainable Enterprise in partnership with School of Natural Resources and Ross School of Business in a 3-year MS/MBA program with courses like Green Development, Sustainable Manufacturing and Environmental Economics.

12. University of North Carolina at Chapel Hill Kenan-Flagler Business School has an MBA with a concentration in sustainable enterprise, that includes a Sustainability Immersion course as the capstone of their MBA. They offer business consulting in real world sustainability venture experiences, including Sustainable Venture Capital Investment Competition where students with best business plans win seed money.

13. University of Notre Dame Mendoza College of Business offers sustainability courses in topics like Greening the Supply Chain, Improving Environmental Accounting, and research on how company annual reports have a rhetoric of sustainability that does not match their actual energy efforts, etc.

14. University of Virginia Darden Graduate School of Business has a 2nd year concentration on sustainability with 19 courses to choose from, including a signature overseas Global Business Experiences focus on sustainable companies.

15. University of Wisconsin-Madison School of Business has a Graduate certificate in Business, Environment, and Social Responsibility. It is a 12 credit track.

16. McGill University Desautels Faculty of Management in Montreal, Quebec has a new green curriculum that integrates social, environmental, and ethical issues into MBA education using case studies, and a Global Strategy and Leadership minor focused on sustainability issues.
## Publicize

<table>
<thead>
<tr>
<th>✓ Network the ‘New Story of Green MBA’</th>
<th>✓ Tabling</th>
<th>✓ Green MBA internship</th>
</tr>
</thead>
<tbody>
<tr>
<td>✓ Alumni Services, Career Fair Services</td>
<td>✓ Letter to prospective students</td>
<td>✓ Green MBA student association</td>
</tr>
<tr>
<td>✓ Advising</td>
<td>✓ Letter inviting employers to Green MBA Career Fair</td>
<td></td>
</tr>
<tr>
<td>✓ Change the Banner</td>
<td>✓ Foundation fund raising</td>
<td></td>
</tr>
<tr>
<td>✓ Star Audit programming</td>
<td>✓ Green MBA scholarships</td>
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</tbody>
</table>
## Greening the Curriculum ~ Thinking About A Greener Future

### 122 Organizations exhibited at NMSU Career Fairs

**2013 & 2014**

<table>
<thead>
<tr>
<th>ALASKA STRUCTURES</th>
<th>Allstate Insurance Company</th>
<th>AMERIND Risk Management Corporation</th>
<th>ARGO ARIZONA PUBLIC SERVICE</th>
</tr>
</thead>
<tbody>
<tr>
<td>B&amp;W Pantex</td>
<td>Baker Concrete Construction</td>
<td>BAKER HUGHES</td>
<td>Bed Bath &amp; Beyond BNSF Railway Bradbury Stamm Construction, Inc. Campus Special Cargill Center for Countermeasures</td>
</tr>
<tr>
<td>C.H. ROBINSON WORLDWIDE, INC. Colorado River Municipal Water District</td>
<td>Consolidated Electrical Distributors Inc. Convergys Cummins Inc. Dallas Police Department</td>
<td>EA Engineering, Science, &amp; Technology, Inc. ECOLAB Enterprise Holdings, LLC Exponential Engineering Company</td>
<td>Exxon Mobil Corporation</td>
</tr>
<tr>
<td>FARM CREDIT (State)</td>
<td>FARM CREDIT Administration (FED)</td>
<td>Fast Enterprises LLC</td>
<td>FEDERAL BUREAU OF INVESTIGATION (FBI) Ferguson, a Wolseley Company</td>
</tr>
<tr>
<td>Fidelity Investments First Light Federal Credit Union Food Corps Freeport-McMoRan Copper &amp; Gold Freese and Nichols, Inc.</td>
<td>Garner Construction Company</td>
<td>GEICO – Government Employees Insurance Company</td>
<td>GENERAL DYNAMICS C4 SYSTEMS</td>
</tr>
<tr>
<td>General Genetics Corporation</td>
<td>General Motors Information Technology, Halliburton</td>
<td>HENSEL PHELPS CONSTRUCTION</td>
<td>HEWLETT PACKARD</td>
</tr>
<tr>
<td>Hispanic Scholarship Fund Institute HollyFrontier Companies</td>
<td>INTEL CORPORATION</td>
<td>J.D. ABRAMS, INC. Jacobs Technology Inc.</td>
<td>JBS Five Rivers Cattle Feeding LLC Johnson and Johnson Liberty Mutual Los Alamos National Laboratory</td>
</tr>
</tbody>
</table>
Greening the Curriculum ~ Thinking About A Greener Future

Invite to Career Expo (Sep) & Career Connections (Feb) SUSTAINABILITY Theme

- 3m (77)
- aecom (1,548)
- aramark (77)
- allergan (139)
- armstrong world industries (77)
- bae systems (101)
- bhp billiton (113)
- bayer (109)
- bechtel corporation (207)
- brown and caldwell (170)
- ch2m hill (619)
- clarke mosquito control (128)
- dupont (128)
- ecolab (70)
- freeport-mcmoran (866)
- ihs, inc. (175)
- ingersoll rand (74)
- jacobs (75)
- johnsoncontrols, inc (80)
- millercoors (157)
- nestle waters
- north america inc. (134)
- newmont (128)
- pall corporation (122)
- arsons (150)
- parsons corporation (547)
- sra international (82)
- schlumberger (144)
- siemens (861)
- urs corporation (158)
Upcoming NMSU Career Fairs

**Employment Extravaganza** 2014: March 12

**Educators’ Job Fair** 2014: March 30 – April 1, 2014 - ‘Largest in Southwest’

**Career Expo** 2014: September 16-17

**Graduate and Professional School Fair** 2014:

**Government & Public Service Career Showcase** 2014: Nov 20\textsuperscript{th}
NMSU is a CLIMATE Hub for Funding

February 5, 2014 by Emily C. Kelley, NMSU News Center
“Agriculture Secretary Tom Vilsack announced today the locations for seven Regional Hubs for Risk Adaptation and Mitigation to Climate Change.”

“Climate Hubs” will address increasing risks such as fires, invasive pests, devastating floods and crippling droughts on a regional basis, aiming to translate science and research into information for farmers, ranchers and forest landowners on ways to adapt and adjust their resource management.

The Southwest Regional Hub: located at Rangeland Management Unit/Jornada Experimental Range at NMSU

The Agricultural Research Service location housed at NMSU
It is important that:

Even in career paths that aren’t sustainability focused, almost every company we spoke to at Career Fair wants to save money and improve their image.
Most companies we talked to have sustainability built in to their mission statements
Thank you

Please provide any suggestions on GREENING @ NMSU Project coordinator, David Boje
dboje@nmsu.edu

http://peaceaware.com/sustainability/