

SUST 434 - Synthesis of Sustainability Perspectives and Innovations - Spring 2013

(This document will be available at: <http://sust.unm.edu>)

Instructor:

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Office Hours: Tuesday 9:30 - 10:00 and Friday 10:00 – 11:30,
or by appointment at our convenience

Class sessions: Monday, Wednesday, 1:00-3:30 Mitchell Hall, Room 121
Eight weeks: Jan 14 – March 6 (last day of class, final exam)

Course description:

Presents frameworks for complex and creative analysis, including systems thinking and synergistic integration of the three pillars of sustainability: environment, equity, economy. Examines innovative local and international case studies in environment, business, policy, and community development. Prerequisites: SUST 334

Goals, purposes, and expectations: This course is suited for students interested in the theoretical and practical aspects of community development, local economies, resource conservation, community activism, and environmental protection.

This course provides the opportunity to integrate experiences and knowledge gathered in Introduction to Sustainability and Environment (SUST 134), Sustainability Practicum (SUST 334), and the electives students have taken toward the minor degree in Sustainability Studies. Students will engage in more complex levels of understanding the challenges of sustainability as they prepare for the capstone project ahead (SUST 499).

Most students gravitate naturally to one or two of the three pillars of sustainability (environmental protection, social justice, and economic vitality). This course examines all pillars and the interactions among them. We will study frameworks for making meaning from complex situations and integrated design, including systems thinking and interdisciplinary philosophical underpinnings of sustainability. This will enable us to acquire a broader lens through which to design synergistic applications of sustainability's three pillars.

We engage in a caring, creative learning experience with responsible students and thereby gain perspectives that empower us all as agents of sustainability. From Steve Covey's *Seven Habits of Highly Effective People* we favor an outcome that is "win/win". Some languages have no words for "teaching" but over 30 words for "learning". Indeed we can only learn; learning is the basis of personal development and enrichment.

Plagiarism: The Faculty Handbook, policy D100, affords instructors the authority to respond to plagiarism by granting a grade of "...F" in the course and the involuntary withdrawal of the student from the class..." Avoid committing plagiarism by making all your work your own. Do not cut and paste from web sites or articles. Brief, direct quotes are allowed but must be documented as such. Always put quotes in quotes or in a smaller italics font, with complete attribution to the source.

Course design:

This semester we focus on research questions, skills, scholarship, and theory with which to test effective solutions for sustainability.

Grading	%	Due dates
Midterm	25	February 6
Final	25	March 6
Mini-proposal & logic model	10	February 4
Poster	15	March 4
Exercises and assignments	20	Various Mondays
Reading Diary Form		
Participation & leadership	5	

	Jan 14, 16	Jan 21, 23	Jan 28, 30	Feb 4, 6
Theme	Goals of research	Pillars of Sustainability	Foodshed Development	Trends & Risks
Lecture	Theories, Questions, & Problem solving Stats 101: Variance	Being a Sustainability Scholar	Atlas Project (Milne) Foodshed Assessment (Peters)	Trends Assessment
Concepts	Questions/Hypotheses Study design, replication, Randomization Quantitative & qualitative research	Web of knowledge Scholar as reader/writer	Foodshed, Value Chain, Water balance (Stephenson), Biodiversity theory (Currie)	Peak everything. Community engagement
Tools	Matlab	Library resources Research notebook	Data sheet design Matlab Spreadsheet Graphic output	Camera Voice recorders
Resources	Matlab it.unm.edu/download Study design Write proposal Readings in Sustainability Science (PNAS) Mooney(2011)	Scholarship guide Writing guide “Buyer Beware” “Community”	Value Chain Handbook itouchmap.com/latlong.html http://www.prism.oregonstate.edu/ “Vegucated” Blank logic model	Bartis (2002) Field recording Wright and Boorse
Activities	1) Q/H 2) Study design 3) Download Matlab 4) skills 5) data sheet 6) frequencies 7) t-test	1) Anatomy of a paper 2) Pet peeves 3) Literature search 4) Q/H for pillars 5) Mini-proposal overview 6) Logic model	1) Mini-proposal 2) Climate diagrams 3) Logistic regression 4) Effect size	Photo framing. Interviewing 101.
Assignments (Due the following Monday unless specified otherwise)	1) Matlab installation 2) Read Osborn et al. (2011) * for Wed. 3) Your top research interests	1) Annotate six milestone papers (2 each): - Clean energy - Environmental racism - Green economy 2) Read Kloppenborg et al. (1996) for Monday	1) Mini-proposal & logic model due Feb. 4 2) Regression report 3) Read Whipple (2010) for Monday 4) Read Brown et al. (2011)	1) Photoessay 2) Interview green hero. 3) MIDTERM Feb. 6 4) Read Garrett (2011) for Monday

	Feb 11,13	Feb 18,20	Feb 25,27	March 4,6
Theme	Water-Food-Energy Nexus	Green Building	Dynamics	Conclusions
Lecture	Sandia's Nexus Projects	LEED & SAFE	The Laws of Complexity	Research career paths
Concepts	Energy is power (Garrett 2011)	Qualitative frameworks Resilience scores	Dynamics, networks Percolation: Law of Crime Scaling and nonlinear growth	Professionalism
Tools			Matlab simulations	
Resources	Costanza et al. (1997) Garrett (2011, 2012) Costanza et al. (2009)	Foley (2011) Worm et al. (2006)	Bettencourt et al. (2007) Tero et al. (2010) Dai et al. (2012)	Trajectory to graduate school
Activities	Correlation analysis Critique poster designs Discuss Garrett(2011)	1) Design poster in PowerPoint	1) Percolation simulation 2) Proof poster for printing	Presentations Resume prep
Assignments (Due the following Monday unless otherwise)	1) Statistical analysis report 2) Read Foley (2011) 3) Read Worm et al. (2006)	1) Draft poster 2) Read Bettencourt et al. (2007) 3) Read Tero et al. (2010) 4) Read Dai et al. (2012)	1) Poster	1) Poster, March 4 2) FINAL Exam March 6

* Note: Complete a [Reading Diary Entry Form](#) for each assigned reading and bring it to class for discussion and to hand in.