

Syllabus: Ecological and Social Sustainability Winter 2008

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Meeting Times and Locations:

Tuesdays and Thursdays, 6:00-10:00 PM*. Seminar II, Building E and A (for one seminar group) as follows**:

6:00 – 8:00 Lecture period, E1105

8:00 – 10:00 Peter's seminar, E3107

8:00 – 10:00 Linda's seminar, E3109

8:00 – 10:00 Alison's seminar, A3107

*Note – we will meet from 12:00 – 4:00 on Thursday, January 10th. We will be conducting field work in the campus forest at this time, so make sure to come prepared to be working in the rain and cold for 4 hours.

**Note – not every class time will follow the lecture/seminar format and some classes will meet in spaces other than those listed above. Any changes in meeting location are noted in the schedule (below). Make sure to check the syllabus before class to verify meeting location.

Course Description: This program, second core course in the MES program, moves students further into the field of interdisciplinary and trans-disciplinary environmental studies through an exploration of the concept of sustainability. A diverse set of theoretical and applied approaches creates opportunities to integrate ideas about sustainability from ecological, economic, political and socio-cultural studies. The course design explores the concept through a diverse set of theoretical and applied readings from multiple disciplines, participatory exercises and discourse, and analytical exercises. The program invites investigation of various sustainable strategies through the application of analytical methods and academic discussion including social and natural sciences. The course begins with historic and applied perspectives on sustainability in the field of forestry/forest ecology as a basis for moving into a theoretical discussion. In the final course component, students will approach the issue of climate change and its relationship to developing sustainable strategies. This program incorporates software and statistical skills that are directly useful for mastering the academic literature we will be surveying, and that prepares students for more advanced analytical work in the spring.

Course Objectives

---develop methodological skills as a foundation for future coursework in data analysis

---review research articles from different disciplines and learn to critically evaluate

popular accounts, articles from academic journals and policy positions.

---develop the required tools to construct a successful research project

---gain a solid grasp of the breadth and application of various social and ecological disciplines that contribute to understanding the concept of sustainability.

Candidacy Paper

Advancement to MES candidacy is based in part on demonstration by the student that she or he can design and execute a scholarly research paper and effectively communicate research results in an oral presentation. During this quarter each student will be required to carry out such a project as part of the course work. The candidacy paper must be analytical (not simply descriptive), well organized, take a position buttressed by supporting evidence, and demonstrate strong bibliographic research skills. At the end of the quarter each student will make a presentation to the class on their candidacy topic. To help you organize your time we have included a series of "candidacy checkpoints" in the schedule below. We have also scheduled two workshops, one on the general structure of an academic argument, the other on presentation skills.

Books

Two books are being assigned for this program:

Defining Sustainable Forestry, Aplet et al. (Island Press, 1993)

Global Warming: The Complete Briefing, 3^d edition, Houghton (Cambridge University Press, 2004)

In addition, a number of shorter journal articles and book chapters will be assigned throughout the quarter.

Schedule

Week 1

Tuesday, January 8

Reading: "The Wealth of Nature: Lumber" from *Nature's Metropolis: Chicago and the Great West*, Cronon (Norton, 1992)

Lecture: History of Forest Management Concepts

Video: "The Wilderness Idea: John Muir, Gifford Pinchot, and the First Great Battle for Wilderness"

Thursday, January 10

Field work: data collection in the Evergreen forest (meet in Lab 1 1065)

Note: this class will meet from 12:00 – 4:00 pm!

Week 2

Tuesday January 15

Lecture: What Is a Forest? (Alison)

Data lab in the CAL (with introduction to SPSS)

Candidacy paper checkpoint: submit proposal

Thursday, January 17

Reading: *Defining Sustainable Forestry* (with seminar)

Case study workshop: The Last Stand: the Quinault Indian Nation's Path to Sovereignty and the Case of Tribal Forestry (Linda)

Week 3

Tuesday, January 22

Reading: "Is Sustainable Forestry Economically Possible?", Pearce et al.

Lecture: The Economics of Forests and Forestry (Peter)

Workshop: The Salvage Logging Debate

Thursday, January 24 – Meet in Sem II, E1107

Readings: Articles on the ecological and economic aspects of forestry in southeast Asia (with seminar) posted on the moodle site.

- Curran, L. M., G. D. Canagio, D. Paoli, D. Astianti, M. Kusneti, M. Leighton, C. E. and Nirarita, H. Haeruman. 1999. Impact of El Niño and logging on canopy tree recruitment in Borneo. *Science* 286:2184-2188.
- Donald, P.F. 2004. Biodiversity impacts of some agricultural commodity production systems. *Conservation Biology* 18:17-37
- Jepson, P., J. K. Jarvie, K. MacKinnon, and K. A. Monk. 2001. The end of Indonesia's lowland forests? *Science* 292:859-861.
- Mitra, S. S. and F. H. Sheldon. 1993. Use of an exotic tree plantation by Bornean lowland forest birds. *The Auk* 110:529-540.
- Van Nieuwstadt, M. G. L., D. Sheil, K. Kartawinata. 2001. The ecological consequences of logging in the burned forests of East Kalimantan, Indonesia.
- Styring, A. R. and M. Zakaria. 2004. Effects of logging on woodpeckers in a tropical rainforest: the relationship between resource availability and woodpecker abundance. *Journal of Tropical Ecology* 20:495-504.

Lecture: Forestry in southeast Asia (Alison)

Candidacy paper checkpoint: submit partial annotated bibliography

Week 4

Tuesday, January 29

Lecture: The Evergreen campus sustainability project (Karen Gaul, Evergreen faculty in Sustainability)

Workshop: Making a case

SPSS Homework due – see homework instructions for details

Thursday, January 31

Readings: Articles on resilience, biodiversity and ecosystem function (with seminar)

- Kennedy, T. A., S. Naeem, K. M. Howe, J. M. H. Knops, D. Tilman, and P. Reich. 2002. Biodiversity as a barrier to ecological invasion. *Nature* 417:636-638.
- Naeem, S. 1998. Species redundancy and ecosystem reliability. *Conservation Biology* 12: 39-45 AND linked citations (for your reading pleasure).
- Reich, P., S. E. Hobbie, T. Lee, D. S. Ellsworth, J. B. West, D. Tilman, J. M. H. Knops, S. Naeem, and J. Trost. 2006. Nitrogen limitation constrains sustainability of ecosystem response to CO₂. *Nature* 440:922-925.
- Tilman, D., P. Reich, and J. M. H. Knops. 2006. Biodiversity and ecosystem stability in a decade-long grassland experiment. *Nature* 441:629-632.

Lecture: Ecological sustainability (Alison)

Week 5

Tuesday, February 5

Reading: "The Economy in the Environment – A Conceptual Framework" from *Ecological Economics: An Introduction*, Common and Stagl (Cambridge University Press, 2005)

Lecture: Economic models of sustainability (Peter)

Data lab in the CAL: Discounting and intergenerational equity

Candidacy paper checkpoint: submit first draft

Thursday, February 7

Readings: To be announced (seminar)

Lecture: Indigenous Sciences and Sustainability (Linda)

Week 6

Tuesday, February 12

Reading: *Global Warming: The Complete Briefing*, part I

Lecture: Biogeochemical cycling (Alison)

Panel: Can forests offset carbon emissions? (guests: Dylan Fischer)

Candidacy paper checkpoint: submit peer reviews of first draft

IPAT – SPSS assignment due

Thursday, February 14

Readings:

- Noss, R. F. 2001. Beyond Kyoto: forest management in a time of rapid climate change. *Conservation Biology* 15:578-590
- Araújo, M. B. and C. Rahbek. 2006. How does climate change affect biodiversity. *Science* 313:1396-1397.

Lecture: Extinction, biodiversity and climate change (Alison)

Candidacy paper checkpoint: submit second (polished) draft

Week 7

Tuesday, February 19

Reading: *Global Warming: The Complete Briefing*, part II (seminar)

Lectures: Understanding climate models (Linda); Risk and uncertainty in climate models (Peter)

Thursday, February 21

Readings: The Stern Review on the Economics of Climate Change, critiques by William Nordhaus and Martin Weitzman (seminar)

Lecture: The economics of climate change (Peter)

Week 8

Tuesday, February 26

Reading: The Citizen's Guide to Carbon Capping, Barnes

Lecture: The economics of minimizing climate change (Peter)

Lab in the CAL: Carbon emission control and global economic development

Thursday, February 28

Readings: Articles on native communities and climate change

Lecture: Native communities and climate change (Linda)

Workshop: Presentation skills

Week 9

Tuesday, March 4

Student presentations

Candidacy paper checkpoint: submit third (final) draft

Thursday, March 6

Student presentations

Week 10

Tuesday, March 11

Student presentations

Thursday, March 13

Student presentations

Evaluation Week March 17-21