

## MES: Population, Energy and Resources Winter 2006

In Population, Energy and Resources (PER) we will look at the interaction between biology, human activities and the natural world on local and global scales. Emphasis will be on how population and resource demands affect the environment and on the concept of environmental sustainability. You will continue to read technical material from several different fields with the goal of becoming more comfortable with both terminology and concepts. In seminar we will discuss contemporary trends in energy use, sustainability, population and natural resource use and the impacts of these trends on both humans and the environment. Workshops will provide hands-on experience in skills like writing and developing PowerPoint presentations, and in applied applications of the knowledge you will gain in the class.

### 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 execute such a project as part of the course work. The written research paper must be analytical (not simply descriptive), well organized, present a thesis and supporting evidence, and demonstrate appropriate use of bibliographic resources. 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.

### Books

This Fine Piece of Water: An Environmental History of Long Island Sound by Tom Andersen

The Estuary's Gift: An Atlantic Coast Cultural Biography by David Griffith

A Concise History of World Population: An Introduction to Population Processes by Massimo Livi-Bacci (2001 edition)

Energies: An Illustrated Guide to the Biosphere and Civilization by Vaclav Smil (2000 edition)

Ocean's End: Travels Through Endangered Seas by Colin Woodard

## Schedule

### Week 1

Tuesday, 1/10

Lecture: Explanation of candidacy paper

Seminar: Candidacy papers and paraphrasing workshop

Thursday, 1/12

Lecture (HH): Threats to terrestrial ecosystems (1 of 2)

Seminar: Global change and tropical forests - Lewis et al, 2004

Candidacy checkpoint: Students turn in candidacy proposal

### Week 2

Tuesday, 1/17

Lecture (HH): Threats to terrestrial ecosystems (2 of 2)

Workshop: Introduced species & repopulating with native species

Background reading: Duncan et al, 2003; and Donlan papers

Thursday, 1/19

Lecture (HH): Viral evolution and emerging diseases

Seminar and/or workshop: Eaton et al 2002; and Khasnis and Nettleman, 2005

### Week 3

Tuesday, 1/24

Lecture (PD): Energy Part 1 of 2

Seminar: Energies by Vaclav Smil

Thursday, 1/26

Lecture (PD): Energy Part 2 of 2

Seminar: Hubbert's Peak workshop

Candidacy checkpoint: Students turn in Annotated bibliography

### Week 4

Tuesday, 1/31

Lecture (PD): Sustainable development: footprints and limits

Seminar (PD): Greening the North (1<sup>st</sup> 80 pages)

Thursday, 2/2

Lecture (PD): The sustainability concept

Workshop: Data workshop on global resource consumption

**Take-home Mid-term Exam Due**

### Week 5

Tuesday, 2/7

Lecture (HH): Global amphibian declines (1 of 2)  
Background reading: Morrison and Hero, 2003; and Adams 2000  
Workshop: Preparing PowerPoint presentations.  
Candidacy checkpoint: Students turn in first draft of candidacy paper

Thursday, 2/9

Lecture (HH): Global amphibian declines (2 of 2)  
Workshop: Causes of and cures for global amphibian declines  
Background reading: Young et al, 2001; and Collins and Storfer, 2003  
Candidacy checkpoint: Peer review of first draft, written comments turned in to faculty

### Week 6

Tuesday, 2/14

Lecture (PD): Population and demography  
Seminar: A Concise History of World Population by Bacci  
Candidacy checkpoint: Students submit list of journal articles to be referenced in paper

Thursday, 2/16

Lecture (AC): Biogeochemical cycles  
Workshop: Local biogeochemical cycles and their governmental regulation

### Week 7

Tuesday, 2/21

Lecture (AC): Ocean ecosystems and humans at the edge of the sea  
Background reading: Colin chapters 1, 2, and 5  
Seminar: Estuaries Gift by David Griffith and **Pretty, 2003**  
Candidacy checkpoint: Students submit polished draft

Thursday, 2/23

Lecture (AC): Pollution and ocean dumping  
Background reading: Colin chapters 4, 6, and 7  
Seminar: This Fine Piece of Water by Tom Anderson and **Stoms et.al., 2005**

### Week 8

Tuesday, 2/28

Lecture (AC): Ocean fisheries  
Background reading: Colin chapter 3  
Workshop: Mixed stock exercise and fishery regulation workshop.  
Background reading: fisheries reading packet

Thursday, 3/2

Lecture (PD): Economics of fisheries  
Seminar:  
**Take-home Final Exam Due**

### Week 9

Tuesday, 3/7

Student presentations  
Candidacy checkpoint: students submit final draft  
Thursday, 3/9  
Student presentations

Week 10

Tuesday, 3/14  
Student presentations  
Thursday, 3/16  
Student presentations