Syllabus: MAE 124/ESYS 103
The Human Earth

Instructor: Dr. Stephen Taylor
Lectures (4): Monday/Wednesday 2:00-2:50, Warren Lecture Hall 2111
    Friday 12:00-12:50, Warren Lecture Hall 2205
    Friday 2:00-2:50, York 2622 (unless otherwise specified)

Office hours: Available in the classroom after class, or e-mail for an appointment.
E-mail: sttaylor@ucsd.edu

TA: Ben Maurer   *e-mail:* bmaurer@ucsd.edu
No scheduled office hours at present. Contact for an appointment.

Course website: http://www-pord.ucsd.edu/∼sgille/mae124

Objectives: This is a course in environmental sustainability and sustainable development. We will examine environmental challenges including pollution, water resources, energy, global warming, population and land degradation. Then we will focus on strategies for addressing these challenges, through government intervention, industrial activity, design, and planning. The course aims to show that it is essential to understand, quantify and embed the environmental dimension (in its broadest sense) at every stage of consideration of industrial and economic activity. We focus on fundamental issues rather than detailed technical and scientific analysis. Lectures, in-class discussion, term papers and exams will ask you to think and synthesize material.
    Specifically, by the end of the course, you should understand, and be able to discuss:

- the major environmental problems that need to be addressed to ensure sustainable development;

- the central roles played by market forces, technological innovation and governmental intervention;

- engineering and design approaches to take into account, and minimize the environmental impacts of industrial activity;

- environmental aspects of specific industrial sectors, such as energy, transport, land and water use, and the built environment.

Academic Integrity: This course will adhere to the standard UCSD policy on academic integrity: "Students are expected to do their own work, as outlined in the UCSD Polcity on Integrity of Scholarship. Cheating will not be tolerated, and any student who engages in forbidden conduct will be subjected to the disciplinary process. Cheaters will receive a failing grade on the assignment or the exam and/or in the entire course. They may also be suspended from UCSD." See http://www-senate.ucsd.edu/manual/Appendices/app2.htm for details.

Reading:

- Brown, Lester R. *Plan B 3.0: Mobilizing to Save Civilization.* (2008) Norton
- Additional reading will be made available in electronic form. (This may include articles from books or print media.)

Grading:

- 20% paper 1. (5 pages, due April 29)
- 30% paper 2. (10 pages, due June 5)
- 10% participation/quizzes.
- 15% midterm (Friday May 2, in class)
- 25% final exam (Thursday June 12, 11:30am-2:30pm)
- Late assignments will not be accepted.

Schedule
Part I: Challenges for the Human Earth

- **Week 1:** Introduction (Tragedy of the Commons, Air Pollution).

  — Friday, April 4: (2 pm) *Guest lecture:* Paul Dayton on "Fisheries and the Tragedy of the Commons"

- **Week 2:** Water resources.

  — Friday, April 11: (2 pm) *Guest lecture:* Dan Cayan, "Water in California"

- **Week 3:** Energy.

  — Friday, April 18: (2 pm) *Guest lecture:* Richard Somerville, "Climate Change"

- **Week 4:** Global Warming and Climate Change.

  — Friday, April 25: (2 pm) *Guest lecture:* Ralph Keeling, "Carbon Cycle"

- **Week 5:** Population, Agriculture, Land Degradation.

  — Friday, May 2: (2 pm) MIDTERM exam

Part II: Sustainability

- **Week 6:** Strategies for Sustainability.

  — Friday, May 9: (2 pm) *Guest lecture:* Paul Linden, " Green Buildings".

- **Week 7:** Land Use and Urban Planning.

  — Friday, May 16: "Field Trip" Birch Aquarium at Scripps

- **Week 8:** Energy and Climate Change.

— Friday, May 23: (2 pm) *Guest lecture:* Kristin Blacker and Kim McIntyre, "Sustainability at UCSD".

- **Week 9:** Transportation.

    — Monday, May 26: NO CLASS. MEMORIAL DAY.
    — Friday, May 30: (2 pm) *Guest lecture:* Brian d'Autremont, "Parking and Public Transportation at UCSD"

- **Week 10:** Balancing Population with Food and Water Resources.

    — Friday, June 7: (2 pm) Final Exam Review Session