

Chemical and Biological Engineering

Course: ChE 365, Sustainability, Technology, and Society

Syllabus (Spring 2009):

Topics:

1. Concepts of sustainability and sustainable development, sustainability metrics and eco-efficiency. Global energy sources and consumption.
2. Global warming, discussion of global climate models, models to estimate greenhouse gas concentrations.
3. Bioethanol, life cycle assessment and unintended consequences.
4. Life cycle cost analysis; concept of industrial ecology.
5. Green processing, green product design and engineering, mitigation technology (e.g carbon sequestration, water purification, transportation).
6. Carbon cap and trade, risk analysis and decision making, public opinion
7. Business strategy for sustainability.

Methodology:

1. Instructional material will be based on literature information from journals, science magazines, and websites.
2. Instructional method includes class lectures, student short project presentations, case study discussion, and final project presentation. Class participation is strongly encouraged and graded.

Grading and Schedule:

Class participation: 15%

Current event presentation: 15%

2 Short project reports with one presentation (40%):

Final project report and presentation: 30% (Presentation on Saturday, June 6 in Tech E133)

Special dates:

May 4, Monday, guest lecture by Dr. Mark Mills.

June 6, Final project presentation.

Class will NOT meet on:

April 27-29, Monday-Wednesday

May 18, Monday

May 25, Monday (Memorial Day)

May 29, Friday

No class during reading week (June 1 to June 5)