

CE 492/598 and CHNE 499/515

Sustainable Engineering

Fall, 2011

MWF 11:00 – 11:50 AM

UNM Centennial Engineering Center, Room 1028

Instructor: Kerry J. Howe

Nearly all of the technological wonders of our modern society are made in industrial production plants. Industrial plants are also major sources of pollution. When designing industrial processes and plants, engineers have tremendous control over how much pollution is produced. Sustainability is more than a “buzzword” – many companies are making serious efforts to reduce the environmental impacts of their products and expect their engineers (of all disciplines!) to be able to address environmental issues. This is not about waste treatment... the goal of sustainable engineering is to eliminate the need for waste treatment by preventing the generation of waste in the first place. This course will introduce the major methods and tools used in pollution prevention and present engineering strategies for minimizing the environmental impact of any product or process. We will take a field trip to a local industry for the purpose of identifying pollution prevention strategies. Students will prepare a semester project that will apply the principles of pollution prevention, life cycle assessment, or industrial ecology to a product or industry of interest. This course is suitable for grad or undergrad students in all engineering disciplines, as well as non-engineering graduate students with a technical background.

Topics include:

- What is sustainable engineering and pollution prevention?
- Industrial activity, resource availability, and environment impacts
- Properties and fate of environmental contaminants
- Environmental regulations
- System tools for pollution prevention
- Environmental life cycle assessment
- Material and energy balances
- ISO 14000 / Environmental Management Systems
- Water and energy conservation
- Design for environment / green chemistry / green engineering



For more information, contact Dr. Kerry J. Howe, CEC Room 3050, phone: 277-2702, email: howe@unm.edu