

# CENG 340 –Introduction to Environmental Engineering

Fall 2013

**Instructor:** Deborah Sills

**Prerequisites:**

**Office Hours:**

**Text Book**

## Course Goals

1. Integrate and apply relevant content from previous courses—chemistry, fluid mechanics, calculus, and statistics—to formulate and solve environmental engineering problems.
2. Identify, formulate, and solve engineering problems.
3. Apply the principles of material and energy balances to analyze environmental problems.
4. Understand the fundamental factors that affect the selection, design, and operation of pollution treatment technologies.
5. Identify appropriate technologies for treatment of specific pollutants present in water, soil, and air.
6. Design basic components of water and wastewater treatment reactors.
7. Analyze engineering designs through the principles of Green Engineering.
8. Develop an appreciation of the impact of civil & environmental engineering on society and the environment.
9. Improve your ability to present and analyze experimental data.
10. Improve your ability to communicate technical information in both written and oral form.
11. Develop an appreciation of the value of independent learning.

# Course Materials

## From the Catalog

An introduction to the fundamentals of environmental engineering and science such as chemistry, microbiology, mass balance, and reactor theory. Application of fundamental concepts to environmental engineering includes water quality, water and wastewater treatment, solid and hazardous waste, air pollution, greenhouse gases and climate change. This course includes hands-on laboratory component with a focus on experiential learning. Prerequisite: ENGR 222 or permission of the instructor.

## Course Overview

In addition to covering basic fundamental principles that govern environmental engineering, this course is also an opportunity for you to look critically at some of humanity's big problems. For example, here in the U.S., we face challenges associated with crumbling, out-of-date civil and environmental engineering infrastructure, and, in certain regions, looming problems of water scarcity. Around the world, 2.5 billion people lack access to basic sanitation (cite UNEP) and, according to WHO, 900 million people lack access to safe drinking water. And to make things even more interesting, climate change is expected to exacerbate many of these problems. Over the semester we will look critically at the current design of water and wastewater treatment systems, analyze these designs using the principles of Green Engineering, and consider innovations for future designs that will provide solutions for regions without existing infrastructure.

## Grades