

ChE 4163 Environmental Engineering
Option for Required Elective for ChE program

Current Catalog Description: Pollution control and waste management. Municipal and industrial water and waste water treatment. Ground water protection and remediation. Air pollution sources and remediation. Solid waste management. Hazardous waste management and treatment. Environmental law and regulations.

Prerequisite: Senior standing, or permission of instructor.

Prerequisites by Topic: General and organic chemistry; solid-liquid-vapor equilibria

Recent Textbook: Class notes and handouts from instructor and current literature

Other Required Materials: None

Course Objectives: Develop an understanding of basic principles of environmental science and engineering as applied to the remediation of contaminated soil and groundwater, industrial waste water treatment, mitigation of air pollution, and hazardous waste management and treatment.

Major Topics Covered in the Course: Basic biochemistry and microbiology; aerobic and anaerobic degradation of hydrocarbons; forensic geochemistry; ex-situ treatment of contaminated soils; in-situ treatment of unsaturated soils; treatment of contaminated groundwater and saturated soils; phytoremediation; intrinsic bioremediation and risk-based corrective action (RBCA); industrial waste water treatment; remediation of brine-impacted soils; sources of air pollution and treatment of stack gases; air pollution dispersion models.

Class/Laboratory Schedule: Lecture meets for two 75-minute sessions each week for 14 weeks.

Professional Component Contribution: Three hours of Engineering Science and Design