

University of Notre Dame
CE 369, 3 Semester Hours
Fall 2004

Department of Civil & Geological Sciences
Instructor: Dr. Jeffrey W. Talley, P.E.

Introduction to Environmental Engineering and Science

Course Objectives:

Introduce students to current environmental issues, to analyzing environmental data, and to approaches in solving environmental problems. This course will examine mass and energy transfer, environmental chemistry, mathematics and modeling for environmental application, statistical analysis of environmental data, risk assessment, environmental laws and regulations, water pollution, soil pollution, and air pollution. Includes field project on St. Mary's and St. Joseph's Lakes (on the Notre Dame campus) that examines the environmental challenges and remedies for shallow-lake system.

Primary Texts:

Introduction to Environmental Engineering and Science, 2nd Edition, G.M. Masters, Prentice Hall, Inc., New Jersey, 1998.

Chemistry for Environmental Engineers, 5th Edition, C.N. Sawyer, P.L. McCarty and G.F. Parkin, McGraw-Hill, 2003.

Administrative: *Grading will be based on midterm exam (25%), a final exam (25%), homework (25%), and laboratory assignments/projects (25%). Auditors must do all homework.*

Office hours:

Dr. Jeffrey W. Talley, Assistant Professor, Department of Civil Engineering & Geological Sciences.
Tuesday and Thursday, 11:00-12:00 PM, 106C Cushing Hall or by appointment. Office: 631-5164;
Email: jtalley1@nd.edu

Class Schedule: Tuesday and Thursday, 9:30-10:45 AM, Malloy Hall, Room 220.

Structure: Lecture - 2 hours 30 minutes per week, unless field project is scheduled. Homework - usually one assignment per week, typically assigned on Thursday and due one week later. There will also be periodic written critiques of papers from environmental literature. Midterm is scheduled for October 14. Final Exam is scheduled for the week of December 12th.

Teaching Assistant (TA): TBD

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Fall 2003 Course Outline

<u><i>Week</i></u>	<u><i>Topics</i></u>
1. Aug. 26	Introduction
2. Aug. 28, Sep. 2	Mass and Energy Transfer
3. Sep. 4, 9	Environmental Chemistry
4. Sep. 11, 16	Laboratory 1: Study of Completely Mixed Flow Reactor
5. Sep. 18, 23	Mathematics and Modeling for Environmental Application
6. Sep 25	Statistical Analyses of Environmental Data
7. Sep. 30, Oct. 2	Laboratory 2: Measurement of Henry's Law Constant for Volatile Organics
8. Oct 7	Risk Assessment
9. Oct. 9	Environmental Laws and Regulations
10. Oct 14, 16	Review, Midterm Exam
<i>Oct. 20-24</i>	<i>Mid-semester Break</i>
11. Oct. 28, 30, Nov 4	Water Pollution
12. Nov. 6, 11	Laboratory 3: Darcy's Law and Hydraulic Conductivity
13. Nov. 13, 18	Soil Pollution
14. Nov. 20, 25	Laboratory 4: Phase Partitioning and Environmental Transport
<i>Nov. 27-Nov 30</i>	<i>Thanksgiving Holiday</i>
15. Dec. 2, 4, 9	Air Pollution
16. Dec. 11-14	Study Days (Review)
17. Dec. 15	Final Examination (10:30 a.m. – 12:30 p.m.)
	Final exam is comprehensive, covering the entire course