

Syllabus CEE 260-Fundamentals of Environmental Engineering, Spring 2009

Course Objectives: At the outcome of this course, students will be able to:

- Grow in appreciation of the importance and complexity of environmental engineering problems and issues
- Use and convert relevant mass and energy units
- Apply fundamental chemical principles to pollution problems
- Set up and solve steady-state and non-steady-state mass balances for conservative materials and materials undergoing first-order decay
- Summarize the impacts of major pollutants on water and air quality
- Determine if water is acceptable as a drinking source based on key microbiological and chemical parameters
- Explain water and air quality treatment systems
- Identify and discriminate the classes of solid waste and how those classes are properly managed
- Explain the method by which pollutant limits are set, and perform risk assessment calculations
- Evaluate the data supporting global climate change and ozone depletion
- Interpret environmental issues to lay people, such as friends and family
- Function effectively in multidisciplinary teams

Program Outcomes:

The CEE 260 course objectives support the following program objectives, which are evaluated for Accreditation Board for Engineering and Technology (ABET) accreditation of the departmental curriculum. (These and other objectives (including c, g, i, k) are addressed in other courses of your curriculum.)

- (a) An ability to apply knowledge of mathematics, science, and engineering
- (b) An ability to design and conduct experiments, as well as to analyze and interpret data in more than one focus area
- (d) An ability to function on multi-disciplinary teams
- (e) An ability to identify, formulate, and solve engineering problems
- (f) An understanding of professional and ethical responsibility
- (h) An ability to understand the impact of engineering solutions in a global, economic, environmental and social context.
- (j) A knowledge of contemporary issues

Course Meetings: 2:00-3:50 pm, Monday and Wednesday, Tech L221

Text: Introduction to Environmental Engineering and Science

G.M. Masters and W. P. Ela, ISBN 0131481932, 2008 3rd edition, Prentice Hall Engineering

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(will grade homework problems)

Office Hours: Monday 9:30-10:30 am and Thursday 10:30-11:30 am, or by appointment,
Tech A225

Instructional Method:

- This course is designed to keep you engaged with a wide variety of environmental engineering background material and applications through readings, interactive class periods, and a variety of graded components.
- Readings from your text will be supplemented with readings from additional sources, which will be posted on the Blackboard course page.
- Class periods will be a mix of lectures, problem-solving and discussion sessions, and quizzes.
- Quizzes and homework assignments will be due approximately weekly, and are designed to keep you engaged with the material throughout the course (not just before an exam), and to give you feedback to help you take control of your own learning of the concepts and skills.
- Two laboratory sessions will have graded reports.
- There are two exams: a midterm and a final.
- I will ask for your feedback at a few points throughout the course, so that the instruction is as beneficial for you as it can be.

Attendance:

Your attendance at each class is required, and you should ask questions if something is unclear. Please come prepared to interact with your classmates in occasional small-group problem-solving sessions. I like to maintain a mutually respectful classroom, free from distractions. Cell phones and the like must be turned off during class time.

Grading:	Homework (8)	30%
	Quizzes (6)	10%
	Midterm Exam (1)	20%
	Laboratory Reports (2)	10%
	Final Exam (1)	30%

Homework:

Homework will be due at the beginning of class on the day indicated for each assignment (also posted on blackboard). Solutions to each problem should be written neatly (or typed). Mark each new problem clearly, show each step you take in the solution to the problem, and circle your final answer where appropriate. Homework turned in late will be penalized 10% per day it is late.

Quizzes and Exams:

There will be a quiz during weeks 2, 3, 4, 7, 8, and 9 on the material covered since the last quiz. The quizzes are intended to help you to gauge your own understanding of the course materials in a timely manner. One midterm exam will help you to see what kind of problems and level I expect on an exam, and help me to measure your mastery of the foundational material. A comprehensive final exam will be held on Monday, June 8, 9:00-11:00 am. Exam questions will be similar to those worked in homework sets and in class.

Laboratory Reports:

The class will be divided into interdisciplinary groups of 4 for laboratory reports. Lab reports will consist of several parts: experimental design, description of principles, data collection and analysis, and discussion of results.

Schedule CEE 260-Fundamentals of Environmental Engineering, Spring 2009

Week 1	Mar 30, Apr 1	Issues, Units, Material and Energy	Chap 1 alt, Chap 1
Week 2*	Apr 6, 8	Environmental Chemistry	Chap 2
Week 3*	Apr 13 Apr 15	Reactors Lab session, Tech A230 and A245	Chap 5 alt
Week 4*	Apr 20, 22	Risk Assessment	Chap 4
Week 5	Apr 27 Apr 29	Mid-term Exam Water Pollution	Chap 5
Week 6	May 4 May 6	Energy, Buildings and Transportation Lab session Tech A230	Chap 5
Week 7*	May 11, 13	Water Quality Control	Chap 6
Week 8*	May 18, 20	Air Pollution	Chap 7
Week 9*	May 25 May 27	No Class-Memorial Day Engineering Ethics	Handouts
Week 10	June 1, 3	Atmospheric Change	Chap 8
Week 11	June 8, 9:00-11:00	Final Exam	

*Indicates quiz administered during that week.