

Syllabus
Introduction to Environmental Engineering, Fall 2006
CE 261

Instructor: Glenn Morrison
Office hours: Tuesday 3-5 in room 209
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Course Objectives: By the end of this course you will have a deeper understanding of the broad topics of water quality engineering, wastewater engineering, air pollution engineering, and municipal and hazardous waste management. You will learn the tools necessary to analyze the key environmental fluids (air and water) including material balances, environmental chemistry, chemical equilibrium, and the ideal gas law.

Text: *Principles of Environmental Engineering*, Davis and Masten

Supplementary material: You will be able to find this syllabus and other information on Blackboard (blackboard.umr.edu) when it is ready.

Grading: Grading is based on your demonstrated working knowledge of the material presented in class, assigned as reading, or garnered during other class activities. I will gauge your comprehension based on exams, reading quizzes, homework assignments, projects and participation in class discussions.

For those of you who like to see the breakdown as percentages:

Exams	
3 midterms	15 % each
1 final	10 %
Labs and reports	17 %
Homework	18 %
Quizzes	5 %
Participation	5 %

Homework assignments: I will assign homework once a week, with the occasional week off to celebrate a midterm exam. The homework assignment is due at the beginning of class of the due date, typically 1 week after the assignment is made. Late assignments = zero credit! Unless otherwise indicated,

-the homework should be handwritten

-restate the question in your own words, in complete sentences

-as you work through the problem, write out all steps, don't leave anything out, comment on how you are solving the problem.

-if there is a numerical answer, circle it to distinguish it from all the rest of the numbers on the page, attach the correct units, and use appropriate significant digits (environmental problems rarely require solutions with more than 2-3 significant digits!).

Lab and Tour reports: Each lab and tour (e.g. water treatment plant) will require a report due one week after completion of the lab (or tour). Turn it in at the beginning of lab class. We will discuss the lab report format during the first lab.

Student Academic Dishonesty. Academic honesty is essential for the intellectual life of the University and for your continued academic and professional development and growth. As your instructor, I have a very high standard for academic honesty in all your work for this class. You as a student in this class have an obligation to adhere to that high standard. Should a case of academic dishonesty arise during the course of the semester, I will do the following: I will assign a failing grade to the work in question. I may fail you for the course. And I will refer the incident to both the department Chair and to the Vice Provost for Undergraduate and Graduate Studies as required in Section 200.010 of the Collected Rules and Regulations of the University of Missouri.

By enrolling in this course and receiving this syllabus, whether in printed or electronic format, you are certifying knowledge of Sections 200.100 (Standard of Conduct) and 200.020 (Rules of Procedures in Student Conduct Matters) in the Collected Rules and Regulations of the University of Missouri and are pledging to abide by them. If you have not yet read these Sections, please do so. They may be found at the following URL address: <http://www.umsystem.edu/ums/departments/gc/rules/programs/200/>.

An example of academic dishonesty is as follows. You must not place in any written assignment, lab report or otherwise, material that has been lifted, scanned, or copied, even electronically, from any other document (eg other student's work, "files", etc), except for those specifically approved by the instructor.

Additional Contact Person: I will do my best to solve any problems you may have with this course; however, if there is a problem I can't resolve, you can contact Dr. Bill Schonberg (Professor and Chair of Civil Engineering Department, 573-341-4787, wschon@umr.edu) for help.

Week	Monday	Wednesday	Reading and review questions
1	8/21/05 Lecture: Introduction Homework 1 assigned Lab: Making beer: a microcosm of environmental engineering	8/23/05 Lecture: Environmental chemistry and equilibria Homework 1 due: TBA	Reading: Chap 1, Chap 2 (sec 2.1-2.2), Chap 5
2	8/28/05 Lecture: Drinking water quality (Chap 9) Lab: Quiz 1 : chemistry Toxicity presentations and video	8/30/05 Lecture: Water quality regulations and risk assessment (Chap 9, Chap 5) Homework 2 due: TBA	Reading: Chap 9
3	9/05/05 LABOR DAY HOLIDAY	9/06/05 Lecture: Water treatment plants, (Chap 9) Homework 3 due: TBA	Reading for Quiz 2: Chap 9: (sec 9.1-9.4) Chapter Review Questions: (pg. 366) 1,2,3,4, 6, 7, 8, 11
4	9/11/05 Quiz 2 Lecture: Softening process, equilibrium, precipitation (p. 43-45, Sec. 9-3) Lab: Hardness lecture, Hardness and alkalinity	9/13/05 Lecture: coagulation and flocculation (sec. 9-2) Homework 4 due: TBA	Reading for week 5: Chap 9: (sec 9-2, 9-4)
5	9/18/05 Lecture: coagulation, flocculation and sedimentation (sec. 9-2, 9-4) (Chap 8) Lab: Exam 1	9/20/05 Lecture: Rapid sand filtration (sec 9-5)	Reading for Quiz 3: Chap 9 (sec. 9.6, 8.1-8.2) Chapter review questions: (pg. 366) 19, 20 (pg. 316) 1,2
6	9/25/05 Quiz 3 Lecture: Disinfection (sec. 9-6) Lab: Simulate water treatment system/ coliform counting	9/27/05 Lecture: Surface water quality (sec. 9-5) Homework 5 due: TBA	Reading for Quiz 4: Chap 8 (sec 8.3-8.6) Chapter Review Questions: (pg 316) 3, 10,12,13
7	10/02/05 Quiz 4 Lecture: Surface water quality and BOD (Chap 8) Lab: Field trip to water treatment plant	10/04/05 Lecture: Wastewater regulations (Chap 9) Homework 6 due: TBA	Reading for Quiz 5: Chap 10 (sec 10-1 → 10-8) Chapter Review Questions: (pg 428) 1,2,3,5

8	10/09/05 Quiz 5 Lecture: Wastewater treatment (Chap 10) Lab: BOD and Suspended Solids	10/11/05 Lecture: Biological treatment (Chap 10) Homework 7 due: TBA	Reading for Quiz 6: Chap 10(sec 10-9 → 10-12) Chapter Review Questions: (pg 428) 6,14
9	10/16/05 Quiz 6 Lecture: Biological treatment (Chap 10) Lab: Wastewater examination, microscopy, Wastewater treatment presentations. Wastewater treatment plant tour	10/18/05 Lecture: Biological treatment and sedimentation Homework 8 due: WWTP Mass balance problem (to be handed out)	Reading: Chap 11 (sec. 11-1 → 11-5)
10	10/23/05 Lecture: Air pollution introduction and Clean Air Act (Chap 1 (1.7); Chap 11) Lab: Exam 2	10/25/05 Lecture: Meteorology and transport (Chap 11)	Reading for Quiz 7: Chap 11 (sec. 11-1 → 11-5, 11-10, 11-12) Chapter Review Questions: (pg 484) 1,2,3,4,7,8,9,10, 11
11	10/30/05 Quiz 7 Lecture: Urban Air pollution (Chap 11) Lab: Emission factors	11/01/05 Lecture: Air pollution control Homework 9 due: TBA	Reading: Chap 11 (sec 11-6, 11-9) Chapter Review Questions: (pg 484) 16, 17, 18
12	11/06/05 Quiz 8 Lecture: Indoor air pollution (Chap 11) Lab: Power plant tour/presentations	11/08/05 Lecture: Global Climate change/CFCs Homework 10 due: TBA	Reading for Quiz 9: (sec 12-1 → 12-5) Chapter Review Questions: (pg 519) 1,2,3,4,7
13	11/13/05 Quiz 9 Lecture: Municipal solid waste (Chap 12) Lab: Ground water velocity	11/15/05 Lecture: Hazardous waste Homework 11 due: TBA	Reading for Quiz 10: (Chap 13) Chapter Review Questions: (pg 568) 4,5,6,7
14	11/20/05 THANKSGIVING HOLIDAY	11/22/05 THANKSGIVING HOLIDAY	Reading : Chapter 13,8 (sec 13.8, 8.7)
15	11/27/05 Lecture: Groundwater transport, treatment and bioremediation Lab: Exam 3	11/29/05 Lecture: Phytoremediation	
16	12/04/05 Lecture: Emerging topics Lab: TBA	12/06/05 Lecture: TBA Homework 12 due: TBA	
17	FINAL EXAM	TBA = to be announced	