

ENVE2310 Environmental Engineering Fundamentals

Fall 2011 – Prof. MacKay

Instructor Contact Info:

Prof. Allison MacKay

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Office Hours: Wed. 3-4:30 pm

TA Contact Info:

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Office Hours: Thurs. 3-4:30 pm in CAST 202

Course Logistics:

Schedule: MWF 9 – 9:50 am CAST 212

Required text: “Environmental Engineering: Fundamentals, Sustainability, Design”, by Mihelcic and Zimmerman, Wiley, 2009/2010.

The primary source for all course information will be HuskyCT.

Course Description:

CE/ENVE 2310 is an introduction to the impacts of engineering on environmental systems. A case study approach will be used to investigate the fundamentals of water, air and soil pollution. Concepts of mass and energy balances, aqueous chemistry, biology, and physics will be applied in a quantitative manner to describe and solve environmental problems. Environmental regulation and policy, pollution prevention, risk assessment will be addressed.

Course Philosophy:

I recognize that only a subset of students in this course will practice as environmental engineers. Therefore, this course will emphasize the language of the environmental engineering discipline and the way in which environmental engineers conceptual problems. This approach is beneficial to non-specialists practicing outside of environmental engineering because they elements are the ones that will be important to your area of practice – not the intricate details of engineering design equations that support an environmental engineering solution to a particular problem. The details of environmental engineering design are available to the specialist students – environmental engineering majors and minors – in the subsequent courses in their plans of study. Consequently, a portion of this course will be devoted to definitions of terms and explanation of processes in words. We will perform quantitative calculations using mass and energy balances, the underlying frameworks used by environmental engineers to assess human impacts on the environment and appropriate technologies to mitigate those impacts.

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Course Objectives and Assessment Tools:

At the end of the semester, you will be able to:

1. Use correctly the language of environmental engineering practice
2. Conduct risk assessments to evaluate the harm posed by chemical, physical or biological constituents in an environmental setting

-Homework Problems, Exam Questions

3. Conduct mass and energy balances to:

a. Assess impact of human activities on environmental systems with applications to:

i) water quality

ii) air quality

iii) soil quality

b. Design a system, component or process to meet a desired need with applications to:

i) water treatment – drinking water, wastewater, groundwater remediation

ii) air pollution

-Homework, Exam Questions

4. Describe the factors chemical, physical and biological factors that affect ambient concentrations of contaminants in water, air and soil

-Homework Problems, Exam Questions

5. Choose appropriate technologies to minimize contaminant releases to, or to reduce ambient concentrations in, water, air and soil

-Presentation, Exam Questions

6. Evaluate the effects of engineering decisions on resource conservation

-Homework Problems, Exam Questions

7. Explain the global, environmental, economic, public policy, and societal factors that contribute to the solution of contemporary environmental problems

-Reflective Writing, Exam Questions

Assessment (100 pts):

Homework	8	Midterm Exam #1	20	Oct. 5, 2011
Case Studies	9	Midterm Exam #2	20	Nov. 9, 2011
Design Presentation	3	Final Exam	40	TBA in Exam Week

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Notes to Grading Scheme:

(1) The final exam will be comprehensive: If your percentage score on the final exam is greater than one or more of your midterm scores, your midterm scores will be replaced by your final exam score when calculating your final grade. Final exam scores can not be used to replace homework or case study assignment scores. CAUTION: Less than 15% of all students have ever replaced one, or all of the midterm grades with a higher final score.

(2) Homework problems will be posted on WEBCT each Friday and due the following Friday. Completion of these exercises will improve your mastery of course materials in preparation for class discussions. Given the number of students in the class this year, only two question will be graded per student per assignment. You will choose two (2) of several questions to submit for grading. Solutions will be posted the following week.

(3) Six Case Studies will be assigned throughout the semester. These activities will be open-ended evaluations of environmental problems and/or their solutions. All assignments will contain a writing component to improve your use of the “language” of environmental engineering. Guiding questions will be provided to allow you to prepare for discussion of the Case in class. Case Studies will be examined during the following lectures: 1.3, 4.3, 7.3, 10.3, 12.3, 14.3. Case Studies will be covered on the exams.

(4) Each student will work on a team of three to prepare and give one (1) presentation (four-minute duration) of a design technology for mitigating human exposures to hazardous materials. The presentations will be scheduled in batches of several groups throughout the semester. Design presentations will constitute a portion of the following lectures: 5.2, 5.3, 8.2, 8.3, 12.1, 12.3, 13.3, 14.1. Technology designs will be covered on the exams.

Additional details for the Case Study and Design Presentations will be posted at Husky, including the assignment itself and the rubric used for grading.

Policies:

Classroom Attendance and Participation:

Students are expected to complete reading assignments prior to the lecture to ensure active participation during lecture hours. Minute papers will be assigned occasionally for the purposes of instructor feedback.

Computer Use:

Students are increasingly integrating computers and other electronic devices into their study strategies; however, non-scholastic uses in the classroom is distracting to others. If you wish to use a computer in the classroom, please contact the Instructor to sign an appropriate use contract.

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Exams:

All exams will be based on lecture material and class assignments (homeworks, case studies, design presentations). All exams will be closed book and notes; however, information sheets will be available with the exam.

Policy for Late or Missed Assignments:

For full credit, assignments must be turned in by class time on the due date. Late assignments will be penalized 20% per class day. Assignments later than two class days will not be graded. Exceptions require doctor-validated medical excuse or at least 2-day prior notice.

One (and only one) non-medical exception will be allowed per student and requires at least two-day prior notice.

Make-up exams will not be assigned unless a request for one is approved prior to the exam or supported by a medical certificate.

Plagiarism:

It is permissible, and encouraged, to work with classmates on problem assignments. As the saying goes, “two heads are better than one”. The purpose of group collaboration is to bring together different viewpoints so a colleague may shed new light on a problem you are grappling with so you can think about it in a different way. You can then apply your altered viewpoint to solve the problem you were concerned with. The purpose of group collaboration is not to collectively put together one solution problem – that provides no benefit for the group members who must work independently to provide solutions to problems during class examinations. In fact, collective solutions violate the University of Connecticut code on plagiarism and require that actions be taken which may include dismissal from the university.

More information about plagiarism can be found at:

http://www.irc.uconn.edu/PlagiarismModule/intro_m.htm

The University of Connecticut policy on Academic Misconduct is contained within the Student Code: http://www.dosa.uconn.edu/student_code.html

Other Helpful Sources of Information

Division of Student Affairs

<http://www.studentaffairs.uconn.edu/services.html>

Counseling and Mental Health Services

234 Glenbrook Road, 860-486-4705

For immediate help, request an “on-call therapist”

http://www.cmhs.uconn.edu/immediate_help.html

“On-Call Therapist” – daytime: 860-486-4705; after hours:

www.suicideprevention.uconn.edu