

ENVE2310 Environmental Engineering Fundamentals

Fall 2018 – Prof. Astitha

Instructor Contact Info:

Prof. Marina Astitha

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(Or use HuskyCT Mail function)

Office Hours: Open door policy (CAST 311)

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Office Hours: Tues, 5 - 7 PM in CAST 123A

Course Logistics:

Schedule: MWF 9:05 – 9:55 am in UTEB 175

Required text: “Environmental Engineering: Fundamentals, Sustainability, Design, Second Edition”, by Mihelcic and Zimmerman, Wiley.

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 problem-solving and 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, and risk assessment will be addressed.

Course Philosophy:

It is recognized that only a minority 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 conceptualize problems. This approach is beneficial to non-specialists practicing outside of environmental engineering because these 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:

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

1. Use correctly the language of environmental engineering practice.
2. 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; iii) subsurface remediation
3. Conduct risk assessments to evaluate the harm posed by chemical, physical or biological constituents in an environmental setting
4. Assess the quality of a water, wastewater or groundwater based on standard chemical parameters
5. Choose appropriate technologies to minimize contaminant releases to, or to reduce ambient concentrations in, water, air and soil
6. Evaluate the effects of engineering decisions on resource conservation
7. Analyze the system-level environmental impacts or energy efficiency of a device or process
8. Explain the global, environmental, economic, public policy, and societal factors that contribute to the solution of contemporary environmental problems

b. ABET Criterion 3 Student Outcomes addressed by the course

(5) Recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts.

Students learn through various examples how engineering decisions have impacted the natural environment, which serves as a conduit for the challenge of professional and ethical responsibilities. In-class discussions and assignments entail critical evaluations of the impact of engineering on society and natural environment. Environmental engineering problems are placed in a societal and economic context (topics of acceptable cancer risk, tradeoffs in alternative energy sources, and analysis of environmental impacts).

(6) Recognize the ongoing need to acquire new knowledge, to choose appropriate learning strategies, and to apply this knowledge.

Students examine contemporary environmental problems with their current skills in engineering and scientific principles and learn the importance of acquiring and applying new knowledge (i.e. due to technological advances, planning for the future, new discoveries in the field etc.). Student learning is assessed on why and how to acquire and apply new knowledge regarding the future of power generation, health risk assessment and climate change impacts on various environmental systems.

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c. Learning Outcomes from the e-learning module (addresses ABET criterion 5 and 6):

- Identify success factors at each life-cycle stage of the team development process that influence productivity.
- Differentiate between consensus and compromise.
- Examine individual preferences' dichotomies found in a personality comparison instrument.
- Identify factors that influence actions and decision-making.
- Recognize four different viewpoints used to reach consensus.
- Relate the importance of team and individual performance to reaching overall objectives.
- Design a performance plan.
- Identify ways to address conflicts in teams most productively.

Assessment:

Homework/project	20%
Midterm Exams	80% each
Final Exam	20%
E-learning module	+2 points

Your grade will be determined entirely by your performance by these metrics. There is no Extra Credit.

Grade conversion chart			
Excellent	A	4	91 - 100
	A-	3.7	89 - 90
Very Good	B+	3.3	87 - 88
Good	B	3	81 - 86
	B-	2.7	79 - 80
	C+	2.3	77 - 78
Average	C	2	71 - 76
Fair	C-	1.7	69 - 70
Poor	D+	1.3	67 - 68
	D	1	61 - 66
Merely Passing	D-	0.7	59 - 60
Failure	F	0	<59

Notes on Grading Scheme:

Midterm exams

Three midterm exams are distributed throughout the semester. They will be closed-book and closed-notes, but some key formulas will be given on a formula sheet. The entire 50-minute class period will be available for completion.

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

Final exam

The final exam will be comprehensive. **NOTE:** If your lowest score on a midterm exam is lower than your score in the final exam, the final exam score will replace your lowest midterm score for purposes of your final grade. The final exam score cannot replace more than one midterm score, and a midterm score cannot replace the final exam score.

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If the mean of your homework/project and midterm exam scores is 90% or higher, you are **exempt** from taking the final exam. In that case, your exam mean will count as 80% of your final grade and your homework/project average the remaining 20%. Or, you may choose to take the final exam anyway.

Homework

Homework problems will be posted on HuskyCT each Wednesday and due the following Wednesday. Completion of these exercises will improve your mastery of course materials in preparation for class discussions and exams. Given the number of students in the class, only two questions will be graded per student per assignment. These questions will be chosen by the instructor, and will be the same for all students, and will not be told to the students in advance. Students are expected to solve all homework problems.

Homework must be turned in **at the beginning of the class** period when they are due to receive full credit, with a 5-minute grace period allowed for late arrivals. Homework submitted after the beginning of class will be considered late. All homework will be submitted in HuskyCT.

Homework solutions will be posted on Friday after the homework was due, unless an exam falls on that Friday, in which case the solution will be posted on the due date. Note that for a homework due two days before an exam, you will not have your graded homework back before the exam, so you may wish to scan or take a picture of your homework to check it yourself against the posted solution as you prepare for the exam.

Homework will not be accepted after the solution has been posted. This means a hard deadline of Friday on most weeks, or Wednesday on exam weeks.

Team assignment: There will be one team assignment during the course of the project. The assignment will be graded with the homework and the participation in the e-learning module will be graded separately (+1 credit points). The module will be associated with the experience of working with a team. More details will be discussed in class.

Policies

Classroom Attendance and Participation:

Students should complete reading assignments prior to the lecture to ensure active participation during lecture hours.

Electronic Devices:

Please do not use electronic devices during class. The exception is that laptops can be used for taking notes, but other uses are distracting to others and are not allowed.

Plagiarism:

It is permissible, and encouraged, to work with classmates on problem assignments. 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. It is *NOT* permissible to copy complete answers from classmates, or to divide up a homework assignment of a group, with each group member submitting identical solutions. In such a case,

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if N students submit identical solutions, each will receive the number of points the solution deserves divided by N . Remember that homework assignments are your primary practice for the exams, and copying homework answers will not be helpful to you in the long term.

Code of conduct:

All students that participate in the class are expected to be respectful towards others and their views. Distracting behavior will not be tolerated and will lead to a deduction of up to 20 points from the final grade. This course requires your active involvement. If you want to learn as much as possible, you are invited to come to class ready to initiate ideas and participate in vivid discussions on the course material. There are no “right” or “wrong” questions and all will be treated with equal respect. Students are expected to conduct themselves in accordance with UConn’s Student Conduct Code (<http://community.uconn.edu/the-student-code/>).

Academic Integrity Statement

This course expects all students to act in accordance with the Guidelines for Academic Integrity at the University of Connecticut. Because questions of intellectual property are important to the field of this course, we will discuss academic honesty as a topic and not just a policy. If you have questions about academic integrity or intellectual property, you should consult with your instructor. Additionally, consult UConn’s guidelines for academic integrity.

In general, issues of academic integrity will be dealt with as prescribed in the Student Code:

<http://community.uconn.edu/the-student-code/>

Final Exam Policy

In accordance with UConn policy, students are required to be available for their final exam and/or complete any assessment during the time stated. If you have a conflict with this time you must obtain official permission to schedule a make-up exam with the Office of Student Support and Advocacy (OSSA). If permission is granted, OSSA will notify the instructor. Please note that vacations, previously purchased tickets or reservations, graduations, social events, misreading the assessment schedule, and oversleeping are not viable reasons for rescheduling a final.

Policy Against Discrimination, Harassment and Inappropriate Romantic Relationships

The University is committed to maintaining an environment free of discrimination or discriminatory harassment directed toward any person or group within its community – students, employees, or visitors. Academic and professional excellence can flourish only when each member of our community is assured an atmosphere of mutual respect. All members of the University community are responsible for the maintenance of an academic and work environment in which people are free to learn and work without fear of discrimination or discriminatory harassment. In addition, inappropriate Romantic relationships can undermine the University’s mission when those in positions of authority abuse or appear to abuse their authority. To that end, and in accordance with federal and state law, the University prohibits discrimination and discriminatory harassment, as well as inappropriate Romantic relationships, and such behavior will be met with appropriate disciplinary action, up to and including dismissal from the University. More information is available at <http://policy.uconn.edu/?p=2884>.

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Sexual Assault Reporting Policy

To protect the campus community, all non-confidential University employees (including faculty) are required to report assaults they witness or are told about to the Office of Diversity & Equity under the Sexual Assault Response Policy. The University takes all reports with the utmost seriousness. Please be aware that while the information you provide will remain private, it will not be confidential and will be shared with University officials who can help. More information is available at <http://sexualviolence.uconn.edu/>.

Other Helpful Sources of Information

Division of Student Affairs

<http://studentaffairs.uconn.edu/>

Counseling and Mental Health Services, 234 Glenbrook Road, 860-486-4705

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

<http://counseling.uconn.edu/immediate-help/>

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

www.suicideprevention.uconn.edu