



Syllabus for ENVE020-01: Intro to Environ Sci and Tech

Fall 2021

Instructor: Wolfgang Rogge

Designation:	EnvE 20 Introduction to Environmental Science & Technology
Catalog Description:	Introduction to historical and current issues in the diverse field of environmental engineering. Principles of mass and energy balance. In-depth analysis of several key innovations from the field that have been instrumental in advancing the field. Design project.
Text Books and Other Required Materials:	1) Introduction to Environmental Engineering and Science by G.M. Masters 2) Class notes, handouts, and library references.
Course Objectives/ Student Learning Outcomes:	1) to introduce students to local and global environmental problems and their impact on human health, welfare, natural systems, and natural resources and the needs of society; 2) to develop a basic understanding of major portions of environmental regulations; 3) to teach the fundamental concepts of mass and energy balance applied to man-made and natural environmental systems; 4) to instill a basic understanding of risk and risk assessment and how it applies to the assessment of environmental problems; 5) to relate theory to real environmental problems and develop problem-solving, design, and engineering decision-making skills necessary to improve environmental systems.
Program Learning Outcomes:	Assessment of learning outcomes is here in terms of students developing skills to (1) apply knowledge of mathematics, science, and environmental engineering, (2) design a system, component, or process to meet desired needs, (3) describe and explain major state and federal environmental rules and laws, as well as international treaties, and given violations of the aforementioned decide on the best course of action and justify the decision, (4) be able to write effective short communications and environmental problem discussions addressed to engineering peers, and (5) achieve understanding of the complexity of environmental issues and identify possible negative local, global and/or societal consequences and be able to recommend solutions to minimize or avoid those. The learning outcomes will be evaluated through course-embedded assessments on homework, tests, exams, writing, and presentations using a rubric (set of scoring criteria developed for ABET).
Prerequisites by Topic:	CHEM 010 MATH 021
Course Policies:	a) Attendance and Participation: It is imperative that you avoid missing classes, be on time and stay the entire lecture period. b) Readings: Our textbook is mostly excellent. For the success of interactive learning and problem solving, it is paramount that you come to class prepared and ready to ask questions on whatever you might not have understood in the book chapter. Even if not explicitly advised, you are responsible to read ahead so that you are prepared for the next class meeting.

c) In-class student problem solving: In order to facilitate learning, supervised independent learning and in-class exposure to problem solving are very helpful. Consequently, I will demonstrate example problems together with you in class. Similarly, if time allows, you will be giving a problem to be solved in-class by either all students individually or in groups. During in-class problem solving, you will have the opportunity to ask questions and request my assistance. For longer problems, you will be asked to finish a given problem at home and bring the solution to class next time for discussion.

d) Assignments: Homework assignments will consist of 6 to 12 problems each and are due on set day at the very beginning of the class. Your homework must be an individual effort, unless otherwise indicated. Begin your homework as soon as it is assigned.

Each problem in your homework should be exactly labeled with the problem number used in the book, problem stated, approach to solve problem shortly summarized, and all partial and/or final results clearly labeled. Each problem has to briefly summarize the problem in "Problem Statement", and what is to be found in "Find". Next, briefly summarize your assumptions and approach in "Assumptions and Approach" and present your solution under the heading "Solution". If the result obtained needs discussion, then provide this under the heading "Discussion". For each step in the solution, equations used need to be shown in it's parametric form, followed by numbers with units replacing the variables and parameters. Most important, your solution has to show the flow of your thought process in solving the problem. An example homework layout will be shown during the first class and posted on UC CatCourses.

e) We will have one project in this class that cover contemporary environmental issues in society and most likely relate to sustainability by proposing change to wasteful habits and novel engineering solutions. The project team should consist of 2-3 students. More infos will be provided.

f) Web Site: Homework assignments as well as important announcements (deadline changes, exam dates, etc.) will be posted on the course web site: <https://catcourses.ucmerced.edu>. It is important that you get comfortable with using this system early in the semester.

g) Cell phones and computers: Please turn off cell phones and pagers before entering the classroom. Cell phone usage during exams and tests automatically invalidates the test or exam, receiving zero points. No texting or emailing during class! During in-class exams, you cannot use laptop computers, iPads, or any other computer type system. You are not allowed to go online during an exam!

h) All exams are open books and closed notes.

There will be a midterm and a final exam.

Also, whenever we finish a chapter in the book, there will be an online multiple choice test. The questions ask may also include material presented in class and as well new material to be found by the students themselves. So, questions may somewhat go beyond class material. The online test will not be timed, but with a date and time deadline.

Academic Dishonesty Statement:

a. Each student in this course is expected to abide by the University of California, Merced's Academic Honesty Policy. Any work submitted by a student in this

course for academic credit will be the student's own work.

b. You are encouraged to study together and to discuss information and concepts covered in lecture and the sections with other students. You can give "consulting" help to or receive "consulting" help from such students. However, this permissible cooperation should never involve one student having possession of a copy of all or part of work done by someone else, in the form of an e mail, an e mail attachment file, a diskette, or a hard copy. Should copying occur, both the student who copied work from another student and the student who gave material to be copied will both automatically receive a zero for the assignment. Penalty for violation of this Policy can also be extended to include failure of the course and University disciplinary action.

c. During examinations, you must do your own work. Talking or discussion is not permitted during the examinations, nor may you compare papers, copy from others, or collaborate in any way. Any collaborative behavior during the examinations will result in failure of the exam, and may lead to failure of the course and University disciplinary action.

Disability Statement:

Accommodations for Students with Disabilities: The University of California Merced is committed to ensuring equal academic opportunities and inclusion for students with disabilities based on the principles of independent living, accessible universal design and diversity. I am available to discuss appropriate academic accommodations that may be required for student with disabilities. Requests for academic accommodations are to be made during the first three weeks of the semester, except for unusual circumstances. Students are encouraged to register with Disability Services Center to verify their eligibility for appropriate accommodations.

Topics:

Mass and Energy Balance
Environmental Chemistry
Mathematics of Growth
Risk Assessment
Water Pollution
Water Quality Control
Air Pollution
Global Warming
Municipal Waste and Landfill Design

Class/laboratory

Schedule:

Midterm/Final Exam

Schedule:

Sustainability

Tues. & Thurs.: 13:30 - 15:20; CLSSRM 262

Midterm Exam: Tues., Oct. 12th, during class

Final Exam: Fri, Dec. 17th from 11:30-14:30, (180 min.).

**Professional
Component:**

Engineering Science - 60%
Engineering Problem Solving and Design - 40%

**Assessment/Grading
Policy:**

HW - 10%

Project - 20%

Midterm - 25%

Final Exam - 30%

Coordinator:

Online Multiple Choice Tests - 15%

Contact Information:

Office: SE2-380

wrogge@ucmerced.edu

Office Hours:

MW 13:30 - 15:00 or by appointment