

CHEE 370R—Introduction to Environmental Engineering

Spring 2016

Instructors (3):

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- Vasiliki Karanikola; Room 306E, Civil Engineering Building (#72), 626-9323, vkaranik@email.arizona.edu
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Teaching assistant: Ms. Yingying Chen, a graduate student in environmental engineering; yingyingchen@email.arizona.edu

Office hours: All instructors will have office hours. We can select these hours to satisfy the needs of the class and faculty—that is, they will be held when the faculty and most of you can make them, at times selected strategically relative to homework assignment dates. We can try to work this out at our initial classroom meeting. We can also schedule review sessions for the weekends preceding exams or as required.

Textbook: *Introduction to Environmental Engineering Science*, 3rd Edition, by Masters and Ela. If for some reason you use an earlier edition of Masters and Ela, be certain to get the assigned problems from the third edition since the problem numbers have changed over the years.

Homework: You can count on an assignment during most weeks that we don't have an exam. This is to keep Yingying busy. Assignments will be due at the start of Monday classes. Homeworks can be done in groups of 2-3—one paper per group. This will give you practice in engineering teamwork. Your cumulative homework grade will contribute 10% to your overall grade. Please establish your group as soon as possible.

Examinations: There will be three in-class examinations and a final exam. These will be closed-book exercises, but you may bring a crib sheet of limited size. Size limitations will increase with each successive exam, as follows:

- ❖ Exam 1—1 page, one side only.
- ❖ Exam 2—1 page, both sides.
- ❖ Exam 3—2 pages, both sides.
- ❖ Final Exam—open book + 2 pages, both sides.

The exams will be worth 90% of your grade, distributed as follows:

- ❖ In-class exams (3) 0.60

❖ Final exam	0.30
❖ Homework	0.10

It is unlikely that grades will be curved, so study hard and don't count on a break from your mean instructors. Final hint: Don't miss classes or exams. Sleep at home. You and/or your parents are paying for this experience, and instructors typically hate it when you ignore their instruction. Roll will be taken on the days in which exams are given back. If you are not present and you have not provided an email notification, a point will be subtracted from your final grade for each such absence.

That said, please try hard to enjoy this experience. The class goes much better when students participate through questions and so forth.

We will award extra credits to students who provide current news articles of environmental interest that are discussed in class. These will normally be reviewed on Wednesdays—one article per week. Each of the articles that you suggest and is presented in class will earn you one point on your final grade—no limit on the total number of such additions.

Syllabus

Topic(s)	Allotted time (approx.)	Reading assignment
Course introduction	1 lecture	
Units/properties of water	1 lecture	pp. 1-21
Reactor dynamics	1 week	pp. 1-21
Water chemistry	1 week	pp. 47-52, 57-70
Test #1		
Growth/resource demand	1 week	pp. 87-120
Risk assessment	1 week	pp. 127-34, 146-166
Water pollution; groundwater	3 weeks	pp. 173-74, 176-265
Test #2	1 class	
Water/wastewater treatment	2 weeks	281-335
Air pollution	2 weeks	367-400, 438-486
Global warming	2 weeks	501-535
Test #3	1 class	
Hazardous waste	2 weeks	333-357
Final Examination	Friday, May 6 @ 10:30 (first day of examinations)	

Notes: ChEE 370L. Material that is sometimes overlooked in civil engineering but is important to an understanding of water, wastewater and hazardous waste treatment includes familiarity with relevant units for water and air solutes, the structure and related properties of water itself, mass balances, kinetic rate laws, treatment of ideal reactor types, and elements of water chemistry (stoichiometry, equilibria, acid/base reactions, Henry's law and solubility of gases, and solubility products). These topics will be covered both here and in CHEE 370L, which is required for civil engineering undergraduates, and which meets weekly on Fridays at 12 noon. All of you are welcome to attend 370L, although only the civil engineers must take it for 1.0 credit.

Scholastic Dishonesty Policy: Integrity is expected of every student in all academic work. Scholastic dishonesty will not be tolerated. Please refer to the UA Code of Academic Integrity for information about procedures and about what constitutes scholastic dishonesty (<http://deanofstudents.arizona.edu/academicintegrity>).

Plagiarism: Although this course is not writing intensive, plagiarism is strongly discouraged. The plagiarism policies within the Student Code of Academic Integrity will be strictly followed: <http://doc.web.arizona.edu/uapolicies>.

Threatening Behavior: The general policies against threatening behavior by students will be followed: <http://policy.web.arizona.edu/~policy/threaten.shtml>

SALT Center and Disability Resource Center: Students who are able to use the services of the Strategic Alternatives Technology Center or may have other educational needs may see the professor at any time to discuss accommodations for their needs. However, this should be done at least 1 week prior to the first exam to allow for preparations that may be needed. Students who are registered with the Disability Resource Center must submit appropriate documentation to the instructor if they are requesting reasonable accommodations: <http://drc.arizona.edu/teach/syllabus-statement.html>.

Accessibility and Accommodations: It is the University's goal that learning experiences be as accessible as possible. If you anticipate or experience physical or academic barriers based on disability or pregnancy, please let me know immediately so that we can discuss options. You are also welcome to contact Disability Resources (520-621-3268) to establish reasonable accommodations. Please be aware that the accessible table and chairs in this room should remain available for students who find that standard classroom seating is not usable.

Student Success in This Course: Students who succeed in this class, i.e., those who earn grades of A or B, typically are serious students who follow the Arizona Board of Regents policy of studying three hours for every in class hour. This means that you should expect to

spend 9-10 hours of outside time on this class each week, consistently, throughout the semester. This means:

1. Students should attend class for all scheduled lecture periods and get notes from classmates when they are unable to attend.
2. Students should read the book sections that are assigned prior to attending the lecture for that material. Students will often be referred to the book information during the lecture and their success will depend upon some familiarization with the readings.
3. Students should come to class prepared to participate in active learning methods that encourage them to explore and question the material they are learning. This means that students should not expect any time during class for other activities like text messaging, telephone calls, other courses, or activities not part of the class. An active learning environment like the one used in the class maximizes exposure to problem solving techniques and mastery of the information.
4. Students should do their homework in a timely manner. Most homework assignments will be covered in class approximately five days in advance of when they are due. This leaves students ample time to reflect on the examples in class, come to office hours, and submit complete and correct homework solutions. Students should begin working on their solutions as soon as the topics are covered in the active learning lectures so they have time to reach the correct answer.

Special Materials Required for the Class: See online course content.

Changes to the Syllabus: The information contained in the course syllabus, other than the grade and absence policies may be subject to change with reasonable advanced notice as deemed appropriate by the instructor.