ENVIRONMENTAL CHEMISTRY

EOHS440 (21584) / CME411 (23669), 3 Credit

Lecture: Tuesday and Thursday 3:00 – 4:30 pm, SPHW 121

Instructor: Dr. An Li.
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Office Hours: Tuesday and Thursday 1:00 - 2:30pm, or by appointment

Objective: Students are prepared for further study in their areas and for advanced environmental chemistry courses by learning the basic chemistry concepts related to the naturally-occurring and pollution-related processes in air, water, and soil. Major organic and inorganic pollutant groups will be described. Quantitative calculations will be involved.

Through this course, students will understand, from a chemistry viewpoint, the major environmental issues the world is facing and our efforts to solve the problems. The chemistry concepts learned and/or refreshed will help in research and practice in areas such as exposure assessment, industrial hygiene, environmental engineering and management, environmental quality control, etc.

Textbook: vanLoon and Duffy. *Environmental Chemistry – A Global Perspective.* 3rd Ed. Oxford University Press. 2011. (required)

Girard. Principles of Environmental Chemistry. 2nd Ed. Jones and Bartlett Publisher, Sudbury, MA. 2010.

Manahan, *Environmental Chemistry* 8th Ed. CRC Press. 2005.

Colin Baird, *Environmental Chemistry*. 4th Ed. W.H. Freeman. 2008.

Prerequisite: General Chemistry, or consent of the instructor

Homework: A homework set will be given each Thursday. It will be due on following Thursday. Each set will count for 20 pts. Three (3) points will be deducted if handed in late. No homework will be accepted one (1) week after the due date.

Grading:

Homework:	200	(20 x 10)
Midterm Exam-1:	100	(Atmosphere)
Midterm Exam-2:	100	(Water)
Final Exam:	100	(Toxic substances)
Total:	500	

(Note: All exams are close-book, 1 ½ hour, in-class)

A: ≥90%; B: 75-89%; C: 60-74%; D: <60%. (The scales are tentative.)

Website: http://blackboard.uic.edu/

STUDENT RESPONSIBILITIES AND RESOURCES

Academic Integrity Statement

Academic dishonesty is an offense against the University and I am obligated to report any incident to the Associate Dean for Academic Affairs. Academic dishonesty includes (but is not limited to): cheating or assisting someone else in academic dishonesty, plagiarism, unauthorized possession of class materials (e.g., tests, reserve materials), and unauthorized changing of one's grade. Students are encouraged to consult their instructor on rules for proper citation, or website sources such as http://www.library.uiuc.edu/learn/handouts/researchprocess.html#citing%20sources.

Two excellent sources which define plagiarism and how to avoid it may be found at: http://www.indiana.edu/~wts/pamphlets/plagiarism.shtml and http://owl.english.purdue.edu/owl/resource/589/01/

You are also strongly encouraged to review UIC's Guidelines on Academic Integrity at http://www.vcsa.uic.edu/MainSite/departments/dean_of_students/Our+Services/Student+Judicial+Affairs.htm and the School of Public Health's Student Honor Code at http://www.uic.edu/sph/shandbook_sphpolicies.htm#honorcode

Disability Statement

If you need accommodations because of a disability and are registered with the Office of Disability Services at UIC, if you have emergency medical information to share with me, or if you need special arrangements in case the building must be evacuated, please inform me immediately. Please see me privately after class, at my office, or email me.

Mutual Tolerance and Respect Statement

Public health deals with controversial issues from multiple perspectives and consideration of these issues may cause disagreements among us or may evoke strong personal feelings, depending on our individual experience, histories, identities and worldviews. Therefore, in all of our interactions and communications, it is important that we strive to have mutual respect and tolerance for one another and for any course guests and members of the community with whom we come into contact. If you feel you have been offended by any content or interactions, you are encouraged to discuss this with the instructor or another faculty member.

CHEMISTRY FOR ENVIRONMENTAL PROFESSIONALS

Outline of Lectures

(tentative)

Week 1	Introduction – Planet Earth and environmental chemistry	Chap. 1
	Chemistry review I – math, units, gas laws	Handout
Week 2	Chemistry review II - thermodynamics	Handout
Week 3	Atmosphere	Chap. 2
	Chemistry review III - kinetics	Handout
	Global warming	Chap. 3
Week 4	Stratospheric chemistry	Chap. 5
Week 5	Tropospheric chemistry	Chap. 4
Week 6	**Exam 1**	
	Water	Chap. 7
Week 7	Acid rain	Chap. 7
	Water pollution	Chap. 8
Week 8	Water treatment	Chap. 8
Week 9	Drinking water	Handout
	Water quality and analysis	Chap. 9
Week 10	Water quality and analysis	Chap. 9
	Field trip: Wastewater management in Chicago	
Week 11	**Exam 2**	
	Organic Pollutants - PCBs, PBDEs, PCDD/Fs	Chap. 14
Week 12	Introductory to transport and transformation	Chap. 15
Week 13	Pesticides	Chap. 16
Week 14	Toxic metals	Chap. 13
Week 15	Energy and the environment	Chap 10-12
	Nanotechnology and the environment	Handout
Week 16	**Exam 3**	