

ENVIRONMENTAL SCIENCE: A CHEMISTRY PERSPECTIVE

Chemistry 315 - Fall 2007
3 Credit Hours

Instructor: Prof. Dan Higgins
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Course Web Page at KState Online: <http://online.ksu.edu>

Lectures: 12:30–1:20 PM MWF, Room: King 209

Office Hours: 1:30-2:30 PM MWF, Other times by appointment.

Course Text: Environmental Chemistry, Baird and Cann, *Third Edition*

Course Grading:

Problem Sets (Twelve Assignments):	120 pts total
Role Playing Activities:	80 pts total
Exams (Two One Hour Exams):	200 pts total
Participation/Attendance	50 pts total
<u>Final Exam:</u>	<u>150 pts total</u>
Total Points:	600 pts total
<i>Extra Credit (Periodic)</i>	<i>30 pts max</i>

Tentative Exam Schedule:

EXAM 1:	Friday, 9/21/07, In Class (12:30-1:20 PM) - KG 209
EXAM 2:	Monday, 10/22/07, In Class (12:30-1:20 PM) - KG 209
Final:	Monday, 12/10/07, Time: 4:10 PM – 6:00 PM - KG209

Exam Policy:

Exact exam dates will be announced ONE WEEK in advance of each exam. The exams must be taken on the announced date, at the scheduled time. Exceptions will only be made for real emergencies and then only at the discretion of the instructor. Exceptions will normally only be granted if approved by the instructor *in advance* of the scheduled exam.

Homework Policy:

Both electronic and written homework will be used in this course. Electronic assignments must be submitted by the due date. No exceptions will be made. Written homework must be turned in on the due date, in class. Homework turned in up to one week late will receive 50% credit. *After one week, absolutely no credit will be given.*

Participation/Attendance Policy:

Attendance and participation in the discussions occurring during regularly scheduled class periods is a very important part of this course. Therefore, a modest number of points will be given for attendance/participation. However, it is understood that situations do arise each semester in which some students must be absent for various personal reasons. The attendance policy for this course will be as follows:

- 1) Absences will not be permitted on exam dates or dates of scheduled oral presentations.
- 2) Up to five absences will be permitted with no penalty (i.e. the full 50 pts will be awarded).
- 3) Beyond these five, ten points will be subtracted for each absence.

Role Playing Activities:

Each student will participate in *mock congressional hearings* involving real life environmental problems/issues. In this activity, we will attempt to simulate the process by which congressional committees develop national policies on various issues. For example, one issue we might address would be global warming. Is it real? What can/should be done to prevent climate change? These assignments will be undertaken as "role-playing" activities. In each case, the class will be broken into groups of 4-6 students. Each student will then choose a "role" to play and develop testimony (a short statement) on his/her position, based on his/her role. One student might play the role of "Chemist," and give testimony on the chemistry behind a particular issue. Another might play the role of "Environmental Scientist" and give data on emission levels, etc. A third might play the role of "Energy Industry Representative" - a corporate representative, presenting information on the what steps might be taken to improve emission levels and at what costs. Each witness will be expected to research the problem/issue, prepare a brief position paper (2-3 pages, single spaced, type written) and present their views orally to the class in five minutes of testimony. Each witness will then answer questions from the "congressional committee". The remainder of the class will play the roles of the committee members and will ask questions of each witness.

Two to three lecture periods at the end of the semester will be reserved for this activity. Each student will be graded on their written and oral statements (including grammar and spelling) (50% of the total), ability to answer questions (30% of the total), and participation on the "committee" (20%).

University Honor System

Kansas State University has an Undergraduate Honor System based on personal integrity that is presumed to be sufficient assurance that in academic matters one's work is performed honestly and without unauthorized assistance. Undergraduate students, by registration, acknowledge the jurisdiction of the Undergraduate Honor System. The policies and procedures of the Undergraduate Honor System apply to all full and part-time students enrolled in undergraduate courses on-campus, off-campus, and via distance learning.

A prominent part of the Honor System is the inclusion of the Honor Pledge which applies to all assignments, examinations, or other course work undertaken by undergraduate students. The Honor Pledge is implied, whether or not it is stated: "On my honor, as a student, I have neither given nor received unauthorized aid on this academic work."

A grade of XF can result from a breach of academic honesty. An XF would be failure of the course with the X on the transcript indicating failure as a result of a breach of academic honesty. For more information, please visit the Honor System web page at: <http://www.ksu.edu/honor>.

Academic Accommodations for Students with Disabilities

If you have any condition, such as a physical or learning disability, which will make it difficult for you to carry out the work as I have outlined it or which will require academic accommodations, please notify me in the first two weeks of the course.

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Tentative Course Outline

Discussion Topics:

- 1) Stratospheric Chemistry (Ozone Layer) - Chap 1
- 2) Tropospheric Chemistry + Pollution - Chap 2
- 3) Greenhouse Gases and Global Warming - Chaps 4+5
- 4) Energy - Fossil Fuels - Chaps 5+6
- 5) Alternative Energy + Conservation - Chap 6
- 6) Nuclear Power - Chap 13
- 7) Water + Water Quality - Chaps 9+10
- 8) Toxic Organics - Pesticides/Nonpesticides - Chaps 7+8
- 9) Genetic Engineering – Time Permitting - Notes & Handouts