



Chemistry in Context

Spring 2008

Class: Tuesday and Thursday 2:30 – 4:20 Nobel 201

Laboratory Nobel 107 4:20 – 5:30 Tuesday or Thursday



moodle.gac.edu

Instructors:

Jonathan Smith
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TF: 11:00 – 12:00
or by appointment

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Overview:

This course will address the chemistry behind a range of environmental and other societal-technical issues. Among the topics will be drinking water, the ozone layer, fuel cells, acid rain, global warming, and green chemistry. The chemical principles in the course will be developed on a need to know basis. In addition to the text readings will be taken from a range of sources and policy and ethical contexts will be explored through discussions in the classroom and exploration in the laboratory. Extensive use of online tools including discussion through a moodle forum will be made (moodle.gac.edu).

Texts:

- *Chemistry in Context: Applying Science to Society*, 6th edition, **Lucy Pryde Eubanks, Cathy Middlecamp, Carl Heltzel, and Steven Keller**, ISBN **978-0-07-304876-5**, American Chemical Society, 2009.
Website: <http://www.mhhe.com/cic>
- *Laboratory Manual to accompany Chemistry In Context: Applying Chemistry To Society*, 6th Edition
American Chemical Society, ©2009, ISBN-978-0-07-304877-2

Topics:

TOPICS:	
The Air We Breathe	1
Protecting the Ozone Layer	2
The Chemistry of Global Warming	3
Energy, Chemistry, and Society	4
The Water We Drink	5
Neutralizing the Threat of Acid Rain	6
Energy from Electron Transfer	8

Project:

The project will focus on the topic and focus group selected at the beginning of the semester. You will be called on individually and as a group to serve as experts for the group and outside class as experts on your topic. There will be two position papers in which you will defend a particular point of view on an environmental issue and present scientific evidence that supports your point of view. Each person will research and write one “green” paper and one “smokestack” paper. Each of these papers will be five pages and will be presented to the class using PowerPoint. This project will culminate with a larger presentation that will bring together the body of work completed and weigh the different sides of the issue buttressed with scientific evidence. Accompanying the presentation will be a revised and combined paper with a balanced discussion of the issue. This paper will be a merged and revised version of the two papers with a new introduction and conclusion section.

Participation:

Class discussion and laboratory work will play an integral role in the course and thus the quality of the discussion is dependent on preparation for each class period. Postings to the class forum are a part of participation and are encouraged. Your attendance in class and laboratory is critical and as such you will be penalized 5% of your participation grade for one absence, an additional 10% for your second absence, and then 15% extra for your third absence with each subsequent absence adding 5% more (20%, ...).

Problem Sets:

Working problems is essential to gaining chemical understanding. This understanding is critical to evaluating environmental issues and presenting clear and sound arguments in class discussion, in your papers, and in your laboratory work. Problem sets will be assigned each Tuesday and collected the following Tuesday. Late assignments will not be accepted.

Laboratory:

The laboratory is a central part of the course and your participation is mandatory. The scientific method will be applied to record and analyze data with an environmental relevance. Short reports and data sheets will be completed as a part of the laboratory. You must pass the laboratory portion to receive a passing grade in this class.

Exams:

Two exams (Thursday, March 20 and Thursday, May 1) will be given during the semester in addition to a final exam

Grading:

Several components figure into the final grade including participation and the writing and posting of two formal papers on your project. Exams will be given during class and may include a take-home portion.

Participation	100
Homework/online quizzes	100
Hour Exams	150
Final	75
Laboratory	100
Project	200
	725