

## Syllabus for Chemistry 103: Chemistry in the Modern World Fall 2009

### Professor Joseph Chaiken

"Let no one enter who is ignorant of geometry" was written above the gates of Plato's Academe, an institution that presumed to educate the finest young minds of its times, a few thousand years ago. So, many have observed for a very long time that all people who presume to be reasonably educated are well served by being exposed to quantitative and objective perspectives on the world, the so-called "exact sciences". The purpose of this course is to provide students who do not plan to pursue technical careers with a basis to learn more about scientific issues as may be needed to function as intelligent and effective citizens and consumers in the future. By learning more about current scientific and technological issues, and obtaining some historical perspective, students will obtain context for understanding specific future developments and an idea of how to think about science and technology in general. Sufficient background and basic chemistry will be provided to allow understanding of the presentation.

#### Times:

Lecture: Monday and Wednesday 10.35 to 11.30 am, Room 1-019 SciTech building

Laboratory: Wednesday 2.15-5.00

Thursday 11-00-1.45 and 2-4.45, Life Science Building LSB 002

#### Contact Information:

Office: SciTech 2-010 Office Phone: 443-4285 Email: [jchaiken@syr.edu](mailto:jchaiken@syr.edu)

Office Hours: Every Monday 1-2pm and by appointment.

#### Required Text:

Stanitski et al. "Chemistry in Context", 5th Ed., McGraw-Hill, 2006.

Attendance: Mandatory at both lectures and Labs. Roles will be taken at every lab.

Missing a lab is an automatic zero for that lab. Missing two labs without explanation fails the lab section and so the class. No lab make-ups are possible.

#### Grading:

##### 1. Assignments: 30 % of grade

Problems will be assigned for homework about every third Wednesday lecture. These problems will be chosen from material covered in lecture, as well as problems pertaining to the new material to be covered. These are due to be handed in at the beginning of the next Monday's class. These will be straightforward and relatively non-time consuming questions.

##### 2. Final paper: 25 % of grade

DUE: Friday December 14th by 5pm (email is acceptable)

The paper should be 6-8 pages long, no more than double-spaced, using 12 point font only. Margins may be 1 inch maximum. Figures are included in this 8 page maximum (Resist the urge to make a figure 1/2 a page or more!). Try to strike a good balance

between a very broad topic (do not go and read 50 books and write a review article!) and a very narrow one (if you can only find one small section on your topic, it's too narrow). If you're having trouble, remember my door is open. You should supply me with a 10 line abstract (by email) before 5 pm November 9th. 10 % of the grade for this section will be lost for each day you are late with this abstract. Those topics I judge to be outside the scope or spirit of this class will be rejected and a new abstract will be due by November 16th at 5 pm. I am giving basically to the end of term for you to do this so as to keep the pressure off a little bit. If you want to just get the abstract done then you can give it to me anytime before November 9th. The format of the paper is flexible, but try to consider the following: Introduce the area and then address the most important questions.

Why is this field of interest today? Why is it important?

What is the relevant chemistry of this problem/field/technique?

What are the current frontiers/problems to be solved?

**Some ideas:**

Green house effect

Alternative fuels

Nutrition

Genetic Engineering

Drug development

Lithium in the treatment of depression

Remember: The essay must reflect the science of chemistry.

**3. Midterm Exam: 15 % total towards final grade**

Midterm is 55 min exam during class time: combining multiple choice, calculation problems and essay questions. Final Assignment will encompass the whole course but is take home. This exam and the final take home assignment replace a set final exam.

**4. Lab work: 30 % of final grade**

Integrity: Anything turned in for a grade should be your work and your work alone. The laboratory is a special environment in which students often have questions about academic integrity. In general, you are encouraged to ask questions of other students in the lab, and even compare observations. You are not, however, to simply copy another student's results. You are required to do each part of each experiment, and report on what you observed.