

Honors 203/Chemistry 110  
Syllabus Part 2 - The Laboratory  
Chemistry and Issues in the Environment Laboratory

**General Information**

**Course Instructor:** Dr. Kimberly Lawler-Sagarin  
**Office:** Schaible Science Center 218  
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**Lab Time:** M 1-4 p.m.  
**Location:** SC 224  
**Required:** Approved eye protection

**Assignments and Grading**

Grades on all assignments in the laboratory will be given in points. These are equivalent to lecture points. There are 250 points possible in the laboratory. The laboratory comprises 25% of your final course grade.

**Point Breakdown**

Assignment	points each	total possible
Experiments/Activities - Data, Calculations & Questions (7)	20	140
Wastewater Field Trip	20	20
Movies and Discussion (2)	20	40
Project Sample Collection & Experiments	30	30
Project Report	20	20
<b>Total Points Possible</b>		<b>250</b>

Regular experimental days are worth 20 points, based on attendance, data collections, calculations and answers to post-laboratory questions. Labs will be assessed for completeness, data quality and computational correctness before you leave the laboratory. There are six regular experiments scheduled.

Additional laboratory meetings will be used for the following activities:

1. ozone layer activity/discussion (20 points)
2. field trip to the Elmhurst Water Treatment Plant (20 points)
3. movies & discussion: *Day One* and one to be chosen by class (from options provided by instructor) (20 points each)
4. three open lab days for projects (project sample collection and experiments are 30 points total)
5. *State of Fear* presentations (points are associated with the lecture portion of the course)

Laboratory projects will be written as formal laboratory reports. The final report will be worth 20 points.

## Project

Many of the scheduled experiments are designed to familiarize you with just a few of the techniques that are used routinely for chemical analysis of environmental samples. These include analytical titration, visible spectroscopy and atomic absorption spectroscopy. This will give each student a sense of the range of analyses that can be done, as well as some practical experience with them, before designing and carrying out an independent project.

For the project, we will work in pairs (with one group of three for an odd number of students). Each pair or small group will perform a set of related analyses on real water samples. One analysis will be for nitrate, another will be your choice. Each group will design their other analysis on consultation with the instructor. Examples of appropriate projects will be discussed in class. The project will consist of several parts: sample collection, determining suitable methods of analysis, planning laboratory work, carrying out the work and then analysis and writing the final report. Everyone will receive a lot of help and feedback throughout this process.

## General Policies

### Absences

Laboratory attendance is mandatory. Chemistry is an experimental science and the laboratory portion of this course is experiential in nature. Thus, no more than 1 unexcused absence will be allowed to receive a passing grade in the course.

Absences will be excused only in the event of serious illness, military service, representing the college, or in the case of a family or personal emergency. Such events must be documented to have an absence excused. A student with an unexcused absence forfeits all points for that experiment, activity, field trip or discussion. If you have an excused absence during a regular lab day, the laboratory will be made up in a way specified by the instructor. Students with excused absences for movies and discussions or field trips may be assigned alternate activities.

### Safety

Safety in the chemical laboratory is very important both for your own well-being as well as the well-being of others. A recurring disregard for safety precautions may adversely affect your **overall grade** in the course by as much as a entire letter grade.

Eye protection in the laboratory is **MANDATORY**. No exceptions. If you do not have approved eye protection, you will be asked to leave and will receive an unexcused absence for that laboratory.

### Lab Cleanliness

Several different chemistry labs are held in SC 224 this term. It is important to clean up all glassware and return all chemicals and equipment to the Honors 203/Chemistry 110 bins. Please check with the instructor or teaching assistant prior to leaving to be assigned a clean-up chore.

I reserve the right to institute a policy to insure cleanliness in the lab, and that policy may affect your lab grade, either through point deduction or your instructor evaluation. If everyone pitches in and cleans up after themselves, this will not be necessary.

## Class Time

The laboratory is 3 hours long. Please plan on the lab and associated class activities taking up the majority of that time. Some labs are shorter than others, but getting out early can not be assured on a regular basis, so please do not schedule work or other activities to conflict with lab time.

When you are finished, make sure there are no additional activities planned for the laboratory that day. Generally, all questions and calculations should be completed and graded by the instructor prior to leaving.

## Laboratory Schedule

The laboratory schedule is designed to complement the topics we are discussing in the lecture portion of the course, however, some deviations are unavoidable. We will occasionally be studying something in the lab prior to discussion in lecture. The schedule is subject to change due to equipment issues, to keep current with the lecture, or to take advantage of special opportunities. I may elect to substitute some experiments for others or change the order of some assignments. Please read the laboratory or assigned reading and before the beginning of the laboratory period.

Week #	Date	Lab Activity	Description	Points Possible
1	Feb. 2	Introduction and Light	Safety, Lab Intro The Visible Spectrum	20
2	Feb. 9	Spectroscopy I	Spectrophotometric Study of ions in Water	20
3	Feb. 16	Spectroscopy II	Determination of Sulfate by Turbidity	20
4	Feb. 23	Ozone Activity	The Ozone Layer, CFC's and Ozone Hole	20
5	Mar. 2	Water Hardness I	Determination of Water Hardness by Titration	20
6	Mar. 9	Water Hardness II	Softening Water Water Hardness by AAS	20
7	Mar. 16	Energy and Fuels	Energy Content of Fuels	20
8	Mar. 23	...	Spring Recess	20
9	Mar. 30	Project	Open Lab for Projects	
10	Apr. 6	Project	Open Lab for Projects	
11	Apr. 13	Project	Open Lab for Projects	30
12	Apr. 20	Presentations	<i>State of Fear</i> and Discussion	20
13	Apr. 27	Field Trip	Elmhurst Wastewater Presentations Treatment Plant	(included in lecture points)
14	May 4	Movie	<i>Movie: TBA</i>	20
15	May 121	Movie Discussion	<i>Movie: Day One</i> Movie and Discussion	20

*Tentative Schedule - Honors 203/Chemistry 110 Laboratory - Spring 2009*