

CHEM 000: Laboratory Teaching Methods

Syllabus for Fall 2008

Instructor: Holly D. Bendorf

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Meeting Time: Fridays from 2:00 – 2:50 pm in room 209, plus 3 – 5 hours of practical experience per week.

Office Hours: By appointment or drop-by.

Course Description: This course provides students with practical experience in laboratory teaching. Students in this course are paired with a faculty mentor and help supervise labs, deliver prelab lectures, assist in ordering chemicals and help prepare laboratory experiments. Students will complete a project that integrates the chemical education literature, classroom instruction materials, laboratory safety and chemical procurement, storage and disposal.

Text: There is not a formal textbook for this course. Rather, we will make use of the chemical education literature such as the *Journal of Chemical Education* and American Chemical Society publications, such as *Chemical Safety for Teachers and Their Supervisors, Grades 7-12*.

Grading Criteria:

Laboratory Instruction Project	20%
Prelab lecture*	20%
Evaluation of work as a teaching assistant*	20%
Lab Preparation Quiz	15%
Laboratory Safety Quiz	15%
Attendance*	<u>10%</u>
	100%

* Grades assigned in consultation with the laboratory instructor.

Learning Goals: At the conclusion of this course, the student should be able to:

- Use the chemical education literature to find laboratory experiments for use in class
- Adapt experiments from the literature for use in class
- Prepare prelab lectures and other materials needed for laboratory instruction
- Identify and order equipment and chemicals needed for experiments
- Prepare solutions and reagents for use in class
- Determine the appropriate methods of chemical storage and disposal
- Demonstrate a thorough knowledge of laboratory safety.

Laboratory Instruction Project: This project will guide you through the planning and preparation involved in introducing a new lab experiment to the curriculum. In this project, you will search the chemical education literature for a published experiment for use in a high school laboratory, identify the learning goals/objectives of the experiment, generate classroom materials for the experiment (prelab lecture, handouts, lab response sheets, etc.), determine the chemicals and equipment needed, and address chemical storage, lab safety and disposal considerations. Drafts of each section will be submitted during the semester. A final draft of the entire project is due at the last class meeting.

Prelab Lecture: Each student will deliver at least one prelab lecture during the semester. Consult with the laboratory instructor to choose the topic and date. Class time will be reserved for practice talks. Prelab lectures are evaluated using the following criteria:

- Content
- Organization and clarity
- Appropriate use of demonstrations, props, and/or a/v equipment
- Delivery

Evaluation of work as a teaching assistant: Teaching assistants will be evaluated on performance in the areas listed below:

- Preparation for lab
- Attendance and punctuality
- Professionalism in and out of lab
- Safety
- Grading

A detailed list of TA guidelines and expectations will be provided in class.

Lab Preparation Quiz: This quiz will cover solution preparation, mole calculations and other relevant quantitative skills.

Laboratory Safety Quiz: This quiz will cover safety in the chemical laboratory.

Attendance: Attendance at all lab periods and CHEM 000 meetings is mandatory. Arriving late or missing a lab or meeting will result in a significant deduction from the attendance grade.

Academic Integrity: Be aware that in accordance with the College's policy on academic honesty, any work you submit must be your own. Any instances of plagiarism will be severely penalized.

Course Schedule:

Date	Week	Topic	Preparation for Class
8/29	1	Course Overview, discussion of TA responsibilities	
9/5	2	Prelab lectures	Meet with lab instructor to choose prelab lecture
9/12	3	Prelab lecture practice	Due: prelab lecture outline and copy of lab
9/19	4	Searching the Chemical Education Literature	
9/26	5	Lab preparation, preparation of solutions	Review concentration units and calculations Due: Copy of article to be used for project
10/3	6	Ordering chemicals and equipment	Due: learning goals of experiment
10/10	7	Lab preparation quiz	
10/17	8	Preparing class materials	Due: chemical and equipment order
10/24	9	Laboratory Safety	Due: draft of written course materials
10/31	10	Long Weekend – no class	Due on Thursday: list of safety considerations for the experiment
11/7	11	Chemical storage and disposal	Due: outline of prelab lecture topics for experiment
11/14	12	Meet to discuss progress on project	Due: statement addressing chemical storage and disposal issues related to the experiment
11/21	13	Laboratory Safety Quiz	
11/28		Thanksgiving Break	
12/5	14	Laboratory Instruction Project Due	