CHEM 123L Course Outline

**Course description**

The CHEM 123L Laboratory course is related to the lecture course, CHEM 123, but is a separate course, graded independently. Experiments performed are designed to give students hands on experience to support and enhance concepts presented in the lecture course. The laboratory explores and expands on course materials, allowing students to witness first-hand the chemistry behind the theories. Working in the laboratory also provides novice students with an introduction to basic lab techniques, procedures, equipment and protocol.

Five laboratory experiments will be completed during the term in the following general areas:  
  
 1. Organic Synthesis 2. Reaction Kinetics

3. Acid – Base Titrations – pH studies

4. Buffer Solutions

5. Electrochemistry

Much of what is learned from the Chemistry 123 Laboratory will come from independent study, in preparation for an experiment and the writing of the laboratory reports. In the lab, students work with a partner, however work that is submitted for grading must be completely original, independent work.

**CHEM 123L on Waterloo LEARN**; use this site to access information and instructional videos for various lab techniques. Changes to the curriculum and announcements will be posted here.

**CHEM 123L on Maple TA**; use this site to complete pre-laboratory quizzes before each experiment: http://mapleta.uwaterloo.ca/

**Expectation of student commitment to the course**

CHEM 123L is a three hour lab held on alternate weeks.

During the lab:

* Each of the five experiments is designed to keep a pair of novice students working for two hours. Well prepared students usually finish faster. Use your time in the laboratory wisely; complete pre-laboratory work before you arrive, focus on the task at hand, divide the work with your partner, plan to complete your clean up before the class ends.

Outside the lab:

* An additional three hours every second week should be expected for lab preparatory work (this includes pre-lab quizzes and assignments), report writing (each experiment will require either an informal or formal report), and post lab review. Formal lab reports can take more than three hours, informal reports should take less, therefore some weeks your work load may be heavier than others.

**Course learning objectives**

Upon completion of this course students can expect to have acquired:

* Hands on experience with theoretical material presented in lectures
* Basic laboratory skills for working in the chemistry laboratory
* Familiarity with chemistry laboratory protocols, techniques and equipment

**Course Materials**

Required materials: Lab Manual (available at the bookstore)

Splash proof safety goggles

Recommended materials: Lab coat

Sharpie or other glassware marker

Course text (for reference when writing reports)

**Contact information**

Instructor: Sue Stathopulos

Office: STC-4019C (Enter through the lab, STC-4019 or 4029)

Phone: 519-888-4567 ex. 33868

Email: [sckramer@uwaterloo.ca](mailto:sckramer@uwaterloo.ca)

Office hours: I have an open door policy and welcome questions, comments and visits Monday – Thursday, between 9:00 am – 4:20 pm. Unless you have an urgent need, please avoid my busiest times; one-half hour before and after labs start (between 9:00 am – 10:00 am and 2:00 pm – 3:00 pm)

Contact: I welcome drop in questions during the hours stated above. Emailed questions are also very welcome, however I will only respond during the hours above, so questions sent in the wee hours of the morning before your report is due may not receive a response in time!

TA’s: Your TA will be introduced the first day in the lab. At that time they will also provide their contact information, which you should record in your lab manual.

Your TA may also be contacted using the class list feature in LEARN, under the TA tab.

**Student assessment**

**How your final grade is calculated:**

5% Laboratory work practical mark (see following page) 10% Weekly pre-lab quizzes (see following page) 45% Lab Reports (5 in total, equally weighted) 40% Final exam

**Attendance:**

* Mandatory, failure to attend your regularly scheduled lab will result in a deduction of all grades associated with that lab period (typically between 10 – 15% of your final grade). **Contact your lab instructor within 24 hours** if you miss a lab for any reason.
* Unscheduled absences; ex. Illness: Absences due to illness must be documented by an official Verification of Illness form and are assessed on a case by case basis. If the absence is judged as unavoidable, accommodations will be made to complete missed work.
* Scheduled absences; ex. Co-op Interviews, Varsity Team games, Funerals: A lab **may** be rescheduled provided a conflict is identified early and warrants special accommodation. In all cases documentation must be presented confirming the reason for your absence.

**Late Penalties:**

* **Work submitted after the deadline will receive a grade of 0**. Late submissions are not accepted. If you are unable to complete your work by the due date, submission of partially completed work is recommended so that partial marks can be awarded.
* Lab reports are typically due at your next scheduled lab period, allowing two weeks to complete each report. **Extensions will not be granted**.
* **Online quizzes must be completed 24 hours prior to your scheduled lab**. Access will be restricted after this time. Failure to complete the online quiz may result in denial of access to the lab, and loss of all grades associated with that day’s work. In the interest of everyone’s safety, unprepared students can be required to leave the laboratory.

**Data Sheets:**

* Each report must include an original data sheet, written in ink, signed by your TA or the Lab Instructor. **Without this data sheet the report will be assigned a mark of zero**.

**Unclaimed work:**

* Term work which has not been claimed by the final day of the exam period for that term will be appropriately discarded.

**On-line Pre-laboratory Quizzes – 10% of your final grade**

Before you arrive in the laboratory each subsequent week you will be required to complete a short on-line quiz on the material needed for the experiment you will be performing that day. You will not be expected to answer questions based on the results of the experiment, since you have not performed it yet, however, you will need to know the techniques you will be using, as well as any background information covered in the lab manual.

Quizzes are accessed through the Maple TA web interface:

<http://mapleta.uwaterloo.ca/>

You will have an account created for you in your section of CHEM 123L. User login is your Waterloo UserID, password is your student ID#.

Quizzes account for 10% of your final grade, and must be completed at least 24 hours prior to your scheduled laboratory period. Access to the weekly quiz will be restricted after this time.

**Pre-laboratory procedure summary - ~3% of your final grade**

Prior to commencing work in the lab each student is required to submit a hand written, experimental procedure summary to their Teaching Assistant. This summary must be notarized by your TA on the day of your lab, submitted with your lab report and graded as part of the lab report mark for that experiment.

This summary must be hand written in your choice of format (point form, flow charts, diagrams, etc.) All information necessary to perform the experiment in the absence of your lab manual must be contained in your procedure summary.

**Laboratory practical performance mark – 5% of your final grade**

Each day as you work in the lab your TA will be assessing your performance. This assessment is based on your punctuality, preparedness, safe lab practices (pages 6-10), work ethic and attitude.

A mark /5 is assigned each day that you work in the lab, and at the end of the term the average of these performance marks will account for 5% of your final grade.

**Information for students with disabilities**

AccessAbility Services, located in Needles Hall, Room 1401, collaborates with all academic departments to arrange appropriate accommodations for students with disabilities without compromising the academic integrity of the curriculum.

If you require academic accommodations to lessen the impact of a disability, please register with AccessAbility Services at the beginning of each academic term.

**Academic Integrity**

**Academic Offences**: When you submit work for grading you are presenting it as your own, original work. Students who submit work that is not original are subject to disciplinary penalties under University of Waterloo Policy 71. All cases of academic misconduct in CHEM 123L are referred to the Associate Dean of the appropriate faculty. A typical penalty for cheating on a course element is a grade of zero assigned to that course element, plus a deduction of 5% of the course grade. The following are considered serious academic offences:

* **Plagiarism**: The words and ideas you submit must be your own. You will use many sources of information during your academic career, but these sources must be properly acknowledged using citations and references in your work. You must learn to present the information you have researched in your own words. If you “cut and paste” directly from your source, the work presented is not yours, but that of the original author. Remember that even ideas that have been paraphrased must be referenced.
* **Copying** from another’s work or allowing someone to copy your work: copied lab reports will receive a mark of zero. Although you work in pairs for the experiment, reports are to be written on an individual basis. No portion of your lab report should be the same as another report. Additionally, if you are found in possession of a lab report from a previous term you will receive a mark of zero for that lab.
* **Fabricating** **data**: as scientists, you all know that this is wrong. There are no penalties assigned for “bad” data, in fact, more is often learned by making some mistakes, recognizing them and explaining their effect on the experiment.

***For more information contact:*** *The University of Waterloo Office for Academic Integrity: uwaterloo.ca/academic-integrity/*

***Academic Integrity:*** *In order to maintain a culture of academic integrity, members of the University of Waterloo community are expected to promote honesty, trust, fairness, respect and responsibility.*

***Grievance:***  *A student who believes that a decision affecting some aspect of his/her university life has been unfair or unreasonable may have grounds for initiating a grievance. Read Policy #70, Student Petitions and Grievances.* [*http://www.adm.uwaterloo.ca/infosec/Policies/policy70.htm*](http://www.adm.uwaterloo.ca/infosec/Policies/policy70.htm)

***Discipline:*** *A student is expected to know what constitutes academic integrity, to avoid committing academic offenses, and to take responsibility for his/her actions. A student who is unsure whether an action constitutes an offense, or who needs help in learning how to avoid offenses (e.g., plagiarism, cheating) or about “rules” for group work/collaboration should seek guidance from the course professor, academic advisor, or the Undergraduate Associate Dean. For information on categories of offenses and types of penalties, students should refer to Policy #71, Student Discipline,* [*http://www.adm.uwaterloo.ca/infosec/Policies/policy71.htm*](http://www.adm.uwaterloo.ca/infosec/Policies/policy71.htm)

***Appeals:*** *Concerning a decision made under Policy #70 (Student Petitions and Grievances) (other than petitions) or Policy #71 (Student Discipline) a student may appeal the finding, the penalty, or both. A student who believes he/she has a ground for an appeal should refer to Policy #72 (Student Appeals)* [*http://www.adm.uwaterloo.ca/infosec/Policies/policy72.htm*](http://www.adm.uwaterloo.ca/infosec/Policies/policy72.htm)