CHEMISTRY 147 Spring 2019: LABORATORY SYLLABUS

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Lab schedule: The first lab sessions will meet during the first full week of classes. Be prepared to begin promptly at the scheduled start of your session in Keyes 409. Please make sure that you have brought a copy of this syllabus, your bound laboratory notebook, as well as your completed assignments. During the first week’s session we will be doing a mass spectrometry experiment as well as going over lab safety and procedures. Laboratory attendance is 100% mandatory.

Lab rules and safety: It is critical that everyone in a chemistry laboratory follow safety procedures. In CH147 laboratory, these include: 1) always wearing safety glasses in the laboratory, 2) wearing sensible clothing, including close-toed shoes, 3) tying long hair back, 4) leaving personal belongings in the hall outside of lab, and 5) never bringing food or beverages in the laboratory. During your first lab meeting you will be assigned a lab drawer to use for the semester and be provided with safety glasses, which you are expected to wear each week throughout the scheduled lab, including time spent writing in lab books or doing computer work. At the end of each lab you may store your glasses in your assigned lab drawer.

Lab exercises: Lab exercise documents are available on the Chemistry 147 laboratory webpage at least several days in advance of each lab. These documents will include a detailed description of the week’s experiment as well as instructions for work to be completed prior to your lab session. You are expected to bring a printed copy to lab with you each week. If you have any questions about the assignments, it is up to you to seek help prior to the due date and time. No extensions will be granted, as there are plenty of resources to assist you if necessary.

Pre-lab responsibilities: Before each lab, you must complete the following tasks:

1. Thoroughly read the laboratory handout, a copy of which must be brought to lab with you. It is critical that you carefully read this document in advance of lab. Otherwise, your lack of preparedness might result in a much longer afternoon!

2. Complete the pre-lab assignment (if applicable). All laboratory exercises will involve either a pre-lab assignment, which can be found at the beginning of the handout, or a pre-lab quiz taken at the start of your laboratory session. Pre-lab assignments will be collected at the door for a grade. Pre-lab quizzes will begin immediately at 1 PM at the start of your laboratory session. The quizzes will be designed to assess your preparation for that day’s experiment, which includes the reading assignment and familiarization with the laboratory handout. You may not refer to your laboratory handout during the quiz, but you may refer to your handwritten laboratory notebook. The quizzes will be strictly timed at 5 minutes. It will not be possible to complete the quiz without the proper preparation as described above. If you are late, you will get a zero for the quiz. Being thoroughly prepared is the best way to ensure that the laboratory is completed safely and efficiently. **Quizzes / pre-lab assignments will constitute 15% of your laboratory grade.**

3. Enter the required information into your laboratory notebook. You must begin the notebook entry for the week’s experiment with the following information:
   a. Title of experiment, date, and notebook page number in the table of contents
   b. Title of experiment and date on the first page of the notebook entry
   c. Experimental objective (see below for more information)

Lab lecture: Each week there will be a brief lecture on important information related to the lab. Any changes to the procedures will be explained and equipment will be demonstrated.
This information supplements what is in the lab handout. As such, punctuality is an inflexible requirement each and every week. During this time, be sure to write any supplemental information in your lab notebook. **Proper observance of safety procedures and punctuality will constitute 5% of your laboratory grade, at your instructor’s discretion.** Recurring tardiness or being significantly late to a given laboratory session may result in receiving a grade of zero for a week of laboratory at your instructor’s discretion.

**Lab notebook:** Buy a bound composition book (NO carbon copy or spiral notebooks) and bring it to the first lab. This can be a lined or graph paper notebook. On the inside front cover put your name, lab section, and the contact information for your Instructor. Number the pages in your notebook before using it. The first TWO pages of your notebook will be for the Table of Contents, which must be kept up to date. This notebook will be used to record data and observations for every lab exercise. See example below or posted on the lab website.

A **CH147 notebook entry should include the following features:**

**Title:** The title of the lab (refer to the laboratory exercise).

**Name, lab partner and date:** Your name and the name of your partner(s), and the date.

**Objective:** In your own words, give a brief description of the goal(s) of the experiment as well as a brief narrative on what the experiment will entail, what type of data you expect to generate, and how you expect to analyze that data. The objective should be no more than a paragraph and must be completed before you come to lab. You must type this out and tape it into your notebook (this will be helpful later).

**Procedure, observations, and data:** Record the experimental steps you are doing, as you are doing them, in thorough and concise terms – integrating your data and observations as you go. You must record all data directly into your notebook – it is not acceptable to write things down on a scrap of paper then enter the data in later. It is also not acceptable to cite your partner’s notebook for primary data. Observations can include, but are not limited to, changes in physical properties (color, state of matter, etc.) as well as actual measurements of volume, mass, etc.

**Data analyses:** Attach all computer-generated data analyses (charts, graphs, tables, etc.) securely and neatly. No pages sticking out of the notebook.

**General comments on recording data:** Your notebook serves as a record and proof of each experiment that you do in the laboratory, no matter what the outcome! Because your notebook is to be filled in as you do each experiment, it need not be perfect. However, it must be legible.

- Your notebook will never look exactly like anyone else’s, but others should nevertheless be able to duplicate your experiment from what is written in your notebook.

- **Use a pen.** Mistakes must be crossed out in such a way that the unwanted entry is still legible. Do not scribble out the entire entry, rip out pages, or use correction fluid. Simply just put a large ‘X’ mark through the mistake or, if necessary, the entire entry and start over next to the crossed out mistake or on the next notebook page. As scientists, we learn from mistakes, so never disregard them.

- Record what you actually do, as you do it. If the procedure indicates to weigh 4.3 g of a solid, and you weigh 4.3339 g, record the exact mass you measured in your notebook. If you were supposed to add a reagent after 30 sec of stirring and you mistakenly add the reagent after 42 sec, record that too.
• Never disregard data. All data is valid unless proven to be qualitatively/statistically invalid. In which case, your lab instructor will perform a q-test to assess the relevance of the data.

• You will often have to use reference data in your calculations. You must cite the sources for these data in your notebook and in your lab report.

Lab notebook evaluation: You are responsible for keeping your notebook current. Your Instructor may check your laboratory notebook periodically for inclusion of all necessary elements and proper formatting during lab sessions. Also, your lab notebooks will be collected twice for more thorough assessment, before spring break and at the end of the semester. If you would like feedback on your notebook in advance of the formal evaluations, please ask your Instructor how best to seek such feedback. Lab notebook evaluation will collectively constitute 10% of your laboratory grade.

Post-lab assignments: Post-lab assignments will be described on the handout for each laboratory exercise and will most often be narrative lab reports. Your report needs to be typed into the report form supplied for each laboratory experiment on the CH147 laboratory website. Type in the necessary information to complete the report, print it, and bring it to your next lab meeting. Please don’t ask to print or complete any aspect of your report after the lab begins. If your report is not turned in prior to the beginning of lab, it is late. Photocopies (or originals) of applicable graphs, Excel tables, worksheets, and instrumental printouts are to be attached to your lab report. Your post-lab assignments will constitute 70% of your laboratory grade. A 25% penalty will be assessed for assignments turned in up to one day late. Work turned in beyond one day late will receive a grade of zero.

Grading: Your laboratory grade represents 25% of your overall grade in CH147 and will be apportioned as follows:

- 15% pre-lab assignments / pre-lab quizzes
- 70% post-lab assignments
- 10% laboratory notebook
- 5% instructor’s discretion

The “instructors discretion” portion of the grade will be earned by being on time, prepared (bringing your notebook, lab handout, and pen, wearing proper lab attire, etc.), and observant of proper laboratory procedures (safety and cleanup, etc.). Coming late to lab (in most cases) will result in an immediate loss of these points. The points will be taken away for safety violations after the instructor has issued a warning. For very serious, blatant or repeated violations after a warning, you will be dismissed from the laboratory and receive a zero for that lab exercise. We are required to enforce proper safety practices and appreciate your cooperation.

Missed labs: You are required to attend your assigned lab section (on time!) and to complete every experiment. If you miss the pre-lab lecture, for both safety and equity reasons, you will not be allowed to participate in the lab. If you cannot attend your lab due to illness or athletic competition, you must make PRIOR arrangements with your Instructor. If you are sick, notify your advising dean and your lab instructor. The lab instructor must receive verification from your advising dean of this illness once the advising dean has received verification from the Health Center. Laboratory work will not be made up for unexcused absences. You will earn a grade of zero for unexcused absences and your course professor and advising dean will be notified. Please refer to the attendance and exam policy in the course syllabus.

Intellectual responsibility: All written work that you submit (including pre-lab assignments) must be your own. If a lab instructor observes students sharing / copying any lab work that is not specified in the lab write-up as collaborative, all students involved will receive a zero for that assignment. All answers to questions must be in your own words, and you must perform all calculations yourself, even when working with a partner. Academic dishonesty will not be tolerated. If any assignment is found to contain copied work, it will receive a grade of zero and the responsible student(s) will be reported to the
Dean of Student’s Office. Additional sanctions for academic dishonesty are assigned by an academic review board and may include failure on the assignment, failure in the course, or suspension or expulsion from the College. For more on recognizing and avoiding plagiarism, see the following guide:

libguides.colby.edu/avoidingplagiarism

Please also refer to the attendance and exam policy stated in the CH147 lecture syllabus and on the Chemistry Department website:

http://www.colby.edu/chem/about/chemistry-attendance-and-exam-policy/

**Resources:** In addition to the assistance the lab instructors can provide, help is also available at the Chemistry Help Center, staffed by experienced and knowledgeable chemistry majors, which is open Monday through Thursday in Keyes 104 from 7:30 - 9:30 pm. These students will help answer your questions and work through problems with you. The Farnham Writers’ Center is also available if you need help with the writing of lab reports.