

Chemistry 141 Laboratory Syllabus – Fall 2018

(Laboratory Web Page: <http://web.colby.edu/ch141/laboratory/>)

Instructors:

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Location: Keyes 405

Required Materials: Bound laboratory notebook (available in the bookstore)

Lab schedule: The first lab sessions will meet in the first full week of classes (Sept. 10-14). Be prepared to begin promptly at the scheduled start of your session in Keyes 405. For week one, please make sure that you bring a copy of this syllabus, Experiment 1 (from the lab website), and your bound laboratory notebook. During the first week's session we will also highlight safety issues and procedures.

Lab rules and safety: Sensible clothes must be worn to lab. No open-toed shoes or sandals are allowed. Long hair must be tied back. Backpacks and other personal belongings must be left outside of lab. Food, drinks, and gum are never allowed in the laboratory. Please be sure to also read the safety information document posted on the lab website. During your first lab meeting you will be assigned a lab drawer to use for the semester and be provided with safety glasses. You are expected to wear safety glasses each week throughout the scheduled lab. At the end of each lab you may store your glasses in your assigned lab drawer.

Lab exercises: Lab experiments will be available on the Chemistry 141 laboratory web page (<http://web.colby.edu/ch141/laboratory/>) 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 you must complete prior to your lab section (your "pre-lab" assignments). *You are expected to bring a printed copy of the laboratory experiment to lab with you each week.*

Pre-lab assignment: Before each lab, prepare yourself by thoroughly reading the laboratory experiment handout. In addition, most experiments have required pre-lab preparations, so it is important that you download the experiment and the pre-lab assignment as soon as they are posted to give yourself ample time to complete them (some pre-lab assignments can be fully answered from information in the experiment handout, but others require that you find information not provided in the handout itself). Complete the pre-lab assignments on a separate sheet of paper (not in your notebook) unless you are given specific instructions to the contrary. Pre-lab assignments will be checked and/or turned in when you arrive at lab each week. Please don't ask to complete your pre-lab questions after the lab begins – no credit will be given once the lab period starts.

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, equipment will be demonstrated, and locations of needed materials will be identified. This information supplements what is in the lab handout.

As such, punctuality is absolutely required each and every week (see grading consequences below).

Notebook Instructions:

Your laboratory notebook is the primary record of all work done in lab. Everything relevant to the experiments you perform should be entered into your notebook as you proceed. It is not acceptable to fill in your notebook after the fact, as this would make your entries recollections, not a primary record. Your notebook will never look exactly like anyone else's, but others should be able to duplicate your experiment based on the procedure and notes you've recorded.

The following guidelines should help you understand what is expected:

- Buy a bound composition book (no carbon copy or spiral notebooks). This can be a lined or graph paper notebook.
- All entries must be permanent, i.e. use non-erasable ink, not pencil.
- On the inside front cover put your name, lab section, and the contact information for your instructor (refer to the syllabus).
- Number the pages in your notebook before using it (it is okay to number just the front side of each page as 1, 3, 5 etc.)
- The first two pages of your notebook should be designated for a Table of Contents. This table should be kept up to date.
- Every entry need not be perfectly neat, but it must be legible, even errors. Cross out mistakes with a single line so that the original entries are still easy to read. **Correction fluids, white outs, and similar devices are not allowed.** It is not acceptable to rip out pages. All pages should be used, do not leave pages blank. Your overall record keeping skills will be part of the notebook grade, and therefore, part of the final lab grade.
- Record the title of each experiment, the date the work was performed, and your partner(s) name(s), if any.
- Outlines of procedures, data (including units), graphs, calculations, and observations should be in your notebook. Some items will need to be graded first before they are returned to you for attaching inside the notebook. Please do not layer attachments when placing into the notebook. If the graph is too large for one page, do your best to tape it across two open notebook pages. Attachments that hang out of your notebook can get torn, tattered or destroyed, so please try to keep each attachment within the notebook.
- Cite references and sources in the prescribed format (see below). *Yes, in your notebook!*

A CH141 notebook entry should include the following features:

Title: Summarize the chemical concept being explored.

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

Purpose: Briefly state the scientific purpose of the experiment. Describe the method you will use, in a general sense (e.g. “by constant pressure reaction calorimetry”). Do not discuss the experimental procedure details or data analysis steps. Don’t include pedagogical goals (e.g to teach us how to use.....)

Procedure / Data / Observations: Describe the steps you follow during the experiment in concise terms. Write down what you do – *as you do it* – integrating your data and observations as you go. Make sure to make explicit references to the lab write-up for any steps that you don’t include in your narrative (e.g. “steps 6-8 in the write-up were completed”). Record all data and observations. Include an example calculation of each formula used in any Excel spreadsheets. Include literature references. Include the manufacturer and model of any instrumentation used (but, not standard laboratory tools such as analytical balances or pH meters).

Copies of all graphs, printouts, etc. will be included in your notebook (i.e., make photocopies or extra copies if working in groups). Attach copies of your graphs and spreadsheet printouts to your lab report. It is not acceptable to cite your partner’s notebook for any table, graph, calculation etc. **It is not acceptable to write on pieces of scrap paper and later copy “neatly” into the lab 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 (you are not allowed to write it first on another paper and then recopy it into your notebook later), your notebook need not be perfect. However, your entries must be legible. Your notebook will never look exactly like anyone else’s, but others should nevertheless be able to duplicate your experiment from the information that is written in your notebook. You must also indicate any collaboration on each and every graph and data table caption.

Use a non-erasable ballpoint pen (water impervious). When you make a mistake, put a neat line through the mistake (NOT multiple lines or squiggles or scribbles that make the error unreadable). Correction fluids are not allowed. Do not rip out pages. All pages should be used, do not leave pages blank. Your overall record keeping skills will be part of the notebook grade.

Citations: Please follow the guidelines in the ACS Style Guide that is available in the lab and Olin library. An abbreviated version of the ACS Style Guide is also posted on the lab website.

Lab notebook evaluation: Your lab notebook will be checked periodically throughout the semester.

Laboratory Reports: Your laboratory report for each laboratory experiment is due one week after the completion of that experiment. The report will typically address such questions as: What was the experimental objective? What were the results? What conclusions can be made relative to the original objective? Were the results expected or unexpected? What were the

systematic sources of error in the experiment and how might each influence the resulting reported value(s)?

Your report needs to be typed into the **report form** supplied for each laboratory experiment. Type in the necessary information to complete the report, print it, and bring it to your next lab meeting. Lab reports count as 70% of your lab grade. A 25% penalty per day will be assessed for reports turned in late. 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.

Grading: Your laboratory grade represents 20% of your overall grade in CH141. Your laboratory grade will be derived from the following items:

- A) Pre-lab assignments (a measure of your preparation for the experiment) **10%**
- B) Lab reports (includes an objective, thoughtful presentation of results, considers consequences of errors as well as source of each, summarizes findings, demonstrates a clear understanding of chemical concepts involved, stays within a two page text limit, cites sources used, attached report sheets, spreadsheets & graphs, turned in on time, etc) **70%**
- C) Discretionary points (attendance, adherence to safety rules, etc.) **10%**
- D) Notebook keeping **10%**

For each experiment you will receive discretionary points for being on time, being prepared (notebook, pen, printed experiment, proper lab attire, etc.), and observant of proper laboratory procedures (safety, cleanup, etc.). Coming late to lab will result in a loss of some or all of those points. If you arrive after the pre-lab lecture begins, you are late. Points will be taken away for any minor safety violation that occurs again after the instructor has already issued one warning. Major safety violations can result in the loss of all discretionary points and/or dismissal from the lab. 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 Lisa Miller. 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 guide: libguides.colby.edu/avoidingplagiarism. Please also refer to the attendance and exam policy stated in the CH141 course syllabus.

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.