CHEMISTRY 150 LABORATORY SYLLABUS
Fall 2017

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https://www.pinterest.com

Office Hours
Tuesday 10:00 am - 11:30 am,
Thursday 2:25 - 3:30 pm, and by appointment. You can stop by my office at any time and I will be able to assist if I am not assisting another student. I am not available during my class times MWF 9:00 am - 1:00 pm, lab times T 2:00 - 5:30 pm and Th 9:00 - 12:30 pm

Lab Times
Tuesday Group (L-B): Tuesday 2:25 - 5:30 PM, OSB 417
Thursday Group (L-D2): Thursday 9:40 - 12:45 PM, OSB 417

Goal
The goal of this class is to provide a hands-on minds-on science learning experience by encouraging scientific practices and exposing students to different instruments, tools, and techniques used in labs.

Course Overview

Assessment Items	Lab Software Skills	Lab Instrumentation
Lab notebooks	Microsoft Excel	Analytical balances
Lab reports	Spartan	pH meters
Quality Checks	ChemDraw	UV/VIS spectroscopy
In-class excel evaluation		XRD

1. Pre-Lab to do list

(a) Prelab prep. Read the experiment introduction and procedure before coming to the lab. Prepare the lab notebook pages before the prelab. You need to write the following items in your lab notebook:

- Name, date, experiment number and title
- Goal or purpose of the experiment and list of chemicals.
- The approach. This is a les detailed description of what you will do in the lab. Do not write each step but a general flow of the method. I will discuss this section during prelab meetings. This step tells us that you read the lab before coming to class.

(b) Prelab lecture. It will begin promptly at the beginning of the lab period. We will talk about the lab and a related safety material during the prelab.It is, therefore, important that you attend. If you miss the prelab meeting, you will not be allowed to work in lab that week and will be given a zero for the experiment. You are not allowed to use cell phones in the prelab meeting. You may bring your Laptop computers to access the lab handout or print a hard copy.

(c) Prelab assignment. See Canvas for any pre-lab assignment information.

2. In-Lab

• Record EVERYTHING you measure and observe directly in your lab notebook, in ink. **Never** write things down on scraps of paper or in the lab manual. Any changes or corrections must be made by drawing one line through the error and writing the correct item in beside it. Never try to correct an entry by writing over it in heavier strokes or by crossing out the entire entry. If you used an unknown, be sure to record its code number or letter in your notebook.

•On some experiments you will work in pairs (or larger groups). The lab manual or your instructor will tell you when to work together. Do NOT work together on experiments unless the lab manual or your lab instructor tells you to; if you do, your report grade may be lowered. For experiments that you work in pairs, make sure you also record your lab partner's name. Even though you have worked in pair, each student must submit an independent report.

•In the lab room, all books, book bags, coats, etc., should be out of the way so nobody trips over them and nothing gets spilled on them – don't leave them on the floor in an aisle or on the bench.

•You are not allowed to use cell phones in lab except for timing, when directed by the instructor. Should your cell phone go off, or should you use it in any way except for timing, you will leave and receive a zero for that experiment. Laptop computers are also not allowed.

•Turn in the carbon copy of all your data and observations before you leave lab (or you may not get credit for that lab). Make sure your name is on each page and that all entries are legible.

Safety

The laboratory can be a safe place if you follow the safety rules. If you violate the safety rules, your lab evaluation may be lowered, and you may not be allowed to work in the lab. Your lab manual lists the laboratory safety rules; the two most important:

•You must wear a pair of safety glasses, even if you normally wear glasses. The chemistry department sells several styles; you may use your own, subject to approval of your lab instructor. The chemistry department does not loan glasses. While in the laboratory, you must wear the safety glasses at all times; even if you have finished with the experiment,

others may still be working. You will not be allowed to be in the lab without your safety glasses.

•You must wear closed-toe shoes in the lab. If you come to lab with open-toe shoes, you will have to leave lab and put on proper shoes before returning.

You must watch the safety video and do the safety quiz before your first lab.

3. **Post-lab**

Post lab quiz. You **may** be given a postlab quiz, in the lab. The quiz will be short and will be based on the experiment you did the previous week. You may not use any material while taking it. The average of all the postlab quiz grades will be part of the bonus lab grade.

Lab reports. Each lab report consists of a report; make sure you show the necessary calculations where called for. If you worked with an unknown, make sure that you record the unknown number or letter on your report sheet. Wherever a written answer is called for on the report, it needs to be in proper English. If you use ink, make any corrections on your report the same way you do in your notebook – draw one line through the error and write in the correct value beside it. If you need to correct a large part of your report, it may be best to draw a line through the erroneous portion and attach an additional sheet to your report with the correct data. Do NOT use whiteout. Be sure that you have addressed all the questions before you turn in your lab report.

Your lab report should be neat and legible. If I cannot follow what you've done, you will lose points.

Since a lab report is a graded assignment, it is expected that you will complete it fairly independently – that is, you should only ask me questions if you do not understand what the lab report is asking for. Do not ask things like "Did I do this right?" or "Is this correct?" There's no point in grading an assignment if you are told what you've done is correct or incorrect before you turn it in.

On some lab reports, you will be asked to identify possible sources of error in the experiment. For this, you need to be specific – terms like "human error" or "experimental error" are too vague and are not acceptable answers.

Lateness. Due dates of the lab reports are will be posted on canvas.
Lab reports turned in late after class is over on the due date will lose 10 points, and 10 additional points for every day late. If you frequently turn in assignments late, the penalty will go up.

Grading

Lab grade. Your lab grade will be the average of your report grades, quality checks, lab notebooks, in-lab excel evaluation, and instructor evaluation. Postlab quiz, Spartan, excel assignments will constitute an additional 1% bonus point.

Grade components

Lab notebooks	55%
Lab reports	15%
Quality checks	20%
In-lab Excel evaluation	10%
Total	100%

Grading scale. Grades are normally assigned as follows:

93.0 and up	A	77.0 – 79.9	C+
90.0 – 92.9	A-	73.0 – 76.9	C
87.0 – 89.9	B+	70.0 – 72.9	C-
83.0 – 86.9	B	67.0 – 69.9	D+
80.0 – 82.9	B-	63.0 – 66.9	D
		62.9 and below	F

Laboratory notebooks

The notebook carbon copy pages you turn in for each experiment will be graded on a 100-point basis. See the Canvas documents on Notebooks. You will receive up to 10 points for your prelab work; up to 20 points for performing the experiment and turning in the carbon copy and the lab report; and up to 70 points on the report itself (including data, calculations, results, and answers to questions). If a report is turned in so late than the other reports on that experiment have been graded and returned, the maximum grade will be 30. If you turn in incomplete reports more than once, they may be given grades as low as 20. Notebook pages turned in late (not at the end of the lab session) will lose 10 points, and 10 additional points for every day late.

To encourage learning from feedback, the laboratory notebook grades will be worth an increasing percentage of the course grade over time.

- Experiments 1, 2, 3, and 4 (parts I and II) are worth 4% each. total 16%
- Experiments 5, 6, 7 and 8 are worth 6% each total 24%
- Experiment 9 (final project) worth 7.5% each total 15%

Laboratory notebooks total 55%

Laboratory reports

To encourage learning from feedback, the laboratory report grades will be worth an increasing percentage of the course grade over time. See the Canvas document on lab reports for more information, including due dates. Lab reports are graded on a 100-point basis. Lab reports turned in late will lose 10 points, with 10 additional points for every day late. If you frequently turn in assignments late, the penalty will go up.

- Lab report 1 4%
- Lab report 2 5%
- Lab report 3 6%

Lab reports total 15%

Quality checks

To encourage personal responsibility, your accuracy and precision in performing important laboratory techniques will be evaluated.

- Quality check 1 3%
- Quality check 2 7%
- Quality check 3 10%

Quality checks total 20%

In-lab Excel evaluation
You will be given an in-lab Excel assignment in order to evaluate your proficiency in using this spreadsheet program. You will be given a laboratory scenario with a beginning question, a procedure, and raw data from a student notebook. You will make a claim, provide evidence (using Excel to create tables and/or graphs, and perform calculations with experimental data), and reasoning.

In-lab Excel evaluation 10%

Total lab course grade 100%

Excel and Spartan online modules and assignments
During the semester, you will be asked to complete four Excel and Spartan software online training modules and assignments through the CANVAS site to help you become proficient. Completion of these assignments will count toward your bonus point.

Evaluation. Your lab instructor will evaluate your performance and conduct in lab. This evaluation will count as an additional grade; it will be based on such items as being on time, being prepared, following the safety rules, working independently and efficiently, finishing on time, and leaving the lab clean.

Lab grade. Your lab grade will be the average of your report grades, your postlab quiz average, and your evaluation. See your course syllabus for how the lab grade is used in determining your course grade.

Missed lab. The laboratory is part of the scheduled class and should be treated as such. The only acceptable reasons for missing a lab are illness/emergency, a religious holiday, or a college-related activity (such as a field trip or a trip where you are representing the school). If you miss a lab for any other reason, you will receive a zero. If you do not follow the procedure below, you will receive a zero regardless of the reason:

- In the case of an illness or emergency, you must let me know the reason by the date and starting time of the lab. If the reason is acceptable, you may be allowed to make up the lab another day that week or if that is not possible, that lab will not be counted.
- If you know you are going to need to miss lab for a religious holiday or a college-related activity, you must talk to me at least a week before the lab. You may be allowed to make up the lab another day that week or if that is not possible, that lab will not be counted.

Except for college-related activities, **only ONE** lab may be missed without a grade penalty. A second missed lab will result in an F in lab and therefore an F in the course, unless prior arrangements are made with me.

Some things are NEVER acceptable excuses for missing a lab, such as leaving early for break, a doctor's appointment (unless due to an emergency), meetings, something scheduled for another class, etc.

Honor Code

A lab report and a lab quiz must be your work and your work alone; you may not give or receive assistance. This means you may not discuss the lab report with any other student. You may in some cases look up data on the internet or in a handbook, but you may NOT look up how to perform a calculation or answer a question. Make sure you understand the provisions of the Honor Code as well as the information on the Honor Code pledge you sign. If you have any doubt as to how the Honor Code applies to any assignment, ask your lab instructor. Your name on a lab report is your pledge that you received no assistance from another student and you did not discuss the report with any other student.

Canvas. You are expected to read our class's Canvas site regularly.

General comments on lab grades

(a) Coming to lab unprepared – without your lab manual, lab notebook, safety glasses, and closed-toe shoes – sends the message that you do not take lab seriously, especially if this happens more than once. This will affect your lab evaluation.

(b) You should be prepared to start to work as soon as you go into the laboratory. Your carbon copy notebook should already be prepared before coming to the prelab meeting. Additionally, if you frequently take longer than everybody else to finish the experiment, you should examine the way you are preparing for lab and how you are working in the lab, as this will affect your lab evaluation.

(c) Be sure you know which experiment you are doing in lab each week. This is especially important if the schedule is changed to keep the lecture and lab aligned. Changes in the schedule will be posted on the Canvas class site and announced in class.

Remember SAFETY ALWAYS.