

Syllabus

CHM 3120L ANALYTICAL CHEMISTRY LABORATORY

Spring 2025

Faculty Instructor: Dr. Alexander Jacobs, Leigh 202A
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Office Hours Monday 11:30am-12:30pm/Friday 1 pm-2 pm Leigh Hall 202
Or by appointment
Simultaneously by Zoom ID: 985 770 6216 Password: Officehr

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Course Website: Canvas; Please visit the website regularly for announcements and resources. Everything is posted under "Files"

Videos available at: <https://www.chem.ufl.edu/undergraduate/courses-and-curriculum/chemistry-laboratories/analytical/>

Required Materials

Laboratory Manual: No lab manual is required. All materials will be posted on the e-learning site, under Files.

Laboratory Notebook: Any sensible laboratory notebook, to be used only for this lab, is suitable. You will turn in scans or photos of your notes, retaining the original notebook for your own use. Please be sure that what you submit is legible and clear.

Laboratory Attire: The Essentials: Long, loose-fitting pants, full shirt, shoes which cover the feet, departmentally-approved safety glasses, tie-back for long hair.

Course Objectives

CHM 3120L is an introductory laboratory course in Analytical Chemistry. By the end of the semester, students are expected to demonstrate:

- proper laboratory techniques for quantitative chemical measurements including accuracy on unknowns
- knowledge of a select group of analytical methods
- competence in data analysis, statistics and preparation of professional laboratory reports

Grading

Your grade will be determined by the accuracy of your results, the quality of your reports, the quality of your laboratory notes, your competence in essential laboratory manipulations, and your performance on written quizzes. Grades will be posted in the Canvas gradebook.

Accuracy	6 @ 35 points	210
Questions, Reports and Notes	8 @ 70 points	560
Practical Exams	4 @ 40 points	160
Written Quizzes	3 @ 45 points	<u>135</u>
		1065 total

The following grading scale will be used:

<u>Letter Grade</u>	<u>Percentage</u>	<u>Letter Grade</u>	<u>Percentage</u>	<u>Letter Grade</u>	<u>Percentage</u>
A	≥93	B-	≥80	D+	≥67
A-	≥90	C+	≥77	D	≥64
B+	≥87	C	≥73	E	<60
B	≥83	C-	≥70		

There may be a curve, there may not be a curve.

Notes:

- 1) There are two part to this course: the lab lecture and the lab proper. You must attend both sections you signed up for, especially the lab lecture. The lab lecture will cover the lab material and experiment you will be performing this week.
- 2) Prior to the first lab/lab lecture, visit the e-learning site and review Preliminary Handouts 1-3, 5: laboratory safety, basic lab rules, laboratory notebook, and fundamental techniques. Also read the handout for Experiment #1.
- 3) Each lab section is only 2 periods. No extra time will be given if an experiment is not complete. Please come to lab prepared.
- 4) You will need to bring a copy of the lab experiments to your lab period. This can be done with either a print out, on a tablet or a laptop. It is advised not to use your phone.
- 5) On the first day, you select a workstation. This is where you will complete your experiments. Everything you will need will be at that station.
- 6) A minimum of 18 out of 35 accuracy points will be given if the experiment is performed, the results are calculated correctly, and deadlines are met. For labs with an unknown number, the number must be reported or will get an accuracy score of zero.
- 7) For labs 1-5, there will be questions at the end of the lab handout. You will turn in the answers to these questions and calculations along with your results, tabulated and presented nicely. Starting with lab 2, you will be asked to write a section of a lab report (Intro, Experimental, Results and Discussion and Conclusion) with each lab. For lab 6 and 7, you will be writing a full lab report. More details will be given about each section as the semester goes on. There are some examples of lab reports on Canvas. Videos covering scientific writing will be posted to Canvas.
- 8) Lab reports and answers to questions must be typed. By lab 2, all calculations must be shown through Microsoft Equation Editor.
- 9) A copy of your lab notes must be submitted with your reports. Lab notes may be taken with a notebook or a tablet, but they must be handwritten in some form. A spreadsheet does not count as lab notes.
- 10) Lab reports are due at the specified time on Canvas for your section, i.e. at the start of the following lab period.

- 11) A 10% penalty off the final score of the report will be assessed each time a result or report is submitted late. The maximum permissible late time is one week.
- 12) All written work (late or otherwise) must be received by 11:59 PM on April, 4/23/25.
- 13) Each student is expected to pass laboratory practical exams on four essential analytical skills (use of the analytical balance/weighing by difference, quantitative transfer/use of a volumetric flask, use of glass pipets and use of micropipettes). The tests will be given by the TA during the regular laboratory period at times mutually acceptable to both the student and the TA.
- 14) Three written quizzes will be given on the dates specified on the schedule. Quizzes will be given on Canvas. They are open note, but you must work alone. If you wish to go over your quiz, please contact your TA. The questions in your lab write ups will greatly help you prepare for the quizzes.
- 15) Attendance is required at all scheduled laboratory periods and lab laboratory lectures, unless you are informed otherwise by your TA or the instructor. Don't come to a Wednesday lab lecture if you have a Monday or Tuesday lab.
- 16) Make-ups will be granted only when justified. If you know ahead that you will have to miss lab, notify your TA and Dr. Jacobs in advance. If you are sick and cannot reach anyone before lab, you will have to present written evidence of the illness. **If you are not feeling well, do not come to lab.** There are 6 sections of lab, make ups are easy to fit in. Recordings will be available of the lab lecture for those who have excused absences.
- 17) Plagiarism will not be tolerated. Students are expected to obey the University of Florida Honor Code, detailed at
- The Honor Code (<http://www.dso.ufl.edu/sccr/process/student-conduct-honor-code/>) specifies a number of behaviors that are in violation of this code and the possible sanctions. Furthermore, you are obligated to report any condition that facilitates academic misconduct to appropriate personnel. If you have any questions or concerns, please consult with the instructors or TAs in this class.
- You are required to abide by the Student Honor Code. Any violation of the academic integrity expected of you will result in a minimum academic sanction of a zero on the assignment. Any alleged violations of the Student Honor Code will result in a referral to Student Conduct and Conflict Resolution. Please review the Student Honor Code and Student Conduct Code at <https://sccr.dso.ufl.edu/policies/student-honor-code-student-conduct-code>
- 18) If you are involved in a laboratory accident, you must go to the infirmary for treatment.
- 19) Students requesting classroom accommodation must first register with the Dean of Students Office. The Dean of Students Office will provide documentation to the student who must then provide this documentation to the instructor when requesting accommodation.
- 20) Should school be closed due to a storm, the schedule will be pushed back for makeups.

Course Fees: You have already paid this, but the fee for this course is \$30.00

Laboratory Schedule

Note: Note that the schedule may change due to weather/holidays/pandemic

Dates (starting date)	Preparation and Lab Lecture (in bold)	Lab Work	Quizzes	Assignment Due
Begin Jan 13th		No lab (add/drop week)		
Week 2 (week of Jan 20th)		No lab due to MLK Jr. Day		
Week 3 (week of Jan 27th)	Read Handouts 1-6 Read Experiment 1 Lab lecture 1	Experiment 1: Balance use Pipet use/calibration		
Week 4, (week of Feb 3rd)	Read Handout 7 Read Experiment 2 Lab lecture 2	Begin Soda Ash Titrations HCl/NaOH titrations		Experiment 1 results and lab notes
Week 5 (week of Feb 10th)	Review handouts to prepare for Quiz 1 Writing an Introduction	KHP/NaOH titrations Finish Soda Ash	Quiz 1 and Deadline for Weighing Practical	
Week 6 (week of Feb 17th)	Read Experiment 3 Lab lecture 3/Writing an Experimental	Beer's Law measurement		Soda Ash questions, results, <u>Introduction</u> and notes due
Week 7 (week of Feb 24th)	Read Experiment 4 Lab lecture 4	Spectrophotometric Fe		Beer's Law questions, results, <u>Experimental</u> and notes due
Week 8 (week of Mar 3rd)	Writing a Results and Discussion/Using Excel	Spectrophotometric Fe Finish Lab 4	Quiz 2 Deadline for Pipetting Practical	
Week 9, (week of Mar 10th)	Read Experiment 5 Lab Lecture 5/Writing a Conclusion	Chloride Ion Selective Electrodes		Spec Fe questions, results, <u>Results and Discussion</u> and notes due
Week 10 (week of Mar 17th)		No Lab due to Spring Break		
Week 11 (week of Mar 24th)	Read Experiment 6 Lab lecture 6	Fluorescence of Quinine; Standard additions and Determination of quinine in cinchona bark	Deadline for volumetric flask practical	ISE questions, results, <u>Conclusion</u> and lab notes due
Week 12 (week of Mar 31st)	No in person lab this week No lab lecture this week	At home Chromatography assignment	Quiz 3	Quinine in tonic water report and notes due
Week 13 (week of Apr 7th)	Read Experiment 7 Lab lecture 7	Chromatography of Coffee	Deadline for Micropipette Practical	At home Chromatography assignment
Week 14 (week of Apr 14th)				Chromatography of Coffee report and notes due
Week 15 (week of Apr 21st)				