

Syllabus

CHM 3120L ANALYTICAL CHEMISTRY LABORATORY

Spring 2019

Faculty Instructor: Dr. Alex Jacobs, Leigh 202A
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Office Hours:
If the door to my office is open, please come on in
You can also email me for an appointment

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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 either carbon copies, or scans or Xerox copies 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	7 @ 70 points	490
Questions, Reports and Notes	8 @ 70 points	560
Practical Exams	3 @ 40 points	120
Written Quizzes	4 @ 45 points	<u>180</u>
		1350 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) Prior to the first lab, 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.
- 2) A minimum of 35 out of 70 accuracy points will be given if the experiment is performed, the results are calculated correctly and deadlines are met.
- 3) At the beginning of the semester, each lab will be accompanied by questions at the end of the lab and 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. By lab 6, you will be only writing lab reports. More details will be given about each section as the semester goes on.
- 4) 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.
- 5) Each student is expected to pass laboratory practical exams on three essential analytical skills (use of the analytical balance/weighing by difference, quantitative transfer/use of a volumetric flask and use of a pipets). The tests will be given by the TA during the regular laboratory period at times mutually acceptable to both the student and the TA.
- 6) Four written quizzes will be given on the dates specified on the schedule. You will be allowed to see your graded written quiz, but it must be returned to the TA before leaving lab.
- 7) Attendance is required at all scheduled laboratory periods, unless you are informed otherwise by your TA or the instructor. It is flu season. If you are sick, do NOT come to lab. Please email the instructor or the TA ASAP. We will figure out a make-up when you are well.
- 8) Once an unknown result has been submitted, no repeat work on that unknown is allowed.
- 9) Plagiarism will not be tolerated. Students are expected to obey the University of Florida Honor Code, detailed at <https://www.dso.ufl.edu/sccr/process/student-conduct-honor-code/>.

- 10) 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.
- 11) If you are involved in a laboratory accident, you must go to the infirmary for treatment.
- 12) 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.

Course Fees: You have already paid this, but the fee for this course is \$45.00

Laboratory Schedule

Note: Note that the schedule may change due to weather

Dates (starting date)	Preparation	Lab Work	Quizzes	Results Due
Begin January 14th Week 1	Read Handouts 1-6 Read Experiment 1 Watch video: Lab Techniques	Check in Experiment 1 Balance use Pipet use/calibration		
Week 2 (Jan 28 th)	Read Handout 7 Read Experiment 2	Begin Soda Ash Titrations HCl/NaOH titrations		Experiment 1 results and lab notes
Week 3 (Feb 4 th)		KHP/NaOH titrations Finish Soda Ash	Quiz 1 and Deadline for Weighing Practical	
Week 4 (Feb 11 th)	Watch ascorbic acid video Read Experiment 3 Review handouts to prepare for Quiz 1	Prep KIO_3 and $\text{Na}_2\text{S}_2\text{O}_3$ Standardize $\text{Na}_2\text{S}_2\text{O}_3$		Soda Ash questions, results, <u>Introduction</u> and notes due
Week 5 (Feb 18 th)		Ascorbic acid titrations Finish lab 3		
Week 6 (Feb 25 th)	Read Experiment 4 Watch Spec Fe video	Spectrophotometric Fe	Quiz 2 Deadline for Pipetting Practical	Ascorbic Acid questions, results, <u>Experimental</u> and notes due
Week 7 (Mar 11 th)		Finish Spec Fe if needed		
Week 8 (Mar 18 th)	Read Experiment 5 Watch ISE video	Chloride Ion Selective Electrodes	Quiz 3 Deadline for volumetric flask practical	Spec Fe questions, results, <u>Results and Discussion</u> and notes due
Week 9 (Mar 25 th)	Read Experiment 6	Fluorescence of Quinine; Standard additions		ISE questions, results, <u>Conclusion</u> and lab notes due
Week 10 (Apr 1 st)	Read Experiment 7	Determination of quinine in cinchona bark		Quinine in tonic water report and notes due
Week 11 (Apr 8 th)	Read Experiment 8	Error Propagation with Beer's Law	Quiz 4	Cinchona bark report and notes due.
Week 12 (Apr 15 th)		Check Out		Lab 8 report and notes due