

# Syllabus

## CHM 3120L ANALYTICAL CHEMISTRY LABORATORY

### Spring 2018

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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
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:

A (88.0–100%), A- (86.0-87.9%), B+ (81.5-85.9%), B (78.5-81.4%), B- (74.5-78.4%), C+ (71.5-74.4%), C (67.0-71.4%), C- (64.5-66.9%), D+ (60.0-64.4%), D (57.0-59.9%), D- (53.0-56.9%), E (<53.0%).

### **Notes:**

- 1) Prior to the first lab, visit the e-learning site and review Preliminary Handouts 1-5: laboratory safety, basic lab rules, laboratory notebook, laboratory reports and fundamental techniques. Also read the handout for Experiment #1.
- 2) A minimum of 30 out of 70 accuracy points will be given if the experiment is performed, the results are calculated correctly and deadlines are met.
- 3) For each of the eight experiments you will write concise formal laboratory reports. Reports are due at the beginning of your laboratory period during the week specified. The laboratory experimental guidelines will contain questions for each experiment. These are designed to help you prepare for the written quizzes. Written answers are not required as part of the reports. A report template is provided for the Soda Ash lab.
- 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.
- 8) Once an unknown result has been submitted, no repeat work on that unknown is allowed.
- 9) 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. Smith 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.

## Laboratory Schedule

**Note:** Because of holidays, different sections may be working on different experiments during any given week. Regardless, each section will follow the sequence of activities given below.

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