# Syllabus

## CHM 3120L ANALYTICAL CHEMISTRY LABORATORY

**Spring 2021**


Faculty Instructor: Dr. Alexander Jacobs, Leigh 202A
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Office Hours:
Friday 12:30-1:30 via Zoom

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Undergrad TAs

| | | | |
|---|---|---|---|
| Valerie Kreisel | valeriekreisel | Maggie Zawoy | zawoym |
| Mitch Gulkis | mitchell.gulkis | Abigail Raffalski | abigailraffalski |
| Brian Martinez | bmartinez1 | Maria Cuellar | mcuellar1 |


**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. Print outs of the lab will be at your personal station

**Laboratory Notebook:** Any sensible laboratory notebook, to be used only for this lab, is suitable. You will turn in images of your notes, however, we will just check before you leave lab. Please be sure that what you submit is legible and clear.

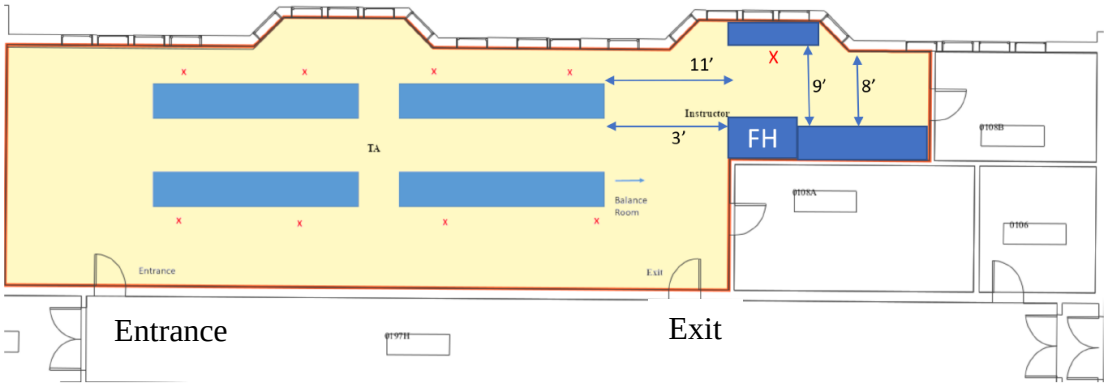
**Laboratory Attire:** The Essentials: Long, loose-fitting pants, full shirt, shoes which cover the feet, departmentally-approved safety glasses, tie-back for long hair.

**COVID-19 PPE**

We will have face-to-face instructional sessions to accomplish the student learning objectives of this course. In response to COVID-19, the following policies and requirements are in place to maintain your learning environment and to enhance the safety of our in-classroom interactions:

You are required to wear approved face coverings at all times during class and within buildings. Following and enforcing these policies and requirements are all of our responsibility. Failure to do so will lead to a report to the Office of Student Conduct and Conflict Resolution. You are required, at all times, to wear gloves and goggles. Gloves will be provided. Gloves will be disposed of when you leave the lab in the designated waste by the exit. No materials can leave the lab. That means notebooks, pens, calculators, etc. must remain in the lab. Your phone can be used to take pictures of your notes. Disinfecting wipes will be provided to clean your phones and

workstation before you leave. UF Chemistry Band hand sanitizer will be available in the lab. You will enter through the door on the sound end of LEI 108 and exit from the door on the north end (see diagram below)




**Plaza of the Americas on this side of Leigh Hall**

## 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
- learning the basics of laboratory report writing, figure making and data interpretation

## Grading

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

| | | |
|---|---|---|
| Accuracy | 3 @ 45 points | 135 |
| Questions, Reports, at home assignments and Notes | 8 @ 70 points | 560 |
| Written Quizzes | 3 @ 45 points | 135 |
| Lab Practical Exams | 3 @ 40 points | 120 |
| | | 950 total |

The following grading scale will be used:

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

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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) Introduction videos will be posted prior to each in person lab. These videos will provide details about the experiments that will assist you in performing the lab.

3) A copy of the experiment will be at your station. You do not need to bring in a copy.

4) Please note your schedule at the bottom of the syllabus. You will alternate between coming into lab and working on an assignment at home.

5) On the first day, you will pick a workstation in the lab. This is where you will complete your experiments for your in-person assignments. Everything you will need will be at that station.

6) Remember the rule of 6. There should always be at least 6 floor tiles between you and someone else. The tiles are 12"x12", so 6 tiles is 6 feet apart. The benches are 5 ft long on the short side, please keep this in mind.

7) 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.

8) 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) with each lab.

9) Lab reports and answers to questions must be typed. By lab 2, all calculations must be shown through Microsoft Equation Editor.

10) A copy of your lab notes must be submitted with your reports.

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. Lab reports are due at the specified time on Canvas for your section

12) 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.

13) 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.

14) Attendance is required at all scheduled laboratory periods, unless you are informed otherwise by your TA or the instructor.

15) 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.
    The sale or transfer of graded or ungraded course materials to another student for use in this course (current or future semesters) is in violation of the Honor Code. All violations will be reported.

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.

a) If you are experiencing COVID-19 symptoms (Click here for guidance from the CDC on symptoms of coronavirus ), please use the UF Health screening system and follow the instructions on whether you are able to attend class. Click here for UF Health guidance on what to do if you have been exposed to or are experiencing Covid-19 symptoms.

b) Course materials will be provided to you with an excused absence, and you will be given a reasonable amount of time to make up work. Find more information in the university attendance policies.

17) If you are involved in a laboratory accident, you must go to the infirmary for treatment.

18) 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 (A) (*For Monday lab, see below*)

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

| Dates (starting date) | Preparation | Lab Work | Quizzes | Results Due |
|---|---|---|---|---|
| **Begin January 11th** Week 1 | No lab | | | |
| Week 2 (Jan 18th) | Read Handouts 1-3,5,6<br>Read Experiment 1<br>Watch video: Lab Techniques | Check in<br>Experiment 1<br>Balance use<br>Pipet use/calibration | | |
| Week 3 (Jan 25th) | | At home assignment 1 | | Experiment 1 results and lab notes on Canvas |
| Week 4 (Feb 1st) | Read Experiment 2 | Prep NaOH and HCl<br>Standardize KHP | Quiz 1<br>Practical (Weighing by Difference) | At home assignment 1 due |
| Week 5 (Feb 8th) | | At home assignment 2 | | |
| Week 6 (Feb 15th) | | Continue Lab 2 | | At home assignment 2 due |
| Week 7 (Feb 22nd) | | At home assignment 3 | Quiz 2 | Titration questions, results, Introduction and notes due |
| Week 8 (Mar 1st) | Read Experiment 3 | Spectrophotometric Fe | Practical (Pipetting) | At home assignment 3 due |
| Week 9 (Mar 8th) | | At home assignment 4 | | Spec Fe questions, results, Experimental and notes due |
| Week 10 (Mar 15th) | Read Experiment 4 | Chloride Ion Selective Electrodes and check out | Quiz 3<br>Practical (Volumetric Dilutions) | At home Assignment 4 due |
| Week 11 (Mar 22nd) | | | | ISE questions, results, Results and Discussion and notes due |

# Laboratory Schedule (A) (***Monday Section only***)

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

| Dates (starting date) | Preparation | Lab Work | Quizzes | Results Due |
|---|---|---|---|---|
| **Begin January 11th** Week 1 | No lab | | | |
| Week 2 (Jan 18th) | No lab | | | |
| Week 3 (Jan 25th) | | At home assignment 1 | | |
| Week 4 (Feb 1st) | Read Handouts 1-3,5,6<br>Read Experiment 1<br>Watch video: Lab Techniques | Check in<br>Experiment 1<br>Balance use<br>Pipet use/calibration | | At home assignment 1 due |
| Week 5 (Feb 8th) | | At home assignment 2 | | Experiment 1 results and lab notes on Canvas |
| Week 6 (Feb 15th) | Read Experiment 2 | Prep NaOH and HCl<br>Standardize KHP | Quiz 1<br>Practical (Weighing by Difference) | At home assignment 2 due |
| Week 7 (Feb 22nd) | | At home assignment 3 | | |
| Week 8 (Mar 1st) | | Continue Lab 2 | | At home assignment 3 due |
| Week 9 (Mar 8th) | | At home assignment 4 | Quiz 2<br>Practical (Pipetting) | Titration questions, results, Introduction and notes due |
| Week 10 (Mar 15th) | Read Experiment 3 | Spectrophotometric Fe | | At home Assignment 4 due |
| Week 11 (Mar 22nd) | | | | Spec Fe questions, results, Experimental and notes due |
| Week 12 (Mar 29th) | Read Experiment 4 | Chloride Ion Selective Electrodes and check out | Quiz 3<br>Practical (Volumetric Dilutions) | |
| Week 13 (Apr 5th) | | | | ISE questions, results, Results and Discussion and notes due |

# Laboratory Schedule (B)

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

| Dates (starting date) | Preparation | Lab Work | Quizzes | Results Due |
|---|---|---|---|---|
| **Begin January 11th** Week 1 | | No lab | | |
| Week 2 (Jan 18th) | | At home assignment 1 | | |
| Week 3 (Jan 25th) | Read Handouts 1-3,5,6<br>Read Experiment 1<br>Watch video: Lab Techniques | Check in<br>Experiment 1<br>Balance use<br>Pipet use/calibration | | At home assignment 1 due |
| Week 4 (Feb 1st) | | At home assignment 2 | | Experiment 1 results and lab notes on Canvas |
| Week 5 (Feb 8th) | Read Experiment 2 | Prep NaOH and HCl<br>Standardize KHP | Quiz 1<br>Practical (Weighing by Difference) | At home assignment 2 due |
| Week 6 (Feb 15th) | | At home assignment 3 | | |
| Week 7 (Feb 22nd) | | Continue Lab 2 | | At home assignment 3 due |
| Week 8 (Mar 1st) | | At home assignment 4 | Quiz 2 | Titration questions, results, Introduction and notes due |
| Week 9 (Mar 8th) | Read Experiment 3 | Spectrophotometric Fe | Practical (Pipetting) | At home assignment 4 due |
| Week 10 (Mar 15th) | | | | Spec Fe questions, results, Experimental and notes due |
| Week 11 (Mar 22nd) | Read Experiment 4 | Chloride Ion Selective Electrodes and check out | Quiz 3<br>Practical (Volumetric Dilutions) | |
| Week 12 (Mar 29th) | | | | ISE questions, results, Results and Discussion and notes due |