

# CHEM 211L Course Syllabus Spring 2023

**Instructor:** Dr. Janis Borchers, 0273 Gilman Hall, email: [jborch67@iastate.edu](mailto:jborch67@iastate.edu)

**Instructor Help Session:** Wednesdays 9-10 am and Thursdays 1-2 pm

**Lab Supervisor:** Dr. Feili Qin, 1279 Gilman Hall, email: [flqin@iastate.edu](mailto:flqin@iastate.edu); office hours by appointment.

**Laboratory Location:** 1201 & 1202 Gilman Hall

Laboratory Schedule:	Section	Time	Teaching Assistant
	1	Mon Wed 12:05 -2:55 PM	Ruhul Amin
	3	Tue Thu 9:00 AM – 11:50 AM	Stasia Harycki
	4	Tue Thu 12:10 PM – 3:00 PM	Donghyun Ryoo
	5	Tue Thu 3:10 PM – 6:00 PM	Sarah Szakas

**CHEM 211 and 211L** are co-requisite courses, i.e., students in CHEM 211L are required to take CHEM 211L at the same time or to have already received credit in CHEM 211. Co-requisite course requirements are strictly enforced: Students who do not meet the co-requisite should drop the course or **they will receive an F in the course.** Students who drop or audit CHEM 211 will be required to drop CHEM 211L. To add lab sections during the first week of class, use AccessPlus. After the first week, please go to the Undergraduate Chemistry Office in 1608 Gilman.

**Learning Objectives:** 1) Attain lab skills for quantitative chemical analysis; 2) learn how to perform basic instrumental analysis; 3) know how to interpret and calculate data; and 4) work safely in the laboratory.

<b>Grading:</b>	1) Quantitative Analysis (13 unknowns @ 50 points each)	650
	2) Notebook Checks (2 checks @ 100 points each)	200
	3) Pre-lab questions (13 pre-labs @ 15 points each)	195
	4) Lab Reports (13 lab reports @ 35 points each)	455
	5) TA evaluation of students	50
<b>Total Points:</b>		1550

The final grade distribution will be determined by the instructor at the end of the course.

## Course Materials:

- The lab manual and supplementary reading material will be supplied *via* Canvas.
- You must purchase a lab coat and safety glasses or goggles.
- An iPad will be provided as an electronic laboratory notebook. A Logitech Crayon smart pencil will also be provided. You will use Microsoft Word to take in lab notes. You will save your electronic lab notebook on OneDrive.
- Submission links for your pre-labs, unknown reports and lab reports are available on Canvas.

- **Quantitative Analysis Laboratory will meet in the first week of classes;** you will check in and need to lock your drawer. Important information regarding check-in procedures, safety, and laboratory notebooks contained in the lab manual will be covered. **Before check In - Carefully read pages 1 - 12 of the Lab Manual.**

**Lab coat and safety goggles are required by the second lab meeting.**

**Lab Safety:** *Personal Protective Equipment (PPE) such as **safety eyewear, gloves, lab coat, long pants and fully covered shoes** are important components for lab safety. You will not be allowed to do the experiment if you are not in proper attire. You are NOT allowed to wear these PPE (gloves and lab coat) out in the hallway to avoid contaminations. **Sandals are NOT allowed.** Failing to follow these safety rules will also result in removal from the lab and the loss of points.*

- **Pre-lab Questions:** Throughout the laboratory manual, there are pre-lab questions. Each student must answer all pre-lab questions for each experiment in their electronic NOTEBOOK and **submit pre-lab for each experiment on Canvas before the student will be allowed to start the experiment.** Thirteen out of fourteen pre-labs will be graded. **It is the student's responsibility to turn in the pre-lab before starting the experiment. Pre-labs submitted late will not be graded.** All pre-labs must be submitted on Canvas.
- **Issuing of Unknowns:** Your TA will issue the unknown samples (after receiving the pre-lab questions). Each sample has a number that must be entered in your laboratory notebook. This number is needed when reporting the results of the analysis. You may not request an additional supply of your unknown. If you ask for more unknown, you will be issued a new one and it will be recorded as if you are repeating the experiment (see repeating an experiment below). **Results for an experiment must be reported within 1 week of completion of the experiment.**
- **Reporting of Unknown Results:** **The deadline for reporting the result of each laboratory analysis is one week** from the date the experiment was finished. You submit your lab results via Canvas. Report the results from each trial you performed, and the mean and standard deviation of all the trials. If you eliminate a data point(s) because of experimental error, include any statistical analysis (i.e. t-test) you used to justify the rejection of the result(s). The grade for that experiment will be posted on Canvas. **Your notebook will be used to determine when the lab was completed.** The maximum score on a lab experiment is 50, and the minimum score for a completed lab is 20. Students who fail to complete an experiment will receive zero points for that experiment.
- **Lab Report Format:**
  - Objective (1~ 2 sentences): 5 points
  - Principles (1~ 2 paragraphs or half a page): 15 points
  - Results and Discussion (show all the calculations) 15 points
  - The whole report is up to 2-3 pages

**The deadline for turning in the lab report of each laboratory analysis is one week. Students who fail to turn in the lab report in one week after finishing the lab will receive zero points for that experiment.** All lab reports must be submitted on Canvas.

- **Calculation Errors and Repeating an Experiment:** If an unsatisfactory score is received on an experiment due to calculation error, you may check for calculation errors and submit recalculated result. **Five points will be deducted for a recalculation.** Your TA will check your old calculation with the new calculation before it is accepted. Your TA will also check to see that your recalculation is written in your notebook prior to giving you a signed report slip. Only one recalculation is allowed per experiment, and it must be handed in one week after the initial grade is posted on Canvas.

If no calculation error was made and you are still dissatisfied with your score, you may repeat the experiment one more time using a different sample; **it is allowed only if there is sufficient time and the necessary apparatus is available.** This sample should be obtained from your TA when you are ready to repeat the experiment. **Five points will be deducted** from the grade received from the new experiment. The higher score between the two trials will be your final score for that experiment.

- **Missing a Lab Meeting:** TA's will take roll at each lab meeting. **If a student misses a lab due to extenuating circumstances** (Medical emergency, funeral attendance etc.) and wishes to make up the time, he/she must obtain permission from Dr. Qin within 1 week of missing the lab. You need to bring a written document for evidence such as doctor's note. Upon approval, Dr. Qin will notify the TA that you will be attending his/her laboratory section to make-up a lab). **In addition, you MUST attend your assigned lab section.**
- **Correlation with Lecture:** One of the objectives of the lab is to give you hands-on experience with the instruments and techniques discussed in lecture. Because of space limitations and the restricted number of devices, however, **some experiments will be performed before the corresponding concepts have been covered in lecture.** In such cases, you will understand the experiment much better and use your time in the lab more efficiently if you read through the corresponding section in the lecture textbook before doing the experiment. You are welcome to visit the class TA for help.
- **Lab Notebook Check:** Your lab notebook will be checked twice during the semester. Attendance on the equipment check-out day is mandatory and will counts 40/100 for your second notebook check. Students who fail to show up on equipment check-out day will result in a 40 points deduction from their second notebook check.

**Laboratory Notebooks** (pp. 10 – 12, lab manual; also see sample notebook in lab):

- Each entry must begin with the date, and signed and dated at the end of lab period.
- The beginning of each experiment should be clearly identified with its title.
- All writing must be legible.
- All data must be recorded directly onto the notebook with units.
- All calculations must be done in the notebook.
- Calibration plots must be included in the notebook.
- Pay attention to the instructions in the manual – some experiments require extra calculations or plots as explained in the lab manual.

#### Teaching Assistants:

- Help sessions/office hours for help with calculations, pre-lab and practice questions.

Section	Lab Time	TA	Office Hours	Email
1	MW 12:05 -2:55 PM	Ruhul Amin	TBA	<a href="mailto:ruhua41@iastate.edu">ruhua41@iastate.edu</a>
3	TR 9 – 11:50 AM	Stasia Harycki	TBA	<a href="mailto:sharycki@iastate.edu">sharycki@iastate.edu</a>
4	TR 12:10 – 3:00 PM	Donghyun	TBA	<a href="mailto:rydh2000@iastate.edu">rydh2000@iastate.edu</a>
5	TR 3:10 – 6:00 PM	Sarah Szakas	TBA	<a href="mailto:sszakas@iastate.edu">sszakas@iastate.edu</a>

**Check in:** Tuesday January 17 & Wednesday January 18

**1st Lab Experiment:** Thursday January 19 & Monday January 23

**Important Course Policies:**

- Late lab report submissions are generally not accepted. Rare exceptions are made for serious reasons such as severe illness or family emergencies. If such is the case, email your TA, instructor or lab coordinator as soon as humanly possible for a deadline extension.
- You must attend your assigned section. You may not makeup an experiment in a different section without permission from your instructor.
- It is your responsibility to make sure that submissions are properly submitted by the deadline. In case of technical problems, please email your TA IMMEDIATELY. Do not wait until the next day or your submission will receive a zero.
- Any complaint regarding a grade MUST be brought up within 1 week of receiving the grade to have any issue addressed. DO NOT WAIT UNTIL THE END OF THE SEMESTER.
- Presence at Lab Check-out is mandatory unless you have an excused absence. Lab Check-out must be done on the scheduled day at the scheduled time. Check-out is worth 40 points.
- Grade concerns brought up after final grades are submitted will not be considered unless there is a demonstrable error on the part of instructor or TA involved.
- Use of personal electronic devices of any type (e.g., laptops and cell phones) is strongly discouraged in the lab. If you choose to use your own personal device in the lab, you do so at your own risk since it is a lab environment.