

Chemistry 178L Course Syllabus

Spring 2023

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Office Hours: TBD; in person or virtual (for virtual, please email beforehand)

Head TA: Raven Buckman (buckm065@iastate.edu)

*CHEM 178 is a co-requisite for CHEM 178L, i.e., students in CHEM 178L must register for CHEM 178 or to have already received credit in 178. However, students in CHEM 178 are not required to take CHEM 178L. 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 178 will be required to drop 178L.** Students may not register to audit CHEM 178L after 5:00 PM on January 30th. The audit does not count towards full-time student status. **To add or drop recitation or lab sections during the first week of class, use AccessPlus. After the first week, please email amwade@iastate.edu or call 515-294-6361. The last day to drop CHEM 178 is March 31st.***

Learning Objectives: (1) understand the importance of instrument calibration; (2) explore various chemical concepts (equilibrium, kinetics, electrochemistry, etc.); (3) study the quantitative aspects of chemical reactions (galvanic cells, electrochemistry, etc.); (4) read and analyze a published research procedure so as to interpret, repeat, modify, and extend the procedure; (5) learn how to write a proper research report (different from lab report).

Required Items:

Laboratory Text: Provided free of charge on the course Canvas site.

Safety Eyewear: UVEX — Model S040C Safety Glasses or Jones & Co. Visorgogs or Magid Glove and Safety Manufacturing “Sapphire” safety glasses. Safety eyewear may be purchased at the bookstore. If you already have goggles from other courses, you may use them as long as they are Z87 impact-rated. Other styles or types of protective eyewear will NOT be permitted.

Lab Coat: Available for purchase from the ISU Bookstore at the Memorial Union, ChemStores (Gilman 1400), or anywhere on the web. If you already have a lab coat from other courses, you may use it as long as the fabric contains more than 50% cotton to ensure it is flame resistant.

Important Course Policies:

1. It is the student's responsibility to make sure that homework is properly uploaded/submitted by the deadline. In case of technical problems, please email IMMEDIATELY your TA. Do not wait until the deadline has passed otherwise your work will not be graded.
2. It is the student's responsibility to check grades on Canvas on a weekly basis.
3. Any complaint on a grade **MUST** be brought up within 1 week of receiving the returned graded work to have the grade corrected. No exceptions.
4. Electronic devices of any type (e.g., laptops and cell phones) cannot be used in the lab. Students will be asked to leave their devices in their backpack. Students may be asked to take pictures with their cell phones of experiments set-ups or reaction products by their TA.
5. Each week, students will work with different lab partners. Lab partners will rotate on a weekly basis. The TA will assign partners at each lab period.
6. Presence at Lab Check-out is mandatory. Absence will result in 5 points being deducted from the last graded item.
7. If no teaching assistant shows up for your recitation/laboratory section, send one student to 1608 Gilman to find a substitute teaching assistant. The department will find a substitute as soon as possible.

Personal Protective Equipment (PPE): Safety eyewear, gloves (provided in lab), lab coat, face covering, and fully covered shoes are important components for lab safety. **Sandals are *not allowed*.** You will not be allowed to do the experiment if you are not in proper attire. **Goggles/lab coat/gloves/are to be worn at all times in the lab until all the chemicals have been put away. Please wear gloves when typing at the computer provided in lab.** Repeated offenses can result in dismissal from the course. In addition, *you are NOT allowed to wear PPE out in the hallway* so as to avoid contamination. **Failing to follow these safety rules will result in the loss of 5 points for each offense starting from the second warning.**

Pre-lab quizzes: You are expected to come to the laboratory prepared to do the work. **Prior** to each class you must have read the appropriate chapter in the electronic lab manual (found on Canvas). You are expected to complete the **pre-lab** quiz for the experiment before your class starts. Pre-lab quizzes may include questions about safety readings (the reading material is found on Canvas). **Late pre-lab quizzes will have 0 points and may not be completed after the due date.** Pre-labs are timed quizzes: once started you will have 30 minutes to complete the quiz in one session. You will be given up to three attempts (each 30 minutes) and the average of the scores will be taken.

Laboratory Notebook: Your laboratory teaching assistant (TA) will discuss the laboratory notebook at the check-in session during the first week of class. Laboratory experiments will be recorded using an electronic lab notebook (ELN) by LabArchives. In the laboratory, each student will have access to a computer. Your lab report will consist of four main parts: pre-lab writing (do not confuse this with the pre-lab quiz), in-lab notes, analysis, and reflective writing. **NOTE:** *for proper submission, you must click the "SUBMIT" button. If you don't, your work will appear as missing.*

Pre-lab writing: You are expected to write the "pre-lab" part of the experiment prior to arriving in class (as evidenced by the timestamp). **Failure to have the pre-lab part completed before class will result in 0 points for that part of the lab report.** The only exception to this requirement will be the first two weeks of classes. This requirement will take place on week 3.

In-lab notes: Methods and observation must be recorded on your ELN during your lab period (as evidenced by the timestamp). **Failure to have the notes completed DURING class will result in 0 points for that part of the lab report.**

Analysis and Reflective writing: Graphs, final data analysis, and calculations as well as reflective writing may be added after your lab period.

Finally, you must submit your ELN **by 11:59 p.m. of three days after the experiment** (e.g., for Monday labs, submit by 11:59 p.m. of Thursday). **Late lab reports will have 0 points (no partial credit).**

Post-lab quizzes must be completed before the next experiment. You will be given three attempts and 1 hour (for each attempt) to complete the quiz in one session. **Late post-lab quizzes will have 0 points and may not be completed after the due date.**

Exam: Project - Photoreduction of Iron(III) in Marine Ecosystems, which involves writing a short proposal and writing a related research report. Students will work in teams of 2–3; the laboratory activities occur over a two-week period (see “Course Schedule”), and there is no Pre-lab or Post-lab quiz for this activity. Evaluation of this project will be scored as follows:

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| (i) | Written Proposal (one per student); | (average of 2 submissions) 100 pts max |
| (ii) | Beer-Lambert determination of iron (II); | 100 pts max |
| (iii) | Project notes and Documentation in ELN; | 100 pts max |
| (iv) | Research report. | 100 pts max |

Each team must submit a research report **no later than 11:59 pm of the date preceding the lab period** for check-out.

IMPORTANT: All the students are responsible for submitting their own copy of the proposal drafts, ELNs, and research report for credit. In detail, proposal drafts and research report are written as a group but each member of the group is required to submit their own copy. ELNs for the project are written and submitted individually as any other ELN.

Missed Experiments: In general, **there are NO MAKE-UP laboratories.** The top 8 experiment scores for each category of pre-lab quizzes, ELNs, and (top 9 for) post-lab quizzes (irrespective of the experiment they belong) will be used to calculate the final grade. Missed experiments will have a score of zero, regardless of the circumstances.

NOTE: Drops are automatically updated on a daily basis starting from week 2. The grade you see on Canvas is already comprehensive of the allowable drops.

Reschedules: Students are allowed to re-schedule one laboratory session due to illness or university-sponsored trip. Eligibility must be demonstrated by providing proof at the moment of the request (e.g., doctor’s note, official letter, appointment summary). It is possible to re-schedule the missed lab only if the make-up lab is scheduled during the same week. Please email the following THREE people (within the same email, not three different emails) to re-schedule a lab session: the course instructor Dr. Sara Pistolesi, the head TA, and your section TA. Please write **“RESCHEDULE, COURSE #, SECTION #”** in the subject line. Please attach your official class schedule so that we can help you with a faster turnaround.

Grading: The score for each experiment is made up of three parts, each with a different weight: pre-lab quiz (8×20 pts = 160 pts), ELN report (8×40 pts = 320 pts), post-lab quiz (9×40 pts = 360 pts). In addition, the final grade will depend on the final exam (project, 400 pts). **Total pts = 1240 pts.**

Grading scale for final grades: A > 93.00%, A- > 90.00%, B+ > 87.00%, B > 83.00%, B- > 80.00%, C+ > 77.00%, C > 73.00%, C- > 70.00%, D+ > 67.00%, D > 63.00%, and D- > 60.00%, and F < 60.00%.

Please note that, with the 6 drops granted (2 for pre-lab quizzes, 2 for ELNs, and 2 for post-lab quizzes), your grade is already higher than it was before the assignment drops. Therefore, NO GRADE ROUNDING OR CURVE WILL BE APPLIED. NO EXCEPTIONS.

Statements

Academic misconduct: Academic Misconduct in any form is in violation of ISU *Student Disciplinary Regulations* and will not be tolerated. This includes, but is not limited to: copying or sharing answers on tests or assignments, plagiarism (including from lab manual), submitting a lab report for an experiment not performed, and having someone else do your academic work. Anyone suspected of academic dishonesty will be reported to the Dean of Students Office.

(<https://www.studentconduct.dso.iastate.edu/academic-misconduct>).

Public Health: If you are not feeling well, you should stay home and focus on your health. Should you miss class due to illness, it is your responsibility to work with your instructor to arrange for accommodations and to make up coursework, as consistent with the instructor's attendance policy. You may choose to wear a face mask and/or receive the COVID-19 vaccine and boosters, as well as other vaccines such as influenza, but those options are not required. Thielen Student Health Center will continue to provide COVID-19 vaccinations free-of-charge to students. The university will continue to offer free masks and COVID-19 test kits during the fall 2022 semester. Other wellbeing resources for students are available at: <https://www.cyclonehealth.iastate.edu/wellbeing-resources/>

Public health information for the campus community continues to be available on Iowa State's public health website. All public health questions should be directed to publichealthteam@iastate.edu.

Accessibility Statement: Iowa State University is committed to assuring that all educational activities are free from discrimination and harassment based on disability status. Students requesting accommodations for a documented disability are required to work directly with staff in Student Accessibility Services (SAS) to establish eligibility and learn about related processes before accommodations will be identified. After eligibility is established, SAS staff will create and issue a Notification Letter for each course listing approved reasonable accommodations. This document will be made available to the student and instructor either electronically or in hard-copy every semester. Students and instructors are encouraged to review contents of the Notification Letters as early in the semester as possible to identify a specific, timely plan to deliver/receive the indicated accommodations. Reasonable accommodations are not retroactive in nature and are not intended to be an unfair advantage. Additional information or assistance is available online at www.sas.dso.iastate.edu, by contacting SAS staff by email at accessibility@iastate.edu, or by calling 515-294-7220. Student Accessibility Services is a unit in the Dean of Students Office located at 1076 Student Services Building.

First amendment Statement: Iowa State University supports and upholds the First Amendment protection of freedom of speech and the principle of academic freedom in order to foster a learning environment where open inquiry and the vigorous debate of a diversity of ideas are encouraged. Students will not be penalized for the content or viewpoints of their speech as long as student expression in a class context is germane to the subject matter of the class and conveyed in an appropriate manner.

Laboratory Experiment Schedule

178L

Spring 2023

Week #	Week of	Experiment
1	Jan-16	Lab Check-In, Safety Orientation, and Introduction to ELN *Monday lab sections will not meet due to University Holiday: week 1 material will be covered during week 2.
2	Jan-23	Reversible and Irreversible Processes
3	Jan-30	Kinetics of the Decomposition of Hydrogen Peroxide
4	Feb-6	Equilibrium
5	Feb-13	Acids, bases, and Salts
6	Feb-20	Buffers
7	Feb-27	Titration Curves
8	Mar-6	<i>Prepare Iron(II) Oxalate for "Solubility Product Constant" exp. + Project groups formation AND Brainstorming for project</i>
9	Mar-13	<i>Spring Break – no classes</i>
10	Mar-20	Determining a Solubility Product Constant
	Mar-24	Deadline for First Proposal submission
11	Mar-27	Oxidation Reduction Reactions
	Mar-29	Deadline for Proposal Draft Feedback from TA
12	Apr-3	Electrochemistry: Galvanic Cells
	Apr-4	Deadline for Final Proposal Submission
13	Apr-10	Electrochemistry: Electrolytic Cells
	Apr-15	Deadline for Final Proposal Feedback from TA
14	Apr-17	Project
15	Apr-24	Project (cont.)
16	May-1	Lab check-out - Attendance is mandatory (5-point penalty on last graded item) Research Report is due at 11:59 pm the night before your regular lab period