

CHEM1241 General Chemistry II Lab

Fall 2025 | M 1:00 – 5:00pm

Instructor Information

Instructor: Elizabeth A. Machunis-Masuoka, PhD, MA

Office: Bolin 307F

Office Hours: TW 8:00 – 10:00am; F 11:00am – 1:00pm

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Course Description

CHEM1241 is a second semester chemistry lab course used to satisfy lab science requirements for BS majors and provide entry level information for students wishing to pursue advanced courses in both chemistry and biology. Students are expected to show competency in all areas of the General Chemistry laboratory: collecting and manipulating data, performing calculations, understanding the equipment used and sources of error, and concepts/topics covered in the experiment.

Prerequisites

CHEM 1141 and concurrent enrollment (or prior credit) in CHEM1243. Successful completion of college algebra BEFORE enrolling in CHEM1241 is strongly recommended.

Required Materials

1. Textbook: Laboratory Manual for Chemistry 1241, Fulton, Quashnock, et al., Revised Edition (2023), print, available at the MSU Bookstore.
2. Safety goggles, Sharpie, closed-toe shoes, and enough clothing to cover yourself from neck to feet are required. Failure to wear proper lab attire will see you dismissed for the day with loss of points for that lab. A lab coat is also **REQUIRED**, to be worn on top of your head to toe clothing.
3. Scientific Calculator.
4. Access to a computer with internet connection (for D2L) and some sort of word processor and spreadsheet programs. There are printers on campus if you do not have one, but I will NOT print your assignments out for you.

Study Hours and Tutoring Assistance

For every 1 hour in class, students should spend 3 hours studying, doing assignments, and otherwise preparing for this course. Professors have office hours, so if you need help come to my office. Free tutoring will also be available during the semester. You

cannot expect to do well if you do not work at it. Tutors are NOT to be given data sheets to work for you.

Attendance

Attendance is **mandatory**. Fall CHEM1241 lab is a trailing course meeting only one day a week. There will therefore be **NO make-ups** for missed labs. Thus, you must be in lab each day unless you are verifiably and extremely ill (i.e., you have a doctor's verification). If you have a legitimate excuse that was provided BEFORE the missed lab, I will supply you with substitute data for the missed lab. Any assignments due the day of the missed lab are still due that day or you will be assessed a penalty (see below for more information).

Grading

Grades will be assessed as follows. Please note, this lab course is NOT curved. To get an A, you must get an A on every assignment.

Table 1: Distribution of points (by percent)

Assignment	Percent
Lab Reports	45
Pre-labs	10
Quizzes	10
Class Participation	10
Attendance	2.5
Journal Article Poster (CORE Assessments: Teamwork and Communication)	2.5
Midterm	10
Final	10

Table 2: Breakdown of Final Grades

Grade	Percentage Range
A	89.5% and higher
B	79.5% to 89.4%
C	69.5% to 79.4%
D	59.5% to 69.4%
F	59.4% and lower

Policy on Late Work

All work is to be turned in as specified in your lab manual. Pre-labs must be handed in regardless of whether you are in lab that day. Lab reports must be handed in regardless of whether you are in lab that day. Any pre-lab or lab reported turned in late will be penalized as follows: for every 24 hours that the assignment is turned in

late, a 10% deduction will be made to your graded score (not to the original point value). Turning the assignment in the week after it is due results in a deduction of 70% from your graded score (weekends are included in being late). No quiz make-ups will be given.

Lab Reports

Follow the instructions in your lab manual for Experimental Write-ups. You are **REQUIRED** to type your reports (all verbal portions). Data sheets and calculations should be handwritten (they must be neat). If you know what you are doing, reactions may be done on the computer; if you don't want to figure it out on the computer, then hand-written reactions are fine (they must be neat). ALL graphs, tables, and figures must be computer generated. Proper formatting will be part of the grade. This means, for example, that if you are typing an exponent, it must be an exponent (neither 10e3 nor 10^3 is acceptable; it must be 10^3). **Lab Reports must be uploaded with all parts together in a single pdf to the Dropboxes set up for them on D2L.** They must be time stamped BEFORE 1:00pm Mondays that they are due or they are late.

Poster Presentations

Students will work with one other student (2 students total) to prepare a poster presentation which will be presented in class with both students presenting the poster. Each student will evaluate the poster prepared by each team according to the rubric below (Rubric 1), and each team will individually evaluate their personal effort in producing the poster by the second rubric presented below (Rubric 2). No one student on any team will present the poster alone. Absence for the presentation will be graded as a missed assignment. This is a CORE Assessment. Rubric 1 measures Communication, while Rubric 2 measures Teamwork.

Student teams will pick one of the Lanthanides or Actinides from the periodic table to research. Student teams will, on the day specified on the schedule, present an oral presentation to the class in the form of an electronic poster (a PowerPoint template will be provided to you). You will present the following information on your poster:

1. The name of your element, when it was discovered, who discovered it and where it was discovered, its general source (where it is primarily found, including a world map highlighting where the element is found), and any other details about the element (example: is it radioactive).
2. Its correct electron configuration and its basic chemistry (what form does it exist as in the environment, what does it react with, etc.).
3. The key reactions the element undergoes (example: if it reacts with oxygen, show the chemical reaction).

4. An economic/use analysis (how is it used, is it expensive, cheap, of little use) along with risks associated with mining it, etc.

You must cite all of your sources of information. Specifically, two of your sources **MUST BE** research papers from the primary literature (i.e., journal articles). These papers must specifically discuss the chemistry of the element (not economics or political/social aspects of mining, etc.). You must cite all sources where they are used on the poster **AND** have a "Literature Cited" section with the complete citations in APA or MLA format.

You will have a maximum of 10 minutes to present your poster to the class (do NOT simply read to us!!). You must get approval for your element **no later than** October 6th. Only one student per element. If you need help using the library or online search engines to find science papers, please come see me.

Rubric 1: Communication [8pts possible]

POINTS	2	1	0	TOTAL
Organization	All required elements are addressed	Most required elements are addressed	Few required elements are addressed	
Chemistry	Chemical knowledge, reactions, etc. are correctly presented without oversimplification	Chemical knowledge, reactions, etc. are adequately presented	Chemical knowledge, reactions, etc. are inadequate or poorly presented	
Evidence	Information is taken from sources and synthesized to present a cohesive description of the chemistry presented	Information is taken from sources with some synthesis to present a description of the chemistry presented	Little information is provided or is poorly synthesized, description of the chemistry is poor	
Appropriate References	All references are used, cited correctly, and represent the literature	Most references are used, cited correctly, and represent the literature	Few references are appropriate for the assignment	
			SCORE	

Rubric 2: Teamwork [6pts possible]

POINTS	2	1	0	TOTAL
Contributes to Team Meetings	Offers alternative solutions or course of action that build on the ideas of others	Offers new suggestions to advance work of the group	Listens to ideas but does not advance work of the group	
Individual Contributions Outside of Team Meetings	Proactively helps other team members complete their assigned tasks to a similar level of excellence	Completes assigned tasks by deadline; work advances project	Fails to complete assigned tasks	
Contributes to Presentation	Supports team members during presentation contributes equally to the presentation	Support and contributions to presentation are unequal or minimal	Fails to support or contribute to the presentation	
			SCORE	

Homework

Homework consists primarily of pre-labs and lab reports. Pre-labs are physically due at the **beginning** of lab the day the lab is to be performed. Lab reports are to be uploaded to D2L **before** the start of lab the week after the lab has been completed. Several beginning of semester homework assignments will also be given:

1. Academic Integrity Statement: a copy of this is in your lab manual and you will be given a copy to sign. You must sign the form and submit it **BEFORE** the first official lab.
2. Lab Safety Sheet: a copy of this is in your lab manual and you will be given a copy to sign. You must sign the form and submit it **BEFORE you will be allowed to work in the lab.**
3. Lab Safety Video and Quiz: these are on D2L. You must watch the video and complete the quiz **BEFORE you will be allowed to work in the lab.**

Quizzes

Quizzes will be given in class during lab lecture. Quizzes will cover the lab being performed that day, material from the previous lab, and concepts from the lab reading. Thus, quizzes will contain both general questions and calculations. **Bring a calculator to class EVERY DAY.** There are no make-ups for missed quizzes, even if you have a legitimate reason to miss a lab.

Exams

There will be a midterm (Experiments 11 – 15) and a final (Experiments 16 – 20). Exams will consist, in part, of partial data sheets. You must be able to do the calculations on the data sheets and discuss sources of error, so it is imperative that you learn how to do the calculations for yourself. You will get only part of the lab period to complete the exam (2 of the 4 hours).

Students with a legitimate, excusable reason for missing an exam (only ONE exam may be excused, not both) will be given consideration. A substitute score based on the exam taken will be used to replace the zero received. **Excusable reasons** for missing an exam include: a) extreme and verifiable illness (you must provide doctor/hospital verification; I will not simply take your word for it that you are too ill to attend); b) accident or injury (must present verification); c) MSU sanctioned event (active participant and you must have provided official university documentation BEFORE the exam); and d) extreme family emergency (e.g., funeral the day of the exam; immediate family only). **Inexcusable reasons** for missing an exam include: a) scheduling doctor, dentist, therapy or other appointments for the day/time of the exam (possible exception: court dates); b) failure to show up (this includes sleeping through the exam); c) weather (if MSU is open, then you must be here); d) congested exam schedule or overlapping classes; e) failure to obtain babysitter or caregiver; and f) work schedule conflict. **Students MUST notify me PRIOR to the start of the exam to receive consideration for an excused absence.** Notifying me after the fact will result in an unexcused absence. Note: family trips, weddings (only if you are in it), etc.—if they were planned before the beginning of the semester and you can demonstrate that they were planned in advance will be considered on a case-by-case basis. Anything planned after the semester begins will not be excusable.

Absolutely no electronic devices of any kind may be used during exams, INCLUDING SMART WATCHES. All exams are closed book and will be monitored for cheating. If you are caught doing anything suspicious, your exam will be taken away from you and you will receive an automatic zero for the exam. NOTE: using old notes and exams from other students to prepare for this class is considered cheating and is not allowed. Copying your notes or exams to give to others either in or out of this class is considered cheating and is not allowed. Working in small groups for the purposes of skewing exam scores is considered collusion and is not allowed.

Extra Credit

Extra credit will only consist of the questions described in the Experimental Write-Up section of the lab manual. There will be no other forms of extra credit.

Important Dates

Last Day to drop with a grade of "W": 4:00pm on November 24, 2025 (Note: you must fill out the online drop request; you can't just stop coming to class!). If you drop the lecture, you MUST drop the lab as well.

Desire-to-Learn (D2L)

D2L will be used as a part of this course. Each student is expected to be familiar with this program as it provides a primary source of communication regarding assignments, examination materials, and general course information. You can log into D2L through the MSU Homepage. If you experience difficulties, please contact the technicians listed for the program. D2L has an app called Pulse that can be downloaded to your phone to help you keep track of your courses—USE IT!!!

Instructor Class Policies

1. Do not walk through the classroom or leave once class has begun (exception: sudden illness) and NEVER WALK IN FRONT OF ME ONCE I HAVE BEGUN TO LECTURE. Do NOT be late.
2. Ask me questions, not other students in lecture.
3. Do not engage in disruptive or disrespectful behavior.
4. Turn off or silence (note: vibrate is not the same as silent) all cell phones, pagers, music devices, and other electronic devices that make noise or have the potential to disrupt the class before you walk into the room.
5. **YOU MUST REMOVE YOUR EARBUDS IN CLASS.** This is a laboratory class where everyone's safety matters. You must be able to hear everything around you and NOT what is piped into your ears through your buds.

University Teams and Organizations

All members of in-season sports teams or other campus organizations who will be missing class because of university sanctioned events MUST present to me a written statement on university letterhead and signed by a university official indicating those dates that will be missed because of travel or participation in the university-sponsored event. Athletics documentation must be presented to me within the first 2 weeks of the beginning of the semester. Other documentation (such as for theater, etc.) must be presented to me at least one week prior to the time that will be missed.

NOTE: if you KNOW you will be missing more than 3 classes during the semester, you MUST come talk with me the first week.

Services for Students with Disabilities

The Americans with Disabilities Act (ADA) is a federal anti-discrimination statute that provides comprehensive civil rights protection for persons with disabilities. Among

other things, this legislation requires that all students with disabilities be guaranteed a learning environment that provides reasonable accommodation of their disabilities. In accordance with Section 504 of the Federal Rehabilitation Act of 1973 and the Americans with Disabilities Act of 1990, Midwestern State University endeavors to make reasonable accommodations to ensure equal opportunity for qualified persons with disabilities to participate in all educational, social, and recreational programs and activities. After notification of acceptance, students requiring accommodations should make application for such assistance through Disability Support Services, located in the Clark Student Center, Room 168, (940) 397-4140. Current documentation of a disability will be required to provide appropriate services, and each request will be individually reviewed. The instructor then needs to be notified by the student of the nature of this accommodation. This notification will take the form of an official letter obtained from DSS by the student and given to the instructor. Every effort should be made to provide me with this documentation within the first 2 weeks of the semester to avoid losing accommodations because you failed to provide proper notification in a timely manner. It is always the responsibility of the student to arrange accommodations with DSS. Students with disabilities must still take their exams on the same day as the rest of the class. For more details, please go to Disability Support Services.

College Policies

See the MSUTexas Portal and Homepage for information regarding Senate Bill 11 (Campus Carry), Smoking/Tobacco/Alcohol/Drug policies, and the University Code of Conduct. Key conduct policies are outlined below:

1. In general, students are to attend all meetings of all classes; instructors may drop students for excessive absences, indifference, disruptive behavior, or failure to complete class assignments; students are prohibited from cheating, plagiarizing, or colluding. Students are expected to have read the Student Handbook.
2. Academic Dishonesty: Cheating, plagiarism, and collusion (as well as several other forms of conduct) are all strictly prohibited at MSU. Please read the MSU Student Handbook definitions of cheating, plagiarism, and collusion and MAKE SURE that you do not engage in any of these behaviors. If you are unclear on what may count as cheating, plagiarism, or collusion after reading the material below, please see the instructor or the Dean of Students.
 - a. The term "cheating" includes, but is not limited to: (1) use of any unauthorized assistance in taking quizzes, tests, or exams; (2) dependence upon the aid of sources beyond those authorized by the instructor in writing papers, preparing reports, solving problems, or carrying out other assignments; or (3) the acquisition, without

permission, of tests or other academic material belonging to a member of the faculty, staff, or another student.

- b. The term “plagiarism” includes, but is not limited to, the use, by paraphrase or direct quotation, of the published or unpublished work of another person without full and clear acknowledgment. It also includes the unacknowledged use of materials prepared by another person or agency engaged in the selling of term papers or other academic materials. Plagiarism also includes the use of someone else’s thoughts, words, ideas, or lines of argument in your own work without appropriate documentation (a parenthetical citation at the end and a listing in “Works Cited”) whether you use that material in a quote, paraphrase, or summary. It is a theft of intellectual property and will not be tolerated. Plagiarism is NEVER accidental.
- c. The term “collusion” means collaboration with another person in preparing any work offered for credit if that collaboration is not authorized by the faculty member in charge.
- d. Student Honor Creed: “As an MSU Student, I pledge not to lie, cheat, steal, or help anyone else do so.” MEMORIZE THIS.
- e. Any form of cheating will result in a 0 (zero) for the assignment/exam/quiz. Repeated cheating will result in an F in the course and an instructor drop (with F).

Safe Zones Statement

The professor considers this classroom to be a place where you will be treated with respect as a human being regardless of gender, race, ethnicity, national origin, religious affiliation, sexual orientation, political beliefs, age, or ability. Additionally, diversity of thought is appreciated and encouraged, provided you can agree to disagree. It is the professor’s expectation that ALL students consider the classroom a safe environment.

Instructor Drops

According to the MSU Student Handbook, “An instructor may drop a student any time during the semester for excessive absences, for consistently failing to meet class assignments, for an indifferent attitude, or for disruptive conduct.” For the purposes of this course, “consistently failing to meet class assignments” includes consistently not turning in assigned work or turning in work that consistently receives a failing grade.

Intellectual Property

By enrolling in this course, the student expressly grants MSU a “limited right” in all intellectual property created by the student for the purpose of this course. The

"limited right" shall include but shall not be limited to the right to reproduce the student's work product to verify originality and authenticity, and for educational purposes.

Labs Covered this Semester

Experiments 11 - 13: Qualitative analysis labs will strengthen lab techniques and skills while learning to identify unknown ions in solution by manipulating pH and solubility. We will skip Experiment 13 this semester.

Experiment 14: The rates of reaction lab will be a cross-section of material related to the kinetics chapter of the lecture text. The initial rate method, calculation of k , and the Arrhenius equation will be evaluated for a given reaction. Several factors that affect rate will also be evaluated.

Experiment 15: Using copper complexes with different ligands, strengths and characteristics of several complexes will be ranked and evaluated.

Experiment 16: An iron complex at varying concentrations will be evaluated using spectrophotometry to calculate an equilibrium constant.

Experiment 17: The water hardness lab will be an environmental lab where the titrant will be standardized and used to determine the ppm of an unknown water sample.

Experiment 18: Various recyclable polymers will be evaluated to determine physical and chemical characteristics for the purpose of understanding recycling of polymers and how polymers are identified and separated. These observations will then be used to identify an unknown sample.

Experiment 19: The titration method will be used to standardize a basic titrant for use to identify the equivalent mass of an unknown acid. Several indicators will also be evaluated for color and estimated pH.

Experiment 20: Electrochemistry will be studied by setting up and using cathodes to evaluate oxidation and reduction reactions. Using this same method, copper and a copper solution will be used to gather data to calculate Avogadro's number and Faraday's constant.