

**Chemistry 217**  
**Principles of Chemistry Laboratory I**

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The purpose of this course is to (1) introduce you to the basic laboratory skills of careful measurements and handling of experimental data, (2) provide laboratory experience which emphasizes and reinforces the principles and concepts of chemistry given in the general textbook, and (3) acquaint you with the quantitative thinking and procedure encountered in elementary physical chemistry and analytical chemistry with emphasis on the interplay between theory and experiment. Towards that end, this lab has been designed so that lecture (CHM 211) and lab topics will occur at roughly the same times.

**Course Description:** A laboratory course that demonstrates the application of concepts introduced in Chemistry 211. (CR or PR: CHM 211).

<b>Student Learning Outcomes</b>	<b>How students will practice each outcome in this course</b>	<b>How each outcome will be assessed in this course</b>
Students will know and follow safety rules in the chemical laboratory.	<ul style="list-style-type: none"><li>• Lab Safety training at MU Online</li><li>• reading laboratory manual</li></ul>	<ul style="list-style-type: none"><li>• online Lab Safety quiz</li><li>• exams</li><li>• instructor's evaluation</li></ul>
Students will learn how to properly use and care for laboratory equipment.	<ul style="list-style-type: none"><li>• reading laboratory manual</li><li>• prelab presentations</li><li>• laboratory experiments</li></ul>	<ul style="list-style-type: none"><li>• lab reports</li><li>• instructor's evaluation</li></ul>
Students will learn how to record and communicate laboratory experiments and results.	<ul style="list-style-type: none"><li>• reading laboratory manual</li><li>• prelab presentations</li><li>• laboratory experiments</li></ul>	<ul style="list-style-type: none"><li>• lab notebook</li><li>• lab reports</li></ul>
Students will apply concepts introduced in the chemistry lecture (CHM 211).	<ul style="list-style-type: none"><li>• reading laboratory manual</li><li>• laboratory experiments</li><li>• laboratory calculations</li></ul>	<ul style="list-style-type: none"><li>• pre- and post-lab questions</li><li>• lab reports</li><li>• exams</li></ul>

**Materials Needed**

1. CHM 217 Lab Manual (purchase at the bookstore)
2. Access to MU Online (<https://www.marshall.edu/design-center/>) and a Marshall email account
3. Composition notebook with sewn binding (*not spiral-bound*) and blue/black ink pen
4. Indirectly vented chemical safety goggles
5. Closed-toe shoes that cover the feet in entirety and clothing that covers the entire torso, extending down past the knees.
6. Combination lock for lab drawer
7. Roll of paper towels for cleanup

8. Non-programmable calculator for exams (it must not have keys for the alphabet)
9. Access to ACS academic lab safety guide (online)  
<https://www.acs.org/content/dam/acsorg/about/governance/committees/chemicalsafety/publications/safety-in-academic-chemistry-laboratories-students.pdf>

### **Safety Precautions**

1. To complete the Safety Training Course online: go to <http://www.marshall.edu/muonline/>. The safety exam can be found in the left column at the top of the course content folder. Students failing to complete this requirement (including completing the online quiz and correctly answering at least 12 correct questions) will not be permitted to work in the lab. This assessment will not count toward your final grades.
2. All students must fill out the lab safety form. This form can be found in MU online. The form is fillable and can be printed out. The form can be sent by email. This form is due January 18, 2024.
3. Read the laboratory safety rules (Training) and chemical disposal rules in the lab manual. There will be questions concerning this on quizzes and exams.
4. Read and sign one copy of the Chemistry Laboratory Questionnaire and keep a second copy (the one in your manual) for reference. The questionnaire must be signed before check-in is permitted.
5. You are required to comply with all safety rules and all safety-related instructions at all times. Failure to do so is grounds for dismissal from the laboratory.
6. Safety goggles must be worn at all times. Wearing contact lenses in the lab is strongly discouraged. If contact lenses must be worn, a Contact Lens Waiver Form must be signed and given to the instructor.
7. Do not eat, drink, smoke, or taste anything in the laboratory.
8. Slacks or dresses cut below the knee are required. Substantial shoes with low heels covering the entire foot must be worn. Avoid very loose clothing or unnecessary items of clothing. Jewelry should be removed.
9. Know the locations of all safety equipment in the lab. You will be tested on this.
10. All injuries, no matter how trivial, must be reported to the instructor immediately. Any accident or near-miss will require a written report discussing how the incident might have been prevented.

## Conduct of the Course

1. Attendance is required in this course. Quizzes will be given at the start of class. Coming to class late means you will have less time to work on your quiz. Furthermore, all assignments are due promptly at 2:00. Any assignment turned in after that will be considered late. *The Department of Chemistry policy requires that students complete at least 75% of laboratories to receive course credit. A student will not receive course credit if s/he misses 4 or more laboratories, whether excused or unexcused.* If you know that you will miss a lab in advance, please contact the instructor in advance. It may be possible to make prior arrangements to complete the lab in the same week with a different section and instructor.
2. The first half hour to one hour of each period will be spent in a discussion by the instructor on the experiment to be done in that period and the chemical principles related to it.
3. The bound notebook is for the immediate recording of all experiment operations and observations made during the laboratory period. Laboratory notebooks will occasionally be turned in for grading of experimental results.
4. Lab reports are due the period following completion of the experiment.

## Course Grade

Quizzes (5-10)	20%
Midterm exam	15%
Final exam	20%
Post-lab write-ups and experimental results*	35%
Laboratory notebook	10%

\*lowest score dropped

Grading Scale: 90-100% = "A," 80-89.99% = "B," 70-79.99% = "C," 60-69.99% = "D," less than 60% = "F"

Assignments turned in late will have a 10% per class day (or any portion thereof) point deduction on the assignment. Late assignments will not be accepted more than one week after due date.

During quizzes talking and sharing of calculators is forbidden.

Calculators with alphanumeric and/or graphing capabilities are **not** permitted for quizzes or the exams.

There are no make-up quizzes or exams.

Excused absences must be arranged in advance.

The Department of Chemistry policy requires that students complete at least 75% of laboratories to receive course credit. Students will receive a grade of "F" for missing 4 or more laboratories, whether the absences are excused or unexcused.

**Office hours:** Monday 2:00 – 4:00 p.m.  
Most Tuesday/Thursday 11:00-12:00 or by appointment

During office hour I may be in either my office or laboratory (Science 408).  
Please check both places for me.

In general, if my office door is open, I'm on the floor. Wait a few minutes to see if I find my way back, if not feel free to look around the floor for me.

If you cannot come by during the scheduled office hour or if you have questions at other times, please feel free to drop by my office or schedule an appointment.

If you have questions that you believe can be answered by email and would like to use that method, please feel free to send them to me. I check my email regularly during the day.

### **Academic Integrity Policy**

Each student should read the university's Academic Dishonesty Policy carefully. It is expected that each student will complete all assignments without help from any other person. Seeking assistance for a graded assignment from Chegg, Reddit, Course Hero, previous students of this class, or any other entity will be considered academic dishonesty and reported by university policy. Posting any material from the lab manual or a class assignment in a public forum is a copyright violation and will also be reported as academic dishonesty.

### **University Policies**

By enrolling in this course, you agree to the University Policies. Please read the full text of each policy (listed below) by going to [MU Academic Affairs: University Policies](http://www.marshall.edu/academic-affairs/university-policies/). (URL: <http://www.marshall.edu/academic-affairs/policies/>)

- Academic Dishonesty Policy
- Academic Dismissal Policy
- Academic Forgiveness Policy
- Academic Probation and Suspension Policy
- Affirmative Action Policy
- Dead Week Policy
- D/F Repeat Rule
- Excused Absence Policy for Undergraduates
- Inclement Weather Policy
- Sexual Harassment – Policy Title IX prohibits the harassment of students based on sex, which includes pregnancy, childbirth, and related conditions. This includes that students will not be penalized for taking medically necessary leave related to pregnancy, childbirth, or related conditions. Marshall's Title IX Office may be contacted at [TitleIX@marshall.edu](mailto:TitleIX@marshall.edu)
- Students with Disabilities (Policies and Procedures)
- University Computing Services Acceptable Use Policy

**Plagiarism Statement (Academic Affairs Policy):** Plagiarism is submitting as one's own work or creation of any material or an idea wholly or in part created by another. This includes:

- Oral, written, and graphical material.
- Both published and unpublished work.

It is the student's responsibility to clearly distinguish his/her own work from that created by others. This includes the proper use of quotation marks, paraphrasing, and the citation of the original source. Students are responsible for both intentional and unintentional acts of plagiarism.

**Sanction:** Sanctions for academic dishonesty may be imposed by the instructor of the course. The sanction for academic dishonesty may be imposed even if a student withdraws from an individual course or the university entirely. The instructor may impose the following sanctions:

- A lower or failing project/paper/test grade
- A lower final grade
- Failure of the course
- Exclusion from further participation in the class (including laboratories or clinical experiences).

## Schedule of Experiments

**\*\* This schedule is subject to change. Changes, if necessary, will be announced in class\*\***

Date	Experiment #	Topic
1//10	1 Part 1	Methods of Measurement
1/17	1 Part 2	Determination of Sugar in Soft Drinks <i>Safety training, safety form, contact lenses, and safety exams are due</i>
1/24	2	Separating Components of a Mixture
1/31	5	Determination of an Empirical Formula
2/7	4	Determination of the Percent Oxygen in Air
2/14	8	Titration of Vinegar
2/21	6 <b>Exam 1</b>	Synthesis of an Alum <i>Lab notebook grading</i>
2/28	7	Reactions
3/6	9	Heat of Reaction and Heat of Solution
3/13	10	Energy of a Peanut: Calorimetry
3/20	<i>No Lab: Spring Break</i>	
3/27	11	Combustion – Synthesis and Reactions of Oxygen
4/3	12	Molecular Architecture
4/10	13	Determination of Molar Mass & Lab Check-out
4/11	<i>last day to withdraw from full-semester courses</i>	
4/17	<b>Final Exam 2</b>	<i>Lab notebook grading</i>

## Artificial Intelligence (AI) Policy

Generative AI is permitted/encouraged with proper attribution, but prohibited in other ways.

Students are allowed, and even encouraged, to use Generative AI in some ways but are prohibited from using it in other ways. Keep in mind that any content produced by generative AI can “hallucinate” (produce false information), so students are responsible for ensuring the accuracy of any AI-generated content. For information on citing AI, please see MU Library’s citation website (URL: <https://libguides.marshall.edu/plagiarism-AI/cite>). Students should not use generative AI in any way that would violate the Student Code of Conduct (URL: <https://www.marshall.edu/student-conduct/files/Studnet-Code-of-Conduct-2022.pdf>).

Students are permitted and encouraged to use generative AI in the following ways:

*Brainstorming:* You may use generative AI to stimulate creativity, generate ideas, or brainstorm topics for papers, presentations, and discussions. The generated content must serve as a stepping stone, not a final product.

*Citation Assistance:* AI tools can be used to manage, format, and organize citations and references, promoting adherence to academic writing standards and specific style guides required for individual assignments.

*Grammar and Style Checking:* AI-powered writing enhancement tools may be used to help with spelling, grammar, syntax, and stylistic errors.

*Concept Understanding:* Generative AI can be used to explain or simulate concepts taught in class, aiding in a deeper understanding.

*Research Assistance:* AI can be used to conduct initial research, compile data, and summarize articles, books, or papers. It should not replace traditional research methods but rather enhance them.

**You may not use generative AI in coursework in the following ways:**

*Plagiarism:* Using AI-generated content as your original work without attribution. This includes essays, papers, presentations, and exam answers.

*Data Manipulation:* Using AI tools to alter data or create misleading information.

*Misrepresentation of Skills:* Using generative AI to complete tasks that are meant to assess your knowledge and skills.

*Confidentiality Breach:* Using AI tools that might violate university policies or laws related to data privacy and confidentiality.

See individual assignment instructions for more details.

**Metacognitive Reflection. In addition to a proper citation, the student should include the following statement with any assignment where generative AI is used for assistance.**

“I used generative AI platform [INSERT NAME OF PLATFORM, SUCH AS CHAT GPT] for assistance in the following ways on this assignment: [INSERT WAYS USED, such as brainstorming, citation assistance, grammar and style checking, concept understanding, and research assistance, etc.]”