

Instructor: Dr. Lawrence Schmitz **Phone:** 304 696-2373 **Office:** S-488 **e-mail:** schmitz@marshall.edu
Office Hours: MWF 1:00 – 1:50, 3:15 – 4:00

Credit: 2 hours

Pre- or Co- requisite: CHM 211

Class Location/Time: Section 109 (CRN 1385) and Section 110 (CRN 1386) S-473 / Thursday, 8:00 a.m.)

Catalog Description: A laboratory course that demonstrates the application of concepts introduced in Chemistry 211.

Outcomes:

1. To practice basic laboratory skills and make careful measurements.
2. To properly record and handle experimental data.
3. To have had a laboratory experience that emphasizes and reinforces the principles and concepts of chemistry introduced in your CHM 211 course.
4. To have been acquainted with the quantitative thinking and procedures encountered in elementary Physical chemistry, Analytical chemistry and Biochemistry with an emphasis on the interplay between theory and experiment in science.

Practice and Assessment:

In order to achieve the goals outlined in the previous section you should:

1. Read the appropriate material before class
2. Listen carefully during the pre-lab lectures
3. Carry out the experiments in lab
4. Write lab reports as required

Assesment will be based on a variety of evaluation tools including exams, quizzes, laboratory results and notebook, and Pre- and Post Lab questions. See “Grading” below.

Required Textbook:

CHM 217: Principles of Chemistry I Laboratory (2017-2018) may be obtained from the Campus Bookstore.

Other Required Items: safety goggles, bound laboratory notebook, paper towels, lock

University Policies: This course will be conducted in accord with all applicable university policies. They can be found at: <http://www.marshall.edu/academic-affairs/policies/>

Attendance: Completion of all experiments and exams is required. Attendance is required.

Making Up a Lab: Only “Excused Absences”, as defined in the MU Undergraduate catalog and policies, can be made up. The proper procedure is to notify me (by e-mail, phone, or in person) as soon as possible; any documentation (such as doctor’s notes) have to be submitted directly to the Dean of Student Affairs (MSC 2W38) who will then notify me (for details see the MU Undergraduate catalog).

While it is possible to allow students to make up a missed laboratory by coming into another section (during the same week), it cannot be guaranteed; early notification is absolutely essential! Since the necessary chemicals and apparatus are not available except during the scheduled time for the experiment, the labs cannot be made up in the preceding or following weeks. Labs missed due to excused absence should be made up by attending another session if possible (see above).

Note that one lab grade will be dropped in computing your score. If you miss a laboratory it will become your drop grade. If you miss more than one lab you will be give a zero on that lab if your absence was not excused. If you have excused absences for more than one lab and do not make them up during the week of the lab, you will be given an incomplete in the course so you can makeup the missed labs during a subsequent semester.

Grading: The grade in this lab will be based on a wide variety of evaluation tools including exams, quizzes, laboratory results and Lab Report, and Pre- and Post Lab questions. The weight for each component is as follows:

Quizzes (drop the lowest score)	20%
Midterm exam (approximately 1 hour in length)	15%
Final exam (approximately 1 hour in length)	15%
Pre- and Post- Lab Questions	20%
Experimental results and Lab Report (drop lowest score)	30%

The letter grades will then be assigned based on $A \geq 90$, $B \geq 80$, $C \geq 70$, $D \geq 60$, and $F < 60$.

Laboratory Notebook: For each experiment you will be required to keeps records of what you did in a laboratory notebook. Most scientific writing uses the past tense and passive voice, and avoids first person statements. This should be particularly true in the experimental section of your notebook records.

Safety: An online safety training module will be available for this course on MUOnline. You are required to complete this training and pass the test at the end of the training program. Sign and bring to class the form that states you will abide by the safety rule.

Important safety rule are listed in your lab manual. Read and obey them.

Schedule of Experiments

<u>Date</u>	<u>Exp. No.</u>	<u>Experiment or Activity</u>
8/24	1, part 1	Density of Water
8/31	1, part 2	Determination of Sugar in Soft Drinks
9/7	2	Separating the Components of a Mixture
9/14	3	Determination of the Percent Oxygen in Air
9/21	4	Determination of an Empirical Formula
9/28	5	Determination of Avogadro's Number
10/5	6	Synthesis of an Alum, Midterm Exam ;
10/12	7	Reactions; Complete Experiment 6
10/19	8	Determination of Molar Mass
10/26	9	Heat of Reaction and Heat of Solution
11/2	10	Titration of Vinegar
11/7	11	Combustion! - Synthesis and Reactions of Oxygen
11/16	12	Energy in a Peanut: Calorimetry
11/23		No lab (Thanksgiving Break)
11/30	13	Molecular Architecture, Checkout
12/7		Final Exam

For each experiment the Pre-lab questions are to be turned in at the beginning of the lab period in the experiment is scheduled. (Note: for experiment 1 this will be extended to the second lab period.) The Lab Report and Post-lab questions are to be turned in at the beginning of the next lab period following the completion of the experiment.