

Syllabus CHEMISTRY 217 Sections 103, 104 CRN: 1379, 1380
Principles of Chemistry Lab I
Fall 2017

Instructor: Phil Alexander

Phone: 304-696-4808(Office)

Email: alexand1@marshall.edu

Office: 408

Room: 465, 474, 476

CLASS TIME: 8- 10:50 T

Office Hours: 9-9:30 and 11:30-1 M, W, F; 3:15-3:30 M, W; 11- 11:30 T or by appointment

Purpose of Course:

1. To introduce you to the basic laboratory skills of careful measurements and handling of experimental data.
2. To provide laboratory experience which emphasizes and reinforces the principles and concepts of chemistry introduced in your CHM 211 course.
3. To acquaint you with the quantitative thinking and procedures encountered in elementary physical chemistry and analytical chemistry with emphasis on the interplay between theory and experiment.

Materials Needed:

1. Laboratory manual available at MU Bookstore.
2. A bound (sewn, not a spiral bound or taped notebook) laboratory notebook. All experimental data must be recorded directly in this notebook during your laboratory period. This need not be a specialized "laboratory" notebook, only a sewn composition book.
3. Safety goggles. Full-coverage glasses are required. Contact lenses should not be worn in the chemistry laboratory. If contact lenses are absolutely necessary, a good set of safety goggles must be worn at all times while in the laboratory. If you wear contact lenses, you must notify your instructor and teaching assistants. Appropriate goggles will be sold by $\text{AX}\Sigma$ members the first of class.
4. A combination lock for your lab drawer.
5. An apron, or other covering for your clothes, is optional, but desirable.
6. The ACS academic lab safety guide is needed. This is available to download at <https://www.acs.org/content/dam/acsorg/about/governance/committees/chemicalsafety/publications/safety-in-academic-chemistry-laboratories-students.pdf>
7. A roll of paper towels for cleanup, spills, etc.
8. Access to a textbook to read about the concepts for the experiments to be completed.
9. A scientific calculator. Those with alphanumeric and/or graphing capabilities are **not permitted** during quizzes or exams.

Conduct of Course:

1. Attendance is required in this course and tardiness will not be tolerated. Turning in labs not performed will result in a score of zero for that lab and may result in failing the course.
2. The first half hour of each period will be spent in a discussion of the experiment to be done in that period and the chemical principles related to it.
3. Quizzes of 10-15 minutes duration will be given each class.
4. The bound notebook is for the immediate recording of all experiment operations and observations made during the laboratory period and will be checked throughout the term.

5. Lab reports are due at the beginning of the period following completion of the experiment.
6. The effects on human gestation of all of the chemicals used in the laboratory have not been determined. It may be advisable for pregnant students to avoid prenatal exposure by postponing this laboratory to a later date.
7. Prelab questions are to be completed and turned in to the lab assistants for entrance to the laboratory.
8. Each student must complete the departmental safety training and pass the quiz before the second lab class and turn in the completed form(s) at that class.
9. Plagiarism is a University offense. You must write your own report and not submit the same report as a partner.
10. Makeup lab work must be completed in the current week only. Ask permission.
11. When you have completed work in the lab, you should stay around to work on completing the lab results and answering the post-lab questions. The TA's and instructor will be available to assist you during much of this time.
12. It is the policy that a student must be present and complete 75% of the labs to pass.

Tentative Schedule of Experiments

<u>Week of</u>	<u>Exp. No.</u>	<u>Experiment / Assignment</u>
8/21	1 Part I	Laboratory Check-In. Density of water H1 and H2: sig figs and dimensional analysis
8/28	1 Part II & III	Determination of Sugar in Soft Drinks
9/4	2	Separating the Components of a Mixture
9/11	3	Determination of the Percent Oxygen in Air
9/18	4	Determination of an Empirical Formula
9/25	5	Determination of Avogadro's number
10/2	6	Synthesis of an Alum & Midterm Exam
10/9	7	Reactions
10/16	8	Determination of Molar Mass
10/23	9	Heat of reaction and Heat of Solution
10/30	10	Titration of Vinegar
11/6	11	Combustion!-Synthesis and Reactions of Oxygen
11/13	12	Energy in a Peanut: Calorimetry
11/27	13	Molecular Architecture, Lab Checkout
12/4		Final Exam

Important Dates:

8/22 First Lab (Come prepared)	10/27 Last day to drop individual courses
9/4 Holiday	11/20-25 Break
10/9 midterm grades due	12/5 Final exam

Grading:

The grade in this lab will be based on a wide variety of evaluation tools including exams, quizzes, laboratory experiment results and reports, homework assignments, notebooks, and evaluation by the instructor and /or teaching assistants. The weight for each component is as follows:

Quizzes (10 or more, drop the lowest score)	20%
Midterm exam (approx. 1 hour in length)	20%
Final exam (approx. 1 hour in length)	20%
Post-lab report and experimental results (Drop the lowest)	25%
Instructor evaluation	5%
Notebook	5%
Pre-lab Questions	5%

The letter grades will then be assigned based on the average computed using the above weights. You may estimate your letter grade using the following scale:

90 or above	A
80 or above	B
70 or above	C
60 or above	D
59 or below	F

During quizzes or exams, talking and sharing of calculators is not allowed. Students will set in alternate rows while taking the quizzes. There are no make-up quizzes unless prompt arrangements are made. Missed labs or quizzes count as your dropped grades.

Safety Precautions:

1. Anyone who has not signed the statement acknowledging one's commitment to a full understanding of and adherence to the required safety measures will not be permitted to work in the laboratory.
2. Use care in following the directions of your instructor and laboratory text. Do not carry out any unauthorized experiments.
3. Know the location of all safety equipment in the laboratory. You will be quizzed on this.
4. All injuries, no matter how trivial, must be reported to the instructor immediately.
5. Safety goggles **must** be worn at all times in the laboratory. Since the department does not have the proper facilities to sterilize safety goggles between uses, we are prohibited from loaning safety goggles to students. It is your responsibility to have your goggles in the laboratory. If you do not have your goggles, you will not be permitted to perform the experiment. We strongly urge you not to wear contact lenses. If contact lenses must be worn, a Contact Lens Waiver Form must be signed and given to the instructor.
6. The effects on human gestation of all of the chemicals used in the laboratory have not been determined. It may be advisable for pregnant students to avoid prenatal exposure by postponing this laboratory to a later date.

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Note well: Observance of the safety rules (especially safety goggles) will be an important factor in determining the Instructor Evaluation portion of the laboratory grade. Any student violating safety rules may be dismissed from the lab.

All university policies, which can be found at this link <http://www.marshall.edu/academic-affairs/policies/>, will be observed.

Lab Report Format

Except where noted the lab report should be typed. Spelling and grammar should be checked. Parts must be in order.

- 1) Name and number of the experiment-also** in the upper right corner, your name, the date, and your lab partners
- 2) Introduction-** one paragraph or so describing the experiment.
- 3) Data-** this should be the actual experimental data you obtained. Presenting it in tabular form is generally best. Observations are data.
- 4) Calculations-** one sample calculation should be provided for each calculation type you do. This can be hand-written, but must be neat.
- 5) Results and Discussion-** processed data (i.e. the results of your calculations), graphs, and explanations of your laboratory results should be provided here. Think about what your results mean as you write-up this section. What has this experiment shown you? If you discuss errors, don't just ascribe them to a generic "experimenter error" or calculation mistake. If something goes wrong, try to track down exactly what it was. If data is hard to determine or limited in some way, tell about that.
- 6) Post-Lab Questions-** Answer these questions as full sentences, unless they are calculations (in which case they may be hand written and show your work).