

Principles of Chem Lab I - CHM 217 (Sec: 201 & 202)

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| Instructor | : Dr. Masudur Rahman | |
| Office | : Biotech Building, Cubical 241 | |
| Phone | : (304) 840-5861 | |
| Office Hour | : By appointment (E-mail (with CHM217 subject line) to set up an appointment. Expect to wait at least 24 hours before receiving instructor's responses) | |
| E-mail | : rahmanm@marshall.edu | |
| Lecture Room | : Science 465 | Time: Tuesday 6.30 – 6.50 |
| Lab | : Science 473 (section 201) and 476 (section 202) | Time: T 7:00 – 9.30 |
| Course Credits | : 2.00 hrs | Course: CHM217 |
| CNR | : 2379 (201); 2380 (202) | Course PR or CR: CHM 211 |

Required Materials:

1. Principles of Chemistry I Laboratory Manual, 2016-2017 Ed., Van Griner.
2. Non-programmable calculator for quizzes and exams
3. Indirectly vented chemical safety goggles for laboratory
4. Bound notebook (not spiral)
5. Combination lock for your drawer
6. *A roll of paper towels for cleanup, spills, etc.*

Course Objectives:

1. To introduce basic chemical laboratory skills emphasizing careful, quality data collection.
2. To interpret experimental data by connecting laboratory observations with underlying principles and concepts learned from lecture materials.
3. To learn and develop basic scientific communication skills through writing lab reports.
4. To learn and practice good laboratory safety procedures.

Format of the Course

1. First 15 minutes (6.30-6.45) of the class, will have the **lab quiz** and then around 10 minutes I will discuss the safety and outline of the experiment you shall do. It is mandatory to read the lab experiment any relevant information from your textbook, and do the pre-lab questions in your lab manual (**do not submit the hard copy**) to prepare for the quiz.
2. The bound notebook is for the immediate recording of all experimental operations and observations made during the laboratory period. Follow the 'Maintaining a Laboratory Notebook' guidelines from your lab manual and use only permanent ink (black or blue) to write in the lab notebook. If you make a mistake, draw a single line through the mistake and continue writing. Lab notebooks will be collected during lab session and graded twice during the semester so bring it with you and have it ready to be graded.
3. Lab reports are due the following week at the beginning of the period. Lab reports turned in late will be docked 10% per day they are late. If they are not turned in within one week of the due date, they **will not be accepted**.
4. After finishing the lab, make sure TA has signed the notebook and inspect your working place, otherwise, 10% points will be docked accordingly.

Course Policies:

1. Graphing calculators, calculators with alphanumeric programming, and calculators on cell phones, PDAs, etc. **cannot be used** during any quiz or exam. Likewise, sharing of calculators during quizzes/exams is prohibited.
2. During quizzes and exams, all materials necessary will be provided to you except a pencil and calculator. You may NOT use your own paper, etc.
3. Student should turn off cell phones during lecture, quiz, and laboratory experiment. Failure to do so may result in dismissal from the lecture.
4. Students with disabilities who require special accommodations will be made. www.marshall.edu/disabled.
5. Academic dishonesty will be dealt with as outlined in the undergraduate catalog. **Copying lab report is academic dishonesty and will be dealt with accordingly.**

Safety:

1. You must pass the **online safety quiz** ([MUOnline –Lab Safety – CHM Spring-2018](#)) before the beginning of the second lab period. Students who have not passed (13 points out of 15) the quiz will be ineligible to participate in the laboratory.
2. Carefully follow the instructions provided in the lab manual. Only modifications to the lab given by the instructor.
3. Protective eye goggles must be worn in the laboratory at all times. **Failure to do so will result in dismissal from the lab.** Wearing of contact lenses in the lab is strongly discouraged.
4. **Clothing:** Slacks or dresses cut below the knee must be worn. Shoes covering the bridge of the foot and toes must be worn in the laboratory. Avoid wearing very loose or unnecessary clothing. Rings should be removed.
5. Know the location of all safety equipment in the laboratory.
6. All injuries, no matter how trivial, must be reported to the instructor immediately.
7. No food or beverages are permitted in the lab.

Attendance Policies:

1. Attendance is mandatory.
2. Make-up exams and/or labs will be granted only in cases that are recognized by the University through an excused absence. Students should contact the instructor as soon as they are able to return to classes. If students know that they will miss the class in advance (and qualify for a University approved excuse), they should contact the instructor at the earliest possible date to arrange for alternate lab time.
3. If the class is canceled unexpectedly, scheduled assignments will be due and scheduled tests will be given during the next class meeting.
4. The Department of Chemistry policy requires that all students complete at least 75% of laboratories. Students will receive a grade of "F" for missing 4 or more laboratories, whether they are excused or unexcused absences.

Laboratory Report Format:

1. Your lab report should be typed and follow the following sequence with all relevant information.
2. Name, date, course, section number, and lab partners
3. Title
4. Introduction – a short paragraph describing the experiment and a brief description of outcomes are expected, include balanced chemical equations when necessary.
5. Data – Raw experimental data presented in a neat, readable format. Most of the time a table works best. Following the format for data presentation in the lab manual is suggested. Attention should

- be given to significant digits and units.
- Calculations – At least one calculation as a sample for each type of calculation performed that is included in your laboratory report. This is the exception to typing the lab report. Neat, hand-written calculations in ink will also be accepted.
 - Results and Discussion – Any processed or compiled data (e.g. graphs) along with a thoughtful analysis of these results. Discussion of error and the source of error must be included.
 - Questions – Use complete sentences to answer post-lab questions. Show work on calculations to receive full credit.

Grading:

Grades for this class will be determined by:

One lowest pre-lab quiz and lab report scores will be dropped.

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| Pre-lab quizzes (12 quizzes-drop one lowest) 10pt/quiz | 110 |
| Lab reports (14 reports-drop one lowest) 30pt/report | 390 |
| Exams: | |
| Midterm | 100 |
| Final | 150 |
| Lab notebook (14 lab notes, drop one lowest) 10pts/LN | 130 |
| Attendance | 50 |
| Professor/TA evaluation | 50 |
| Bonus point | 20 |
| Total | 1000 |
| Grading Scale: A: 900-1000; B: 800-890; C: 700-790; D: 600-690; F < 600 | |

Lab Note book Grading:

| Lab Notebook collection Date | Evaluate experiment No. | Lab Notebook return Date |
|------------------------------|-------------------------|--------------------------|
| 02/19 | 1, 2,3,4,5 & 7 | 02/27 |
| 4/17 | 8,13,6,9,10,12 & 11 | 4/24 |

Lab Schedule:

| Experiment No. | | Lab title | Date of Experiment | Lab Report Due Date |
|---|---------------|--|---------------------------|----------------------------|
| 1 | Part I | Laboratory Check-In. Density of water H1 and H2: Sig Figs and dimensional analysis | 01/09 | 01/16 |
| | Part II & III | Determination of Sugar in Soft Drinks | 01/16 | 01/23 |
| 2 | | Separating the Components of a Mixture | 01/23 | 01/30 |
| 3 | | Determination of the Percent Oxygen in Air | 01/30 | 02/06 |
| 4 | | Determination of an Empirical Formula | 02/06 | 02/13 |
| 5 | | Determination of Avogadro's Number | 02/13 | 02/19 |
| 7 | | Midterm Exam & Synthesis of an Alum | 02/20 | 3/6 |
| 8 | | Reactions; Complete Experiment 7 | 02/27 | 3/6 |
| 13 | | Determination of Molar Mass | 3/6 | 3/13 |
| 6 | | Heat of Reaction and Heat of Solution | 3/13 | 3/28 |
| 3/16 Last day to drop an individual course | | | | |
| 3/19- 3/23 Spring Break | | | | |
| 9 | | Titration of Vinegar | 3/27 | 4/3 |
| 10 | | Combustion-Synthesis and Reactions of Oxygen | 4/3 | 4/10 |
| 12 | | Energy of a Peanut: Calorimetry | 4/10 | 4/17 |
| 11 | | Molecular Architecture & lab check-out | 4/17 | 4/24 |
| | | Final Exam | 4/24 | |