

Chemistry 218 – Principles of Chemistry Lab II Fall-2016

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| Instructor | : Dr. Masudur Rahman | |
| Office | : Biotech Building, Cubical 241 | |
| Phone | : (304) 696-3569 | |
| Office Hour | : T & W 5-6pm | |
| E-mail | : rahmanm@marshall.edu | |
| | (If you cannot attend the scheduled times, email or call me to set up an appointment. Expect to wait at least 24 hours before responses to emails.) | |
| Lecture Room | : Science 465 | Time: Tuesday 6.30 – 6.55 |
| Lab | : Science 474 (section 101) and 476 (section 102) | Time: T 7:00 – 9.20 |
| Course Credits | : 2.00 hrs | Course PR or CR: CHM 212 |

Required Materials:

CHM 218 Lab Manual, goggles, SEWN-BOUND lab notebook (no spiral- or glue-bound), ink pen (black or blue), and calculator

Other Items: Paper towels and combination lock

Course Description:

A laboratory course that demonstrates the application of concepts introduced in Chemistry 212.

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.

Safety:

1. A signed copy of the laboratory questionnaire stating that you have read and understand the required safety measures must be turned in before you are permitted to work in the laboratory. A copy of this questionnaire will be provided on the first day of class.
2. You must pass the online safety quiz (MUOnline –Lab Safety – CHM – Fall 2016) before the beginning of the second lab period. Students who have not passed the quiz will be ineligible to participate in the laboratory.
3. Follow the instructions provided in the lab manual carefully. Only modifications to the lab given by the instructor or teaching assistants are permitted.
4. Protective eye goggles must be worn in the laboratory at all times. Failure to do so will result in dismissal from lab. Wearing of contact lenses in lab is strongly discouraged.
5. 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.
6. Know the location of all safety equipment in the laboratory.
7. All injuries, no matter how trivial, must be reported to the instructor immediately.
8. No food or beverages are permitted in the lab.

Format of the Course

1. During the first 15 minutes (6.30-6.45) of class, we will have a pre-lab quiz and second 15-20 minutes a

discussion of relevant information needed for the lab being conducted on that day. It will be helpful to read the lab, read any relevant information from your textbook, and do the pre-lab questions in your lab manual 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 and graded twice during the semester so bring it with you and have it ready to be graded at each lab session.
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. Keep the lab clean!

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.
6. 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.
7. 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.
8. Questions – Use complete sentences to answer post-lab questions. Show work on calculations to receive full credit.

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 an alternate lab time.
3. If class is cancelled 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.

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.

- Please turn off cell phones during laboratory discussion and quiz time, failure to do so may result in dismissal from lecture.
- Students with disabilities who require special accommodations will be made. www.marshall.edu/disabled.
- Academic dishonesty will be dealt with as outlined in the undergraduate catalog. Copying lab reports is academic dishonesty and will be dealt with accordingly.

Grading:

Grades for this class will be determined by:

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| Pre-lab quizzes | 25% |
| Lab reports | 25% |

Exams:

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| Midterm | 15% |
| Final | 20% |
| Lab notebooks | 5% |
| Attendance | 5% |
| Professor/TA evaluation | 5% |

Grading Scale:

A 90-100 B 80-89 C 70-79 D 60-69 F < 60

Schedule:

| Lab Number | Experiment/Assignment | Date of Experiment | Lab Report Due Date |
|---|---|--------------------|---------------------|
| 1 | Check-in and Introduction to Graphing | 8/23 | 8/30 |
| 2 | Beer's Law – Determining the Mass Percent of Acetylsalicylic Acid in Aspirin | 8/30 | 9/6 |
| 4 | Protein Extraction and Folding: Investigating Intermolecular Forces | 9/6 | 9/13 |
| 5 | Determination of Water Hardness | 9/13 | 9/20 |
| 6 | Quantitative Analysis – How Accurate Can a Titration Get? | 9/20 | 9/27 |
| 7 | Bonding and Acidity | 9/27 | 10/4 |
| | Midterm Exam | 10/4 | |
| 8 | Kinetics of Decomposition of Hydrogen Peroxide | 10/11 | 10/18 |
| 9 | pH Dependence of Drug Absorption | 10/18 | 10/25 |
| 10 | Studying LeChatelier's Principle | 10/25 | 11/1 |
| <i>10/28 is the last day to withdraw from full-semester courses</i> | | | |
| 11,12 | Qualitative Analysis – What Metal Ions Are in This Solution? Isolation of Copper Metal from Malachite Beads | 11/1 | 11/8 |
| | | 11/8 | 11/15 |
| 13 | Gibbs Free Energy – Solubility and Spontaneity | 11/15 | 11/29 |
| 11/22 No class, Fall Break | | | |
| 14 | Synthesis of a Coordination Compound | 11/29 | 12/06 |
| | Final Exam/Checkout | 12/06 | |