

## Principles of Chemistry Laboratory I (CHM 217-101/102): Fall 2017

Course description: A laboratory course that demonstrates the application of concepts introduced in CHM 211.

Credit: 2.00 hours

Prerequisite or Corequisite: CHM 211

Laboratory Meeting Times: T 2:00 – 2:50 pm Science Building 473; 3:00 – 4:50 pm S 474/S 476

Instructor: Rosalynn Quiñones, Ph.D.; Science Building 496; 304-696-6731; [quinonesr@marshall.edu](mailto:quinonesr@marshall.edu)

Office hours: Mondays, Tuesdays, and Thursdays from 9:00 am - 11:00 am at S 496, or by appointment. I

welcome drop-in visits, but cannot guarantee that I will be available to help you during non-office hours.

Simple questions can be answered via email.

Required text: CHM 217 Laboratory Manual 2017 – 2018 Edition (Marshall University/Stadium Bookstores)

Other required items: chemical splash goggles, bound laboratory notebook, paper towels, lock

Learning Objectives (1) Learn basic laboratory skills. (2) Understand the connection between the laboratory experience and the principles and concepts studied in the lecture course. (3) Know the rules which must be followed to assure a safe laboratory environment and experience. (4) Know the location of all safety equipment in the laboratory room and be able to operate it if necessary. (5) Understand the concepts of accuracy, precision, significant figures, and experimental error.

**Mandatory Safety Training:** Before 2:00 pm on Monday August 28, complete the Safety Training Course online: go to <http://www.marshall.edu/muonline/>. Students failing to complete this requirement (includes completing the online quiz and obtain more than 12 correct questions) **will not be permitted to work in the lab.**

### Safety

1. Read the laboratory safety rules (pp v-viii) and chemical disposal rules (p xi) in the lab manual. There will be questions concerning this on quizzes and exams.
2. 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.
3. 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.
4. Safety goggles must be worn at all times. Wearing of contact lenses in lab is strongly discouraged. If contact lenses must be worn, a Contact Lens Waiver Form must be signed and given to the instructor.
5. 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.
6. Know the locations of all safety equipment in the lab. You will be tested on this.
7. 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.

Calculators: Those with alphanumeric and/or graphing capabilities are **not permitted** during quizzes or exams.

Electronic Devices: Cellular telephones and other electronic devices must be silenced during class. **This means from 2:00 pm until you have finished work and left the laboratory for the day.** The only use permitted is for keeping time.

### Course Policy

1. **Attendance and punctuality (2 pm) are basic requirements for this laboratory.** 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. For the policy concerning excused absences and other pertinent University policies (academic dishonesty, inclement weather, and disabilities) go to the Academic Affairs website ([www.marshall.edu/academic-affairs](http://www.marshall.edu/academic-affairs)) and click on the link to Marshall University Policies.

2. Pre-lab presentations (in S-473) are generally brief. Pertinent material from the CHM 211-212 textbook should be read in preparation for an experiment (and possible quiz). Consult safety data sheet (SDS) (available online) or other source to learn about any chemical substance being used in an experiment. The lab period will not be extended for those who fail to prepare adequately in advance. This lab has been designed so that lecture and lab topics occur at roughly the same time, emphasizing the interplay between theory and experiment.
3. The bound notebook is for the immediate recording of all experimental operations and any observations made during the laboratory period. Use of pencil and felt-tip pens is forbidden: this is a permanent record written using ink that is not water-soluble.
4. Do not attempt laboratory work if fatigued, hungry, ill, or pregnant.
5. To avoid mishaps, be deliberate. Efficiency and productivity are best achieved without undue haste. Think before acting, and be mindful of classmates.

### **Course Assessments**

Answers to pre-lab questions are due at 2:00 pm the day of the experiment; evaluation will be part of the report, which is submitted a week later. **Do not attach pre-lab questions to reports submitted the same day.** *Post-lab write-ups and experimental results* (produced using a program such as Microsoft Word) are due at 2:00 pm the period following completion of the experiment. **Late reports are not accepted.** Printing is responsibility of the student: **reports submitted as email attachments will be disregarded.** Follow the guidelines for the *lab report format* (A required lab report format can be found in MU online).

Follow the guidelines for maintaining a *laboratory notebook* (A required laboratory notebook format can be found in MU online). Notebooks will be inspected at least twice. At the end of each laboratory period, the lab notebook must be signed by the lab instructor or TA. Therefore, *you must write all you do, observe, and data collect in the lab notebook.* Always write down in your lab notebook and lab reports in 3<sup>rd</sup> person.

*Online Quizzes* will be performed using Socrative cell phone application or online webpage (<https://b.socrative.com/login/student/>). Students can download for free “Socrative student” app using a smartphone. The online quizzes will be taken before the laboratory period. Students need to enter my unique Room Code “**CHM217**” into the Student Join Room field, then click on Join Room. The online quiz will be available each week for a period of 24 hrs from Sunday 11 am to Monday 11 am. No extra time will be allowed if one is late. A quiz may cover any previous experiments as well as the experiment of the day.



*Instructor Evaluation* of student performance will be based on observation of safety rules, attitude in the lab, and proper maintenance of laboratory facilities. Students may lose these points for offenses such as, but not limited to: tardiness, improper waste disposal, safety violations, leaving a mess on the balances, failure to return/store lab equipment before leaving lab.

**Course Performance:** Except in highly unusual circumstances, **no make-up of quizzes or experiments is permitted.** Missed quizzes or experiments are considered “lowest”. The lowest quiz and report scores will be dropped so that an unavoidable absence will not jeopardize one’s grade. Excused absences (for policy, see link on next page of syllabus) must be arranged in advance (if possible).

## Grading Policy

Course Point Allocation	
Online Quizzes (~6 – 9)	10%
Mid-term Exam	15%
Final Exam	20%
Post-lab Write-ups and Experimental Results	35%
Laboratory Notebook	15%
Instructor Evaluation	5%
<b>Total</b>	<b>100 %</b>

## *Grade Scale*

Grade Chart	
100-90	A
89-80	B
79-70	C
69-60	D
59-0	F

## *Miscellaneous policies*

I have an Open Communication Policy: If you are having trouble with a problem, concept, or anything class related please do not hesitate to email me or come by my office. I do try to respond to email within 24 hours, but there are no guarantees. The content of this course will adhere closely to the information contained in the textbook and laboratory manual. You may use other resources (alternate texts, notes from other professors, etc.). If you find information that contradicts something written in the textbook or said in the lecture, please consult Dr. Quiñones.

Class announcements may occasionally be made via email to your university email address. Please check it on a regular basis. Lecture notes and handouts will be posted at MU Online as time permits.

## **Schedule of Experiments**

<b><i>Performed</i></b>	<b><i># Exp.</i></b>	<b><i>Experiment/Assignment</i></b>	<b><i>Report Due</i></b>
Aug. 21	<b>1. Part I</b>	Lab Check-In, Safety Information, Density of water. H1 and H2: sig figs and dimensional analysis	
Aug. 28	<b>1. Part II and III</b>	Determination of Sugar in Soft Drinks	Sept. 6*
Sept. 4	<b>2</b>	Separating the Components of a Mixture	Sept. 11
Sept. 11	<b>3</b>	Determination of the Percent Oxygen in Air	Sept. 18
Sept. 18	<b>4</b>	Determination of an Empirical Formula	Sept 25
Sept. 25	<b>5</b>	Determination of Avogadro's Number	Oct. 2
Oct. 2	<b>6</b>	Synthesis of an Alum and <b>Mid-Term Exam.</b> <i>Lab notebook will be submitted for grading</i>	Oct. 9
Oct. 9	<b>7</b>	Reactions	Oct. 16
Oct. 16	<b>8</b>	Determination of Molar Mass	Oct. 23
Oct. 23	<b>9</b>	Heat of reaction and Heat of Solution	Oct. 30
Oct. 30	<b>10</b>	Titration of Vinegar	Nov. 6
Nov. 6	<b>11</b>	Combustion!-Synthesis and Reactions of Oxygen	Nov. 13
Nov. 13	<b>12</b>	Energy in a Peanut: Calorimetry	Nov. 27
Nov. 20		THANKSGIVING BREAK	
Nov. 27	<b>13</b>	Molecular Architecture, <i>Lab Checkout</i>	Dec. 4
Dec. 4		<b>Final Exam; Lab notebook will be submitted for final grading</b>	

**\* Lab Report # 1 will be dropped off at Dr. Quiñones office (S 496) or her mailbox in S 450 by September 6, 2017.**

ACS Academic Safety Guide link:

<http://www.acs.org/content/dam/acsorg/about/governance/committees/chemicalsafety/publications/safety-in-academic-chemistry-laboratories-students.pdf>

### **University Policies:**

By enrolling in this course, you agree to the University Policies listed below. Please read the full text of each policy by going to [www.marshall.edu/academic-affairs](http://www.marshall.edu/academic-affairs) and clicking on “Marshall University Policies.” Or, you can access the policies directly by going to [http://www.marshall.edu/academic-affairs/?page\\_id=802](http://www.marshall.edu/academic-affairs/?page_id=802). Academic Dishonesty/ Excused Absence Policy for Undergraduates/ Computing Services Acceptable Use/ Inclement Weather/ Dead Week/ Students with Disabilities/ Academic Forgiveness/ Academic Probation and Suspension/ Academic Rights and Responsibilities of Students/ Affirmative Action/ Sexual Harassment

#### ***Academic Honesty***

The university policy will be enforced. See page 73-75 of the 2016 – 2017 undergraduate catalog. Some examples of academic dishonesty include (but are not limited to) copying another student’s assignment, lying about being ill on the day of a test, using a cell phone or other communication device during a test, quoting an author’s writing (including material found on the internet) without giving due credit.

[http://www.marshall.edu/catalog/files/UG\\_16-17\\_published\\_08-25-16.pdf](http://www.marshall.edu/catalog/files/UG_16-17_published_08-25-16.pdf)

#### ***Incomplete Coursework***

The university policy will be enforced. See page 96 of the 2016 – 2017 undergraduate catalog.

[http://www.marshall.edu/catalog/files/UG\\_16-17\\_published\\_08-25-16.pdf](http://www.marshall.edu/catalog/files/UG_16-17_published_08-25-16.pdf)

#### ***Accommodations for Disabilities***

Students with disabilities must contact the Office of Disabled Student Services in Prichard Hall 117, phone 696-2271 to provide documentation of their disability to ensure proper accommodation. Please visit

<http://www.marshall.edu/disabled> for additional information.

#### ***Sexual Harassment***

This course will follow Marshall University’s policy on Sexual Harassment, which can be found on p. 71 of the 2016– 2017 online undergraduate catalog.

[http://www.marshall.edu/catalog/files/UG\\_16-17\\_published\\_08-25-16.pdf](http://www.marshall.edu/catalog/files/UG_16-17_published_08-25-16.pdf)