

## I. INTRODUCTION

Chemistry 111 is the first course in chemistry for all students majoring in chemistry or one of the other sciences; biology, earth sciences and physics. All students registered for this course should have taken the Math and Chemistry Placement Exams. If you haven't, please take them **as soon as possible**. If the scores you receive on these exams necessitate a change in your schedule, you will be able to drop and add classes through the Registrar's Office without any problems.

Get into good study habits early by keeping up with the reading assignment and homework. It is best to allocate a certain number of problems each day so as to keep up with the homework. The practice gained by doing the problems will be most beneficial for the exams and quizzes. **KEEP UP WITH THE MATERIAL IN THE COURSE ON A DAY-BY-DAY BASIS, RATHER THAN PUT IT OFF UNTIL JUST BEFORE THE EXAM.**

## II. COURSE MATERIALS REQUIRED

1. Chemistry by Flowers, Theopold, Langley and Robinson; OpenStax, 2019, The book is available in web view and PDF for free. You may purchase a hard copy on Amazon for US\$ 50.  
<https://openstax.org/details/books/chemistry-2e>
2. A calculator that has log, ln,  $10^x$ , and  $e^x$  functions. Cell phone calculators are strictly forbidden when taking quizzes and exams.
3. Lab Text: Chemistry Techniques and Explorations, Daniel R. Albert; OpenStax, 2023.  
<https://paadopt.org/bookshelf/chemistry-techniques-and-explorations-an-introductory-chemistry-laboratory-manual/>
4. Lab Notebook: Must be bound (no ring binders) approximate size 7 x 9.5", quadrille **ruled**. Carefully follow the instructions for the laboratory notebook on pages 8 through 10 of the laboratory manual.
5. Lab safety goggles.

## III. A. CLASS SCHEDULE

<u>Chapter</u>	<u>Topics</u>
1	Chemical Foundations
2	Atoms, Molecules, and Ions
3	Composition of Substances and Solutions
	<i>Exam - I</i>
4	Stoichiometry of Chemical Reactions
5	Thermochemistry
	<i>EXAM - II</i>

6	Electronic Structure and Periodic Properties
7	Chemical Bonding
8	Theories of Chemical Bonding <i>EXAM- III</i>
9	Gases
10	Liquids and Solids
11	Properties of Solutions <i>Exam - IV</i>

**Dec. 11 (WED): FINAL EXAM 8 - 10 a.m. (Comprehensive)**

**PROBLEMS WILL BE ASSIGNED IN EACH CLASS**

**B. RECITATION**

1. Discussion about matters from lectures. (Ask questions!)
2. Review of problems assigned in lecture.

**C. TENTATIVE LAB SCHEDULE**

- 8/27. Lab 1 – Lab safety, Record keeping, check-in (Pages 8-12).
- 9/3. **Lab 2** – Separating Substances, Measuring Mass, & Analyzing Data (Pages 13-22).
- 9/10. **Lab 3** – Measuring Volumes (Pages 23-33).
- 9/17. **Lab 4** – Reaction Types & Qualitative Analysis (Pages 34-41).
- 9/24. Lab 5 - Reaction Types & Qualitative Analysis (Pages 34-41).
- 10/1. **Lab 6** – What is contaminating the water supply? (Pages 42-44)
- 10/8. Lab 7 – What is contaminating the water supply? (Pages 42-44)
- 10/15. – Fall Break.
- 10/22. **Lab 8** – Titrations (Pages 45-55)
- 10/29. **Lab 9** – What is the acidity of vinegar? (Pages 56-59)
- 11/5. Lab 10 – What is the acidity of vinegar? (Pages 56-59)
- 11/12. **Lab 11** – Molecular Models (Hand Out-Experiment 13)
- 11/19. **Lab 12**– Absorption Spectroscopy (Pages 60-73)
- 11/26. **Lab 13** – What is the Dye Composition of a drink? (pages 74-78)
- 12/3. Lab 14 - What is the Dye Composition of a drink? (pages 74-78) & Check-out.

## I. LABORATORY MANUAL

Permanently bound notebook (spiral or ring binders are not acceptable). Bound notebooks are available in the campus bookstore, on-line, or at retail stores.

## II. SUPPLEMENTAL MATERIAL

Handouts will be posted on your CHEM 111 lecture D2L course. You must print them out and read them before lab. Calculator with root function, logs, and antilogs will be useful for lab exercises. *Required:* Safety goggles and close-toed shoes.

## III. LAB OBJECTIVES

- 1) To provide the student with an empirical insight into the principles of chemistry.
- 2) To develop an ability in the student to learn and work with a team of peers.
- 3) To develop in the student an appreciation for safety and environmental sensitivity.
- 4) To illustrate, in a laboratory setting, the fundamental laws of chemistry.

## IV. INSTRUCTIONS FOR LABORATORY EXERCISES

Please arrive on time, as you will not be given extra time to finish the experiment beyond the designated time. Read about the experiment before coming to lab. It is unsafe and inefficient to read the handout, for the first time, as you are performing the laboratory experiment. ***All pre-lab worksheets are due at the beginning of class*** and are worth five points each. If the experiment performed is a continuation from the previous week, there will be no pre-lab worksheet. The pre-lab worksheets can be found in the Lab Manual. No pre-lab worksheet is due during the first week of classes. It is expected that all students will complete all laboratory exercises, and all labs will count toward the final lab grade as described below.

## V. RECORD-KEEPING IN THE LABORATORY

To properly apply the scientific method, you must record all laboratory observations in a bound notebook in great and graphic detail. The notebook should have a table of contents at the beginning, containing the experiment title, the page on which each experiment begins, and the date(s) during which the experiment was performed. The pages should be numbered, and no pages should ever be removed from the notebook. At the beginning of a new experiment, write a few sentences in the notebook about the purpose of the experiment, the method used, and any partners with whom you will work.

Mistakes are indicated by a single line drawn through them, never by obliterating them beyond recognition, since experimenters often decide later that what was thought to be a mistake was not really a mistake. Observations and data should be recorded directly into the notebook *as you are performing the experiment*. Do not write on paper towels or scrap paper and transfer to the notebook later. This would defeat the purpose of the notebook as a primary source of data. Organize your notebook beforehand when possible by labeling and leaving blanks for experimental parameters that must be recorded, and by making tables for data ahead of time. If you are unsure whether a piece of information should go into the notebook, write it in there. You cannot have too much information. If you have misgivings about the accuracy or precision of the data, or if something went wrong during the experiment, write that in the notebook as well. Later, you will not remember which data you trust and which you do not. Explanatory notes, units, and labels are always important, as is legibility.

## VI. ATTENDANCE

Attendance is necessary in all lab meetings. If you cannot attend lab, due to serious illness or other emergency, you must contact me before the class period begins.

## D. COURSE GRADING AND POLICIES

### I. GRADING

Four Unit Exams (100 pts. each)	400
Final Exam	200
Quizzes	200
Lab (9 prelabs(54), 9 reports (135), notebook (11))	<u>200</u>
<b>TOTAL POINTS</b>	<b>1000</b>

#### Guaranteed Letter Grades:

A	90 - 100%	A-	87% - 90%	B+	84% - 87%
B	80 - 84%	B-	77% - 80%	C+	74% - 77%
C	70 - 74%	C-	67% - 70%	D+	64% - 67%
D	60 - 64%	D-	57% - 60%		
F	Less than 57%				

**YOU MUST ACHIEVE A PASSING GRADE IN THE LECTURE COMPONENT, i.e., EARN 480 POINTS OUT OF A TOTAL POSSIBLE POINTS OF 800 ASSOCIATED WITH LECTURE, AND MUST HAVE COMPLETED ALL LABS TO PASS THE COURSE.**

### II. COURSE POLICIES

1. There will be a quiz given every Wednesday during class time.
2. Lab reports/quizzes should be neat and written legibly in ink. They are due at the end of each lab period. Credit will be deducted for "late" reports. Instructions for writing lab reports are in the introduction section of the laboratory manual. All lab reports should be submitted (even if they are late) in order to pass the course.
3. All students will take the examinations and quizzes as scheduled. You are responsible for obtaining the notes for any class you miss, whether your absence is excused or not. Other than health problems (that require a written, signed excuse from the **doctor stating that you were too ill**), excused absences will only be considered **before** the scheduled exam. A make-up exam will be scheduled at a mutually agreeable time within three days in these circumstances. There are no makeups for missed quizzes. For excused absences the final exam percentile will be used to calculate the grade.
4. Plagiarism and copying are expressly prohibited. If you secure information from another person and do not acknowledge it in writing in your laboratory report, you will receive a grade of zero for that work.
5. **Class attendance is required**, and it should be recognized that missing more than one to two days of a chemistry course is most unwise due to the pace of the course and the amount of material covered. It will be considered for "borderline" students when giving the final grade for the course.
6. Any student who has been approved for special academic accommodations through the Office of Learning Services (OLS) should discuss this with the instructor during the first week of classes.

## E. TUTORING HELP

### The Peer Learning Hours are:

- **Wednesdays 12-2 pm in Caputo 211 and Thursdays 12-2 pm in Roddy 256.**
- **Tuesdays, Wednesdays, and Thursdays 5-7 pm in Roddy 256.**

*Millersville University and its faculty are committed to assuring a safe and productive educational environment for all students. In order to meet this commitment, comply with Title IX of the Education Amendments of 1972, 20 U.S.C. §1681, et seq., and act in accordance with guidance from the Office for Civil Rights, the University requires faculty members to report to the University's Title IX Coordinator incidents of sexual violence shared by students. The only exceptions to the faculty member's reporting obligation are when incidents of sexual violence are communicated by a student during a classroom discussion, in a writing assignment for a class, or as part of a University-approved research project. Faculty members are obligated to report to the person designated in the University Protection of Minors policy incidents of sexual violence or any other abuse of a student who was, or is, a child (a person under 18 years of age) when the abuse allegedly occurred.*

*Information regarding the reporting of sexual violence, and the resources that are available to victims of sexual violence, is available at <http://www.millersville.edu/socialeq/title-ix-sexual-misconduct/index.php>.*