CHEM 110 – Fundamentals of Chemistry
Spring 2023

Instructor: Dr. Maria V. Schiza **Lecture:** Tue & Thu: 9:25-10:40 am (Brossman 102)
Office: Caputo 219
Tel: (717) 871-7437
e-mail: Maria.Schiza@millersville.edu (best way to be reached)

Office Hours: Mon 9:00-10:30 am, Wed 9:00-10:30 am, Thu 11:00-12:00 pm, Fri 9:00-10:00 am
*Alternative times can be scheduled by appointment for an in-person or Zoom meeting.

Required materials:

1. **Course Textbook:** "Basic Chemistry" by Timberlake and Timberlake, 6th Edition (Paperback – ISBN: 978-0134878119; eTextbook – ISBN: 9780135765982). Also acceptable: 5th edition (ISBN: 978-0134138046 - can be found on Amazon). Access card for MasteringChemistry is NOT required.
2. **Scientific Calculator:** An inexpensive one is sufficient. It should be capable of doing square roots, logarithms (log, ln), and exponentials (10^x, e^x, y^x).
3. **Other requirements**: regular access of materials/announcements posted on the D2L course site and your Millersville University email account.

Description: This course is designed to prepare you to succeed in the general chemistry sequence CHEM 111 and CHEM 112. It is an intensive review of the fundamentals of chemistry, with particular emphasis placed on solving chemistry problems and developing good studying and problems solving skills. Topics include: measurements, formulas, nomenclature, equations, stoichiometry, atomic structure, solutions, and molecular structure.

Course Objectives: By the end of the course, you should be able to:

a) Demonstrate an understanding of the rules for determining significant figures and working with exponential notation.
b) Use a calculator to perform simple mathematical operations involving significant figures and exponential notation.
c) Interconvert units in the English and metric systems of measurements using the conversion factor method.
d) Solve simple density problems involving solids and liquids.
e) Classify common substances as pure elements, compounds, or mixtures. Understand temperature and energy concepts.
f) Identify the three basic subatomic particles.
g) Show the correct notation for writing the symbol of an element.
h) Deduce the atomic number, atomic mass, number of protons, neutrons, and electrons given the symbol of an element.
i) Write electronic configurations of elements given their atomic number or symbol.
j) Calculate the atomic mass of an element given the composition of its isotopes.
k) Explain simple trends in the properties of elements in the periodic table.

l) Name simple ionic or covalent compounds given the formula and write down the formula of a compound given its name.
m) Calculate number of moles using mass and molar mass.
n) Balance chemical equations and calculate the moles of products or reactants in chemical equations using the rules of stoichiometry.
o) Determine the number of moles in solutions.
p) Write the Lewis structures of simple compounds.

Tentative Schedule of Topics:

Chapter	**Short Topic Title**	**Textbook Sections/ Readings**	***Quizzes***	***Exams***
Chap 1	Introduction	1.1, 1.3-4	***Quiz 1 on 2/2***	
Chap 2	Measurements	2.1-7		
Chap 3	Matter and Energy	3.1-5	***Quiz 2 on 2/23***	
Chap 4	Atoms and Elements	4.1-5		
Chap 5	Periodic table	5.1-6		***Exam 1 on 3/2***
Chap 6	Naming Compounds	6.1-5		
Chap 7	Chemical Quantities	7.1-6	***Quiz 3 on 3/23***	
Chap 8	Chemical Reactions	8.1-2		
Chap 9	Chemical Quantities in Reactions	9.1-5	***Quiz 4 on 4/13***	
Chap 12	Solutions	12.1-5		
Chap 10	Molecular Structure	10.1-4		***Exam 2 on 5/3 (Final Exam)***

Grading Criteria:

Homework	25 %
Problem(s) of the day	5 %
Quizzes (4)	40 %
Exams (2)	30 %
Total	100%

Grade Distribution:

A	92-100%	**B-**	80-81.9%	**D+**	67-69.9%
A-	90-91.9%	**C+**	77-79.9%	**D**	62-66.9%
B+	87-89.9%	**C**	72-76.9%	**D-**	60-61.9%
B	82-86.9%	**C-**	70-71.9%	**F**	< 60%

Homework:
Homework problems will be assigned on D2L to check your skills as we cover the material in each chapter. This will allow me to see your progress in the course. You will be allowed multiple attempts on the homework problems. Only your highest score will count towards your grade.

Problem(s) of the day:
You can expect a problem based on the materials covered each day at the end of class when there are no quizzes/exams. However, the problem(s) of the day may be postponed or cancelled if there is limited time available by the end of the class period.

Quizzes:
Four quizzes will be given during our regular lecture meeting times. You will have about half of the lecture time (30 minutes) to complete the quizzes. Quizzes will primarily consist of multiple choice, short answer, and worked problems. **The quizzes will be on Thursdays: Feb 2nd, Feb 23rd, Mar 23rd, and Apr 13th.** Each quiz is equally weighted in the quizzes category.

Exams:
Two exams will be given in class during the semester. Each exam will contain one or more of the following types of questions: multiple choice, short answer, and worked problems. All exams in this course are considered cumulative. **The first exam will be given on Thursday March 2nd. The second exam will be given during the Final Exam Period on Wednesday May 3rd at 2:45-4:45 pm.** Each exam is equally weighted in the exam category.

Practice Problems Worksheets and Peer Learning Hours/Tutoring Information:

Practice Problem Worksheets:
During some class meeting times, you can also be assigned problems to work on, given in the form of worksheets. I will go round the class and answer questions as you are working on those. These problems will not be collected for grading; however, I highly recommend completing those, as they will help with your quiz and exam performance.

Peer Learning Hours/Tutoring:
Chemistry tutoring is primarily available via drop-in Peer Learning Hours. You can just show up to these sessions to work on and get help with chemistry. The schedule is available below and at https://www.millersville.edu/chemistry/tutoring.php

- Tues. 6 – 8 pm in Roddy 256
- Wed. 1:30 – 3:30 and 6 – 8 pm in Roddy 256
- Thur. 1:30 – 3:30 and 5:30 – 7:30 pm in Roddy 256
- Sat. 12 – 3 pm in McNairy Library 117

Starting January 21st and continuing through the Spring Semester.

Course Policies:

Class Attendance: Policy link: Class Attendance Policy | Millersville University
Students are expected to attend all classes. Students are responsible for all material covered. It is the responsibility of the student to obtain information on the material discussed during class. If you need to be excused for a valid reason (college activities), please see me in advance to be allowed to arrange the make-up of any missed assignments. In unexpected cases (illness, death in the family), contact me as soon as possible by e-mail or phone and follow up in person. Making up missed Homework, Problem(s) of the day, Quizzes, or Exams are allowed as long as you communicate with me in advance of the deadline, or under emergency situations.

Academic Honesty: Policy link: Governance Manual (millersville.edu)
Students are expected to conduct all CHEM 110 work in an honest and ethical manner. Cheating on coursework bypasses the learning process and will **NOT** be tolerated. Anyone caught cheating will be assigned a score of zero on the work. Habitual academic dishonesty will be penalized to the maximum.

Decorum:
Talking or distracting others during lectures is not permitted. Anyone doing so may be asked to leave the class. You are expected to treat other students in the class with respect always.

Weather Delays and Cancellations: Policy link: Policy on Delays & Cancellations | Millersville University

---

Suggestions for Course Success

My expectation is that you are working on CHEM 110 material for at least 6 hours every week outside of class. This effort needs to be consistent throughout the semester to get the most out of this course. If you find yourself putting in the work outside of class and still having difficulty with any part of the course, you should arrange to come meet with me as soon as possible so that we can work together to help you be successful. Here are my suggestions for success:

- Work on chemistry a little bit every day. Set aside 60 to 90 minutes each day to work on chemistry outside of class.
- Read the textbook and work example problems. Work at least five new problems a day.
- At a minimum you should be working on all of the homework and worksheet problems.
- The way you work through a problem matters. Try to work problems by minimally looking at your notes or the textbook. Starting problems is the most difficult part. Give yourself five minutes. Solve problems from start to finish by yourself.
- Utilize helpful resources:
  Ask questions during class, form study groups, come to office hours, visit the free chemistry drop-in peer learning hours/tutoring sessions.

Important Dates:
1/24 Last Day to Add or Drop a Course
3/6 - 3/10 No Classes - Spring Recess
3/31 Last Day to Withdraw from Course and Receive a `W'
5/3 CHEM 110 Exam 2 (Final Exam) from 2:45 - 4:45 pm

Title IX Statement
Millersville University and its faculty are committed to assuring a safe and productive educational environment for all students. In order to comply with the requirements of Title IX of the Education Amendments of 1972 and the University's commitment to offering supportive measures in accordance with the new regulations issued under Title IX, 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 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.***