

**CHEM 110**

**FUNDAMENTALS OF CHEMISTRY  
COURSE SYLLABUS**

**Spring 2024**

**Instructor:** Dr. Jeremiah K.N. Mbindyo  
**Office:** Caputo 321  
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**Office hours:** Monday 10 a.m. -12 noon      Tuesday 12 noon-1 p.m.  
Wednesday 10 a.m. -12 noon  
Other times can be scheduled by arrangement, preferably in person or by email.  
**Venue:** Brossman 102  
**Class hours:** M W F 9:00- 9:50 p

**Required materials:**

- 1. Course Text:** "Basic Chemistry" by Timberlake and Timberlake, 5<sup>nd</sup> edition (ISBN-13:978-0134138046). The 4<sup>th</sup> or 6<sup>th</sup> Editions ( ISBN-13: 9780321809285 and 9780134878119) are also acceptable. 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 requirement:** You must open a Marauder account and access blackboard regularly.

**Description:**

This course is designed to prepare you to succeed in the general chemistry sequence CHEM 111 and CHEM 112. It is not a survey of chemistry. It is an intensive review of the fundamentals of chemistry, with particular emphasis placed on solving chemistry problems. Topics include: measurements, formulas, nomenclature, equations, stoichiometry, atomic structure, molecular structure and solutions.

**Course Objectives:**

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

1. Demonstrate an understanding of the rules for determining significant digits and working with exponential notation.
2. Use a calculator to perform simple mathematical operations involving significant digits and exponential notation.
3. Interconvert units in the English and metric systems of measurements using the conversion factor method.
4. Solve simple density problems involving solids and liquids.
5. Classify common substances as pure elements, compounds or mixtures.
6. Identify the three basic sub atomic particles and explain the relative mass of each.
7. Show the correct notation for writing the symbol of an element.
8. Deduce the atomic number, atomic mass, number of protons, neutrons and electrons given the symbol of an element.
9. Write electronic configuration of elements given their atomic number or symbol.
10. Calculate the atomic mass of an element given the composition of it's isotopes.
11. Explain simple trends in the properties of elements in the periodic table.
12. Write the Lewis structure of simple compounds.
13. Name simple ionic or covalent compounds given the formula, and write down the formula of a compound given its name.
14. Calculate number of moles using mass and molar mass.
15. Determine the number of moles in standard solutions.
16. Calculate the moles of products or reactants from equation using the rules of stoichiometry.

## **Course Policies:**

### **Lecture**

We will meet 3 times a week for 50 min lecture/discussion.

### **Homework**

You will be assigned homework problems covering materials in each chapter. The solutions to these problems are provided in the text. Homework will not be collected for grading. However, quizzes will have questions very similar to those in the practice problems and homework.

### **Problem of the day**

You can expect a problem based on the materials covered each day at the end of class when there is no quiz. However, the problem of the day may be postponed or cancelled if there is limited the time available by the end of the class period.

### **Worksheets and Quizzes:**

During some class meeting times, you will be assigned problems to work on. I will go round the class and answer questions. The problems will not be collected for grading. However, at the end of the class period, a quiz maybe given that will test portions of the materials covered.

**Peer Learning Hours:** There is free tutoring available by students who have already taken the class. No need to make an appointment simply come work on chemistry with your peers and get help from experienced tutors. Location: Caputo 211.

<b>Day</b>	<b>Afternoon Session</b>	<b>Evening Session</b>
Tue	None	5:30 -7:30 p.m.
Wed	12-2 p.m.	5:30 -7:30 p.m.
Thur	12-2 p.m.	5:30 -7:30 p.m.

### **D2L and email**

Solutions to homework problems and other course materials and information will be posted on D2L. You must open a Marauder account and logon to D2L regularly to access course information. I will used your MU email to communicate to you often. You need to check your email regularly.

### **Attendance**

You are expected to attend all classes and to participate in discussion. In case of unavoidable absence, you should notify me in advance, preferably in person. It is your responsibility to make up any work missed when you were absent. You should also pick up any hand outs, tests, assignments etc. that were handed out during your absence from my office during office hours. Quizzes, problems of the day or tests missed due to unexcused absence can not be made up.

### **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.

### **Exams**

There will be two hour exams and one final.

**Grading Criteria:**

Your grades will be calculated as follows:

Quizzes and worksheets	40 %
Problem of the day	10 %
Hour exams (2)	30 %
Final exam	20 %
Total	100

**Grade distribution:**

<b>A</b>	90-100%	<b>B-</b>	78-79%	<b>D+</b>	65-67%
<b>A-</b>	88-89%	<b>C+</b>	75-77%	<b>D</b>	64-65%
<b>B+</b>	85-87%	<b>C</b>	70-74%	<b>D-</b>	60-63
<b>B</b>	80-83%	<b>C-</b>	68-69%	<b>F</b>	< 60%

**Tentative order of topics**

<b>Chapter</b>	<b>Topic</b>
Chap 1	Introduction
Chap 2	Measurements
Chap 3	Matter
Chap 4	Atoms and Elements
Chap 5	Electronic structure and the Periodic table
Chap 6	Ionic and Molecular Compounds
Chap 7	Chemical Quantities
Chap 9	Chemical Quantities in Reactions
Chap 10	Bonding and Molecular Structure
Chap 12	Solutions
Final Exam – Wed - May 1, 8-10 a.m.	

## **Revised University Class Attendance Policy**

The University supports departmental and faculty class attendance policies that are reflective of and consistent with University approved guidelines. Faculty will include their class attendance policy in their syllabi given to all students in their classes at the start of the semester.

### **University approved guidelines:**

1. **Students are expected to attend all classes.** It is the student's responsibility to complete all course requirements even if a class is missed. If a student misses class for an officially excused reason, then he/she is entitled to make up the missed work but only at the convenience of the faculty member. Responsibility for materials presented in, assignments made for, and tests/quizzes given in regularly scheduled classes lies solely with the student.
2. **The University policy is that faculty will excuse absences for the following reasons:**
  - a. personal illness,
  - b. death or critical illness in the family,
  - c. participation in a university-sponsored activity,
  - d. jury duty,
  - e. military duties, or
  - f. religious holidays
3. **Faculty judge the validity of student absences from class within the University's approved guidelines and may require documentation for excused absences.** Faculty will evaluate any reason, other than those listed above, for a student missing class and determine whether the absence is justified. In these circumstances, a student may make up missed work at the discretion of the instructor.
4. **In the case of foreseeable absences, students are encouraged to notify the faculty member in advance.** A student who will miss class due to participation in an official University activity must notify the instructor well in advance of the activity to assure that the absence is excused.

### ***Appeals:***

As with any academic issue, students may exercise their right to appeal adverse attendance decisions. Please refer to the current undergraduate catalog for the complete Academic Appeal procedure.

### **Title IX Statement**

*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/socialseq/title-ix-sexual-misconduct/index.php>.*