

COURSE SYLLABUS

Instructor: Dr. Jeremiah K.N. Mbindyo
Office: Caputo 321
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Office hours: Mon. 9:00-10:50 a.m.; Wed. 9:00-10:50 a.m.; Fri. 9-10 a.m.
Other times can be scheduled in person or by email
Venue: Roddy 153
Class hours: Monday 12:00-12:50 noon

Course Materials:

1. **Recommended text:** (Open Access) Chemistry, 2e from OpenStax, <https://openstax.org/details/books/chemistry-2e>. Print ISBN 194717262X, Digital ISBN 1947172611. You can access the textbook online in the web view (recommended) or download as a PDF for free. Additional readings may be assigned in class.
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).

Course Description: The ideas of introductory chemistry are studied in extended depth, using problems, laboratory exercises, readings and discussion. Grades of B- or higher in both CHEM 112 and CHEM 113 will result in honors designation for the pair. The pair of courses counts as one entry in the science component of general education and results in 5 hours of general education credit. 1 hr. discussion. Prereq. or Coreq: CHEM 112 .

Learning Objectives

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

- (a) Solve calculations involving concentrations, solutions and stoichiometry and apply them in chemical analysis.
- (b) Work collaboratively with other students to solve challenging chemistry problems.
- (c) Describe in detail the chemical processes involved in operation of batteries, generation of solar power, water treatment and formation of smog.
- (d) Write precis' of scientific articles to crystallize main ideas discussed.
- (e) Critically analyze and discuss scientific articles in popular press and science magazines to explain the underlying chemistry principles.
- (f) Design and execute a scientific experiment.
- (g) Present experimental data in a well-organized scientific report.
- (h) Present experimental data in a well-organized and formatted poster.

Course policies

We will meet for a 1 hr. lecture/discussion each week. You are expected to attend all classes and to contribute actively to discussions. 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.

You are expected to contribute actively to classroom discussions. You will be assigned readings to present to the class and also presented with problems to solve in the class. There is a strong emphasis in group work. In some classes, demonstrations will also be presented to reinforce concepts discussed.

Grade Criteria:

Course grades will be based on in class quizzes/worksheets, presentations of assigned readings and poster presentation. Participation points will be assessed from attendance, contribution to discussions and presentations in class.

Worksheets	25 %
Assigned readings	40 %
Group projects	30 %
Participation	5%
Total	100

Grade Distribution

A	90-100%	B-	78-79%	D+	66-67%
A-	88-89%	C+	74-77%	D	64-65%
B+	85-87%	C	70-73%	D-	60-63
B	80-84%	C-	68-69%	F	< 60%

Tentative Order of Topics

1	Vaping/Photochemical smog
2	Tantalum/Smart phones
3	Pencils and Lead/Graphene
4	Serendipitous Chemistry/Artificial Sweeteners
5	Chemistry of coins/Magnetism
6	Solar-power/ Solar Powered Future
7	Flint water crisis/ Lead in water
8	Electric car/Lithium Batteries
9	Nuclear power/Microwave energy
10	MSDS/Vapor pressure
11	Recycling/Waste water treatment
12	Colligative properties
13	Autocatalytic reactions/silver mirror
14	Poster Assignment
15	Poster Assignment

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/socialeq/title-ix-sexual-misconduct/index.php>.