

**Instructor:** Dr. Jeremiah K.N. Mbindyo  
**Office:** Science & Technology Building 321  
**Email:** Jmbindyo@millersville.edu  
**Office hours:** Monday 10 a.m.- 12:00 p. Tuesday 12:10 - 1:10 p.m.  
Wednesday 10 a.m.- 12:00 p.  
Other times can be scheduled by arrangement in person or by email.  
**Lab Venue:** CAPUTO 328  
**Class hours:** Thur 2:00-3:50 p.m.

**Required materials:**

1. **Laboratory manual:** Experimental procedures will be posted in D2L.
2. **Laboratory notebook.** Permanently bound, approximately book 7 x 9.5".
3. **Safety glasses.**
4. **Calculator.** Should be capable of doing square roots, logarithms (log, ln), and exponentials ( $10^x$ ,  $e^x$ ,  $y^x$ ).

**1. Description**

This is a hands on Laboratory course in which you will learn lab procedures and concepts that reinforce your understanding of topics discussed in lecture. You will be working in teams two students to carry out procedures. Each person will submit their own report. It is important that everyone comes prepared for the experiment for the day and that each person contributes to the team effort. By the end of the course, you should be able to:

- a. Demonstrate safe laboratory practices.
- b. Keep a properly documented laboratory notebook.
- c. Work as a team to carry and interpret experimental procedures
- d. Perform titrations and follow written instruction to perform set up and perform experiments.
- e. Demonstrate proper methods to categorize and dispose waste generated during laboratory experiments.

**2. Laboratory safety**

Safety is very important in the laboratory! If you are not sure of any procedure always ask! Make sure you review the laboratory safety rules attached. **Eye protection must be worn at all times in the laboratory.**

**3. Waste Disposal**

For each experiment, pay attention to the disposal of waste. Special containers will be placed under the hood and labeled for the waste. Do not dump waste or through solids into the sink.

**4. The Laboratory Notebook:**

- a. The laboratory notebook is a permanent record of your work in the laboratory. Always enter your data directly into the notebook. Never write data on another sheet of paper with the idea of transferring it to the notebook. All entries in the notebook should be done legibly in ink. If an error is made, do not obliterate the data or tear the page. Draw a single line through the data and write a brief note explaining why the data was wrong. Include your initials next to this data.
- b. Each page must be consecutively numbered. No page should be skipped. It is not permitted to go back and make entries on previous pages.
- c. Use the first page of your notebook to write a table of contents. You should begin each new experiment on a fresh page. Cross out any space on the last page of each report that is not used.

- d. Write the title of the experiment on the top of the page and also on the table of contents. Enter the date on the page when you do the experiment.
- e. Keep your notebook tidy.
- f. For each experiment include: title of experiment and date performed. Do sample calculations in the lab notebook before including in your report.
- g. Instructor must sign lab notebook at end of each lab period.

**5. Lab reports.**

Lab reports will be uploaded in D2L. They will usually be due at end of lab period or by beginning of next lab period. The instructor will explain for each lab period.

**6. Report Format**

A template for lab report will be provided in D2L for each experiment.

**7. Lab Report Grade Criteria:**

<b>Item</b>	<b>pts</b>
Notebook	20
Lab report (15 pts ea x 9)	135
Pre-lab quizzes (5 pts ea. x 9)	45
<b>Total</b>	<b>200</b>

**8. Lab Schedule**

Date	Lab no	Topic
<b>Jan-23</b>	-	Lab safety, Record keeping, check-in - (Pages 8-12) -
<b>Jan-30</b>	<b>Lab 1</b>	Measuring Volumes – Technique (Pages 23-33).
<b>Feb-06</b>	<b>Lab 2</b>	Separating Substances - (Pages 13-22)
<b>Feb-13</b>	<b>Lab 3</b>	Formula and Composition of a Hydrate; Part A - Handout
<b>Feb-20</b>	<b>Lab 4</b>	Formula and Composition of a Hydrate; Part B – Hand out
<b>Feb-27</b>	<b>Lab 5</b>	Titrations – (Pages 45-55)
<b>Mar-06</b>	<b>Lab 6</b>	What is the Acidity of Vinegar? – (Pages 56-59)
<b>Mar-13</b>	<b>Lab 7</b>	Spring Break
<b>Mar-20</b>	<b>Lab 8</b>	What is the Acidity of Vinegar? – (Pages 56-59)
<b>Mar-27</b>	<b>Lab 9</b>	Molecular Models and Covalent Bonding - Handout
<b>Apr-03</b>	<b>Lab 10</b>	Absorption Spectroscopy - (Pages 60-73)
<b>Apr-10</b>	<b>Lab 11</b>	Reaction Types and Qualitative Analysis – (Pages 34-41).
<b>Apr-17</b>	<b>Lab 12</b>	Reaction Types and Qualitative Analysis – (Pages 34-41).
<b>Apr-24</b>	<b>Lab 13</b>	What is Contaminating the Water Supply? – (Pages 42-44)
<b>May-01</b>	<b>Lab 14</b>	What is Contaminating the Water Supply? – (Pages 42-44)

## 9. Attendance Policy

You are expected to attend all laboratory sessions during the scheduled time. Due to the limited number of equipment, a missed Lab cannot be made up.

### 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>.*