

## COURSE SYLLABUS

**Instructor:** Dr. Jeremiah K.N. Mbindyo  
**Office:** Caputo Hall RM 321  
**Email:** Jmbindyo@millersville.edu  
**Office hours:** Monday 11:00-12:00 Wednesday 11-12  
Tuesday 12:30-2:00 Thur 12:30-2:00  
Other times can be scheduled by arrangement, preferably in person or by email.  
**Venue:** Caputo Hall 328  
**Class hours:** Thursday 3:00 -4:50 p (Section C)

**Required materials:**

- Laboratory manual:** Experiments in General Chemistry; T.G. Greco, L.H. Rickard and G.S. Weiss; Prentice Hall; 2002.
- Laboratory notebook;** Permanently bound, quadrille-ruled, approximately 7 x 9.5".
- Safety glasses:** available from ACS student affiliates in the general chemistry prep room (STB 330)
- Molecular models:** available from ACS student affiliates in the general chemistry prep room (STB 330)
- You will require a calculator to do calculations in the lab. An inexpensive scientific calculator is sufficient. It should be capable of doing square roots, logarithms (log, ln), and exponentials ( $10^x$ ,  $e^x$ ,  $y^x$ ).

**1. Course Objectives:**

Students are expected to be able to:

- Demonstrate the proper procedure of laboratory safety when working in the lab.
- Keep a neat and organized record of laboratory data in a notebook book.
- Use balances to make measurements of mass to correct significant figures.
- Perform simple titrations and use the results to calculate concentrations of the unknown.
- Use a Spectrophotometer to measure concentrations of solutions, make Beer-Lambert plots and make conclusions about the concentrations of unknowns.
- Use physical tests such as solubility and color, and chemical properties such as pH, and reaction with acid or base, to identify simple ionic and covalent compounds.
- Make molecular models to show bonding in simple covalent compounds.
- Calculate the heat of neutralization of simple acids and bases from temperature measurements using a calorimeter.
- Demonstrate proper method to categorize and dispose waste generated during the laboratory experiments.

**2. Laboratory procedures:**

You are expected to read and understand the experimental procedure before you come to the laboratory. You may find it helpful to make an outline of the key steps in your laboratory notebook. You should also do the pre-lab questions before you come to the Lab.

During the first 5 minutes, a pre-lab quiz will be given. The quiz will be based on the experimental procedure, safety and waste disposal guidelines and pre-lab questions for the experiment.

I will then give a brief introduction to the experiment. DO NOT start working or assembling equipment during this pre-lab period. Also, during the experiment, I may call your attention to make announcements about the procedure. Be attentive during such announcements.

**3. Laboratory safety**

Safety is very important in the laboratory! If you are not sure of any procedure always ask! Make sure you review the rules on laboratory safety on pages 1-4 of your manual. A copy of these rules

must be signed and handed over to the instructor. **Eye protection must be worn at all times in the laboratory.** Do not use contact lenses in the lab. Failure to follow safety guidelines is reason for dismissal from the lab and a grade of zero assigned on the experiment.

#### 4. Waste Disposal

For each experiment, pay special 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.

#### 5. The Laboratory Notebook:

1. The laboratory notebook is a permanent record of your work in the laboratory. You must have your notebook with you in order to work in the Lab. 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.
2. Each page must be consecutively numbered. No page should be skipped. It is not permitted to go back and make entries on previous pages.
3. Use the first page of your notebook to write a table of contents. You should begin each new experiment on a fresh page. 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.
4. It is recommended that you write the outline of the procedure in advance before coming to the lab and where necessary prepare tables to receive the data.
5. The Instructors signature should appear for each Lab period.
6. Review the information on page 10 of your laboratory manual for more information about the laboratory notebook.

#### 6. Reports:

Laboratory reports are due one week after the lab. These should be on the tear out sheets of the laboratory manual, or forms provided by the instructor. You should never enter data directly onto your report sheets during the experiment. The raw data should be on the laboratory notebook. In experiments where you work in pairs, you will hand in individual reports. There will be a penalty of 10% per day for late report. Towards the end of the semester, the laboratory notebooks will be collected and graded based on the guidelines above. Plagiarism and copying are prohibited and will not be tolerated. Any one presenting a report copied from another student will receive a grade of zero for that particular lab.

#### 7. Grading Criteria:

Each lab will be graded out of 12 pts as follows:

Completed experiment, correct number of trials, neatness, significant figures	<b>6 pts</b>
Accuracy, sample calculations, correct interpretation, graphs, post lab questions	<b>6 pts</b>
Total	<b>12 pts</b>
Total 10 labs x 10 pts	<b>100 pts</b>

Lab note books will be graded out of 20 pts for, completeness, neatness, table of contents and following the guidelines for proper entry of notes	<b>20 pts</b>
Each pre-Lab quiz will be worth 5 pts ; Total 9 pre-lab quizzes x 5	<b>45 pts</b>
The timed test will be graded out of 35 pts	<b>35 pts</b>

Overall Total **200 pts**

## LAB SCHEDULE

<b>Date</b>	<b>Experiment No.</b>	<b>Title</b>
01/11	Check In; Experiment 1	Measurements and density; Part II
01/18	Experiment 2	Formula and Composition of a Hydrate; Part A (begin)
01/25	Experiment 2	Formula and Composition of a Hydrate; part B (complete)
	Experiment 6	Identification of Chemicals (begin)
02/1	Experiment 6	Identification of Chemicals (continue)
02/8	Experiment 6	Identification of Chemicals (complete)
02/15	Experiment 7	Titration of Acids and Bases
02/22	Experiment 12	Spectrophotometric Analysis of Aspirin (begin)
03/1	Experiment 13	Molecular Models and Covalent Bonding
03/08		SPRING BREAK
03/15	Experiment 12	Spectrophotometric Analysis of Aspirin (complete)
03/22	Hand out	Boyles Law
03/29	Hand out	Pressure-Temperature relationship
04/05	Experiment 11	Thermochemistry: The Heat of Reaction
04/14	Hand out	Vapor Pressure of Liquids
04/21	Experiment 6	Identification of Common Chemicals Timed Test- Final

## 8. **Attendance Policy**

You are expected to attend all laboratory sessions during the scheduled time. In the event of unavoidable, it will be your responsibility to make up any missed lab. Note that missed labs can only be made up during another scheduled laboratory period for another class. This will solely depend on the convenience of the instructor and availability of space during that lab period. Laboratory classes are harder to make up than regular classes. You are referred to the MU attendance policy below.

## 9. **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.