

CHEM 104: General, Organic, and Biochemistry 2

Semester: Spring, Year: 2023

Lecture Times and Room: Monday/Wednesday 8:00 AM – 8:50 AM; Brossman 102

Labs: 01A Thursday 4:00 – 5:50 PM; Caputo 331

1. Instructor Information

Instructor Contact Information

Instructor name: Dr. Nicholas Leed

Email address: nicholas.leed@millersville.edu

Office location: Caputo 317

Office hours: Mon 11:00-1:00; Wed 9:30-10:30; Thurs 1:00-3:00; by appointment

Preferred contact instructions: Please contact me via email with any questions or to setup a meeting outside of office hours. No email necessary to show up to office hours.

2. Course Description

Description

An introduction to the basic theories of general and organic chemistry, including nomenclature, reactions and problem solving. Appropriate for nonscience majors and satisfies general education requirements. Proficiency in algebra is essential.

Purpose

Our goal is to learn beginning chemistry principles and apply those principles to the world around us. Energy, clean air and water, medicines, better consumer products, and many others are strongly tied to chemistry!

The problem-solving techniques and approaches we use in this class are broadly applicable to thinking about many questions you will encounter in your life!

3. Learning Outcomes

Learning Objectives

- Be able to use qualitative and quantitative skills to solve chemistry problems (Problem Solving)
- Be able to use chemical theories to explain chemical and physical phenomena (Critical Thinking)
- Be able to organize, present, and interpret data to draw reasonable conclusions (Communication)
- Be able to explain natural phenomena encountered outside the classroom using chemical principles
- Be able to use appropriate and safe laboratory procedures

Tips for success in Chem 104

1. Be present and prepared for class.
2. Participate and be an active learner. I promise to provide you with the resources you need to help you succeed – class materials, examples, readings, practice problems, office hours, etc – but you are ultimately responsible for the knowledge you are gaining.
3. Review your notes after each class.
4. Complete practice problems.
5. Seek help from available resources. This includes studying with friends, other chemistry students, or the tutoring center. You should also come see me if you have questions! I am available during my office hours or by appointment. If you visit with me during office hours, please bring a list of questions that you have with you to make our time together more beneficial and efficient!
6. Remain engaged and upbeat throughout the semester.

4. Learning Resources

Required Learning Materials

- Textbook: Chemistry: Atoms First 2nd Edition by Flowers et al; OpenStax, 2019. ISBN: 1947172646
Good news: your textbook for this class is available for free online!
Your book is available in web view and PDF for free. You can also purchase on iBooks for \$4.99 or get a print version, if you prefer, on Amazon.com for about \$55. You can use any of the formats. Web view is designed to work well on any device. The textbook can be found at <https://openstax.org/details/books/chemistry-atoms-first-2e>
- Biology 2nd Edition by Clark et al; OpenStax, 2020. ISBN: 1947172514
Selected chapters will be provided on D2L and the full textbook may be found at <https://openstax.org/details/books/biology-2e>

- Scientific Calculator: Your calculator for this course must be able to handle logarithms and exponents. This type of calculator can be found for around \$10. *Mobile communication devices and calculator programs/internal memory are not acceptable for use on exams*
- Laboratory Notebook: Permanently bound notebook (No perforations or binders)
- Safety Goggles: Available from Bookstore or Chemistry Supply Room: Caputo 330
- Regular access to D2L (<https://millersville.desire2learn.com/>) and university email

Additional Learning Resources

Stop in and Work on Chemistry!

No need to make an appointment simply come work on chemistry with your peers and get help from experienced tutors. Starting August 27th and continuing through the Fall Semester.

Contact Dr. Albert (dalbert@millersville.edu) with any questions/concerns.

5. Learning Assessment

Final Grade Breakdown

The final course grade will be calculated using the following components:

Course Component	Percentage of Total
4 Midterm Exam	40%
Cumulative Final Exam	20%
Quizzes (drop lowest 1)	15%
Homework/ In-Class Participation	8%
Lab Notebooks and Reports	12%
Molecule Presentation	5%
Total Grade	100%

Exams

Four mid-semester examinations and one final exam will be administered in class on the dates indicated below. These will be opportunities for you to demonstrate your individual understanding and ability to apply, analyze and synthesize the material discussed in the course and in assigned readings.

Exams are scheduled for:

Mon, 01/30

Wed, 03/01

Mon, 03/27

Wed, 04/19

The Comprehensive Final Exam is scheduled for: Fri, **05/05, 2:45-4:45 pm**

D2L Quizzes

There will be approximately 5 quizzes throughout the semester that cover material from the previous classes. These will be used to test your understanding of course material, help focus your studies, and assist in preparation for exams. Quizzes will be administered on D2L and must be taken within the 24-hour window provided. Quizzes can only be attempted once and should not be completed with assistance from your text, notes, or any other student. Using any assistance is a violation of the University Honor Code and is subject to disciplinary action. There are no make-up quizzes available, even if your absence for a class that day is approved. Instead, your lowest quiz score will be dropped automatically.

D2L Homework

There will be D2L homework throughout the semester to help you gain mastery in material discussed in class. Occasionally, a D2L homework will include material we will cover in an upcoming class. D2L homework may be repeated until mastery of material is gained.

Make-Up Exam/Quiz Policy

If you know ahead of time that you will miss an exam because of a college-sanctioned activity (e.g. an intercollegiate athletic event), you must tell me, in person, at least one full week before the exam date. You will be expected to take the quiz or exam before the scheduled exam period unless illness or a family emergency causes a late make-up exam to be necessary. The make-up exam will not necessarily be the same as the exam administered to the rest of the class. Any request for a make-up exam may require documentation. Missing a quiz or an exam without prior permission will result in a score of zero and cannot be made up.

Grading Scale

Grade	Interval
A	93.0 and over
A-	90.0 to 92.9
B+	87.0 to 89.9
B	83.0 to 86.9
B-	80.0 to 82.9
C+	77.0 to 79.9

Grade	Interval
C	73.0 to 76.9
C-	70.0 to 72.9
D+	67.0 to 69.9
D	63.0 to 66.9
D-	60.0 to 62.9
F	Below 60.0

6. Course Policies

Learning Accommodations

Any student who meets the eligibility requirements to receive academic accommodations through learning services should speak with the Office of Learning Services in Lyle Hall as early in the semester as possible. You should give me a Testing Accommodation Request form ("green sheet") as soon as possible and plan to take quiz/exams on the same day and time at the Office of Learning Services. For more information:

<http://www.millersville.edu/learningservices>.

Official Attendance Policy

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 the student 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 Millersville University policy states that faculty will excuse absence 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
 - f. religious holidays
3. Faculty judge the validity of student absences from class within the University's approved guidelines and may require documentation for excuse 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.
5. For more information: http://www.millersville.edu/registrar/faculty/attendance_policy.php

Academic Honesty Policy

According to Millersville University's Academic Honesty Policy: "Students of the University are expected to be honest and forthright in their academic endeavors." If you break the academic honesty policy, there are severe penalties. A failing grade will be assigned and you may be prosecuted by an Academic Review board. Actions that violate the Academic Honesty Policy are:

1. Plagiarism: inclusion of someone else's words, ideas, or data as one's own work.
2. Fabrication: falsification of research or other findings.
3. Cheating: the act or attempted act of deception by which an individual tries to misrepresent that the individual has mastered subject matter in an academic project or the attempt to gain an advantage by the use of illegal or illegitimate means. Submitting in-class participation cards for another student is considered cheating.
4. Academic Misconduct: violation of University policies by tampering with grades or participating in the distribution of any part of a test before its administration

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 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 www.millersville.edu/titleix.

Counseling Reminder

Students sometimes face mental health or drug/alcohol challenges in their academic careers that interfere with their academic performance and goals. Millersville University is a caring community and resources are available to assist students who are dealing with problems. The Counseling Center (717-871-7821) is an important resource for both mental health and substance abuse issues. Additional resources include: Health Services (717-871-5250), Center for Health Education and Promotion (717-871-4141), Campus Ministries, and Learning Services (717-871-5554).

Americans with Disabilities Act

Millersville University is committed to equality of opportunity and freedom from discrimination for all students, employees, applicants for admission or employment, and all participants in public University-sponsored activities. In keeping with this commitment, and in accordance with the Americans with Disabilities Act (ADA) the University will make every effort to provide equality of opportunity and freedom from discrimination for all members of the University community and visitors to the University, regardless of any disability an individual may have. Accordingly, the University has taken positive steps to make University facilities accessible to individuals with disabilities and has established procedures to provide reasonable accommodations to allow individuals with disabilities to participate in University programs. The University administration and management are obligated to report any allegation of discrimination to the appropriate office as defined in this policy.

7. Laboratory Policies

The laboratory component of Chem103 is designed to give you hands-on experiences that enhance learning by application. Students MUST prepare for, carry out, and report on ALL lab experiments or activities in Chem103.

Attendance

Students should attend and complete every lab as scheduled. If an excused absence conflicts with your scheduled lab time, please contact the instructor as soon as possible to make alternate arrangements. Except for unavoidable, approved excuses, a missed lab will earn NO credit even though the work and report must still be made up. Students with repeated lab attendance issues may not be able to make up the work needed to pass Chem103.

Safe & Cooperative Environment

Students are expected to follow all directions regarding safety precautions and lab attire. More complete lab safety rules are posted in D2L and should be taped into your lab notebook for quick reference. Please notify the instructor about any special concerns (allergies, pregnancy etc.) that might require alternate arrangements for you to work safely in lab. You must also keep your lab drawer and general lab areas clean and tidy. Failure to follow instructions or clean up may result in a penalty for the week.

Instructions & Pre-Labs

Students are expected to come to lab each week with an understanding of the planned experiment/work. You should print out the lab protocol posted on D2L and tape it into your notebook (1 pt penalty for starting work without printed instructions). After reading over the instructions, you should complete the 3-pt pre-lab quiz in D2L by at 8 am Thursdays. (There is no pre-lab quiz when only a worksheet activity is scheduled for lab.)

Notebooks & Reports

Students must record ALL lab work directly into their notebook during lab. Calculations or analysis, a brief summary report, and answers to lab questions should also be written directly into the notebook. Failure to properly record data during lab may result in a 1 pt penalty. You should also maintain a table of contents listing titles and page numbers for each experiment. Notebooks are due before leaving the lab unless arrangements are made with the instructor

Lab Grading

Lab Notebook Set-up (week 1) 5 pts
Weekly Lab 15 pts each (x13)
(generally, a 3-pt pre-lab quiz & 12-pt notebook report)

Molecule Presentations

Each individual student will research a chemical element and give a 5-minute oral presentation during the lab sessions on April 27. Basic information, general properties, and life applications for the element will be assembled into a PowerPoint file. Files must be submitted to D2L at least 2 hrs BEFORE the lab period that day. Deductions will be made: 1 pt for late submissions online, 2 pts for files only brought to class in person, and 5 pts for an unexcused absence requiring presentation on another date. Detailed instructions, a template, and resources are available in D2L.

8. Course Schedule

Week		Topic/Reading	Laboratory Exercises
1	01/17	Acids, Bases, and Buffers	Lab check-in/Safety
2	01/23 01/25		Buffers & pH
3	01/30 02/01	Organic Chemistry Structures and Nomenclature	Organic Molecule Naming & Drawing
4	02/06 02/08		Exam Review Exam 1
5	02/13 02/15	Functional Group Structures & Reactions	Limonene & Vitamin C Analysis
6	02/20 02/22	Carbohydrates	Aspirin Synthesis
7	02/27 03/01	Exam Review Exam 2	Caffeine Extraction
8	03/06 03/08	Spring Break	No Lab
9	03/13 03/15	Lipids	Analgesic Separation
10	03/20 03/22	Amino Acids, Proteins & Enzymes	Testing for Biomolecules
11	03/27 03/29	Exam Review Exam 3	Carbohydrates
12	04/03 04/05	Nucleotides & Nucleic Acids	Soap: Lipid Saponification
13	04/10 04/12	Energy and Metabolism	Amino Acids & Proteins
14	04/17 04/19	Exam Review Exam 4	DNA Extraction & Metabolism
15	04/24 04/26	Nuclear Chemistry	Molecule Presentations / Lab Checkout
16	05/1	Review for Final	No Lab