

CHEM 110: Fundamentals of Chemistry

Dr. Dan Albert

Spring 2026

Welcome

Welcome to CHEM 110! I'm excited to have you in this course and look forward to working together to help you achieve success. I know for me this semester brings feelings of excitement but also nervousness about how everything will go. I can't guarantee any particular outcome. I will guarantee that I will be flexible, listen to you, and clearly communicate with you as the semester goes along. I ask you to do the same and know that together we will make this semester a good experience.

Contact Information

email: daniel.albert@millersville.edu

phone: 717-871-7391

office: Caputo Hall 214

The best way to reach me is via university email.

Student Consultation/Office Hours

Student Consultation/Office Hours are a great opportunity to get individualized support from me. All Office Hours will be held in Caputo 214 and are open to all students in the course. If you need to meet at a different time or have a private matter to discuss, please contact me and I would be happy to set-up an individual meeting with you. The scheduled times for Office Hours are as follows:

- Monday Afternoons from 12 - 1 pm
- Tuesday Mornings from 9 - 11 am
- Wednesday Afternoons from 2 - 3 pm
- Thursday Afternoons from 2 - 3 pm

If you cannot make it to office hours please feel free to set-up an alternative time to meet by corresponding with me via email.

Course Description

An intensive review of the fundamentals of chemistry, with particular emphasis placed on solving chemistry problems. Topics include measurements, formulas and nomenclature, equations, stoichiometry, atomic and molecular structure, solution concentrations, acids and bases. This course is designed to prepare students majoring in the sciences for their general chemistry sequence, CHEM 111 and CHEM 112.

Prerequisites

Math Placement Test of Math 160 or higher or completion of or concurrent enrollment in Math 101; or permission of instructor.

Course Purpose

An understanding of chemical principles is crucial in a wide variety of natural science disciplines as we constantly interact with chemicals. We will work to build an introductory understanding of how the natural world is composed of chemicals that are composed of atoms. We will work to better understand the world through knowledge of the behavior of atoms and molecules.

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!

Course 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)

Meeting Times

Lecture: Mondays, Wednesdays, and Fridays from 9:00 - 9:50 am in 261 Roddy Hall

Required Materials

- Textbook: *Chemistry 2e* by Flowers, Theopold, Langley, and Robinson; OpenStax, 2019. ISBN: 978-1-947172-61-6
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-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.
- Regular access to D2L (<https://millersville.desire2learn.com/>) and university email.

Class Environment

I value a learning environment that is engaging, respectful, and helpful. I ask that you help maintain a learning environment that meets these goals for everyone in the class. Anyone whose behavior is disruptive of the learning environment for others in the class will be asked to leave.

My goal is for you to feel comfortable, appreciated, fairly treated, and encouraged to challenge yourself and obtain success. *Please come talk to me if there is anything I can do to help support you in achieving success.*

Title IX

Millersville University and its faculty are committed to assuring a safe and productive educational environment for all students. In order to meet this commitment and to comply with Title IX of the Education Amendments of 1972 and guidance from the Office for Civil Rights, the University requires faculty members to report incidents of sexual violence shared by students to the University's Title IX Coordinator. 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 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, to the person designated in the University. Protection of Minors Policy

Information regarding the reporting of sexual violence and the resources that are available to victims of sexual violence is set forth at:<http://www.millersville.edu/titleix>

Grading

All grades in this course are assigned by the instructor of record. Your grade in this course will be calculated using the following components and weighting. You can access your assignment grades via D2L.

Category	% of Total
Skill Checks	15
Quizzes	40
Regular Exams	30
Final Exam	15
Total	100

Your final grade will be determined by your overall percentage grade in the course using the grading scheme described above.

The cut-off percentages for each grade are given below. I reserve the right to lower grade cut-offs, but under no circumstances will the grade cut-offs be higher than those listed below.

Grade Cut-off (%)	Letter Grade
93	A
90	A-
87	B+
83	B
80	B-
77	C+
73	C
70	C-
67	D+
63	D
60	D-
	F

Skill Checks

We will have weekly skill checks so that you can practice different questions and I can see your progress in the course. Skill checks will need to be completed by 11:59 pm on Monday Evenings. These checks will consist of five to ten questions on D2L (<https://millersville.desire2learn.com/>). You will be able to take the skill checks as many times as you like and only your highest score will count towards your grade.

Quizzes

Four quizzes will be given during our regular lecture meeting times. You will have about half of the lecture time (25 minutes) to complete the quizzes. Quizzes will primarily consist of short answer questions and worked problems. Each quiz is equally weighted in the quizzes category. Low quiz grades can be replaced by your grades on exams. Whichever is lowest grade of quizzes 1 and 2 can be replaced by your score on Exam 1, if your grade on Exam 1 is higher than your lowest quiz score. Whichever is lowest grade of quizzes 3 and 4 can be replaced by your score on Exam 2, if your grade on Exam 2 is higher than your lowest quiz score.

Regular Exams

Two exams will be given in class during the semester. Each exam will contain one or more of the following types of questions: multiple choice, short answer, and worked problems. All exams in this course are considered cumulative. The first exam will be given on March 6th. The second exam will be given on May 1st. Each exam is equally weighted in the exam category. If your score on the final exam is higher than your lowest regular exam, then your score on the final exam also replaces your lowest regular exam score.

Final Exam

The final exam is cumulative. It will have the same format as the regular exams but it will be about 50% longer. The final exam for this course is scheduled at 8 am on May 6th.

Assistance

If you tell me that you are having trouble I will not judge you or think less of you. I am always here to listen and if I can not help you, I will find someone who can.

Tutoring

Chemistry tutoring is primarily available via drop-in Peer Learning Hours. You can just show up to these sessions to work on and get help with chemistry. Peer Learning Hours are on Tuesdays, Wednesdays, and Thursdays from 4 - 6 pm in Caputo 211.

The schedule is available at <https://www.millersville.edu/chemistry/tutoring.php>

Counseling

People sometimes face challenges in their careers that interfere with their performance and goals. University Resources are available to help support you. 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).

Academic Honesty

The Millersville University Academic Honesty Policy states that:

Students of the University are expected to be honest and forthright in their academic endeavors. To falsify the results of one's research, to steal the words or ideas of another, to cheat on an examination, to allow another person to commit, or assist another in committing an act of academic dishonesty, corrupts the essential process by which knowledge is advanced.

The entire academic honesty policy can be found at <http://www.millersville.edu/english/faculty/academic-integrity/index.php>

All work that is turned in for a grade should be completed individually by the person whose name appears on the work.

AI Use Policy for CHEM 110

You may not use AI tools to generate text, images, or code for any graded work in this course. Any submitted work that is not your own original creation will be subject to the university's academic integrity policy.

AI tools could be helpful for you in this class to develop study materials or get help on thinking about solving various suggested problems but remember the goal of this class is to build scientific problem analysis skills that can only be developed by you engaging, thinking, and practicing those skills.

If you are using AI to help yourself get better at thinking, that is a great use in this course. If you are using AI to substitute for your thinking, than that it is a bad use of AI for this course.

Millersville Policies

- Academic Honesty Policy Governance Manual (millersville.edu); for additional information please see the following: What is Academic Integrity?
- Attendance Policy: Class Attendance Policy
- Inclusion Statement: Millersville University Inclusion Statement
- Land Acknowledgement: Land Acknowledgement
- Policy on Delays and Cancellations: Policy on Delays & Cancellations
- Chosen Name FAQs: Preferred Name FAQs
- Privacy Rights under FERPA: Annual Notification of Student Rights Under FERPA
- Student Conduct and Community Standards Handbook: studentcodeofconduct.pdf (millersville.edu)

Attendance, Absences, and Make-Ups

Attendance and participation in class is expected. Please communicate with me if you need to miss class for any extended period of time and we will work together to help you continue to make progress in the class.

Late or Make-Up Skill Checks, Quizzes, and Exams are allowed as long as you communicate with me in advance of the deadline or under emergency situations. Here are some examples of reasons why we may need to reschedule coursework.

- Required religious observation
- Participation in a Millersville University athletic event
- Armed forces related training or drills
- Medical Illness/Emergency
- Death in the family
- Special circumstances: If you feel that you have a special circumstance that is of similar importance to the items listed above, please come talk with me as soon as possible and I will work with you to try and find a solution

Suggestions for Course Success

My expectation is that you are working on CHEM 110 material for 6 hours every week outside of class. This effort needs to be consistent throughout the semester to get the most out of this course. If you find yourself putting in the work outside of class and still having difficulty with any part of the course, you should arrange to come meet with me as soon as possible so that we can work together to help you be successful. Here are my suggestions for being successful in this course.

- Work on chemistry a little bit every day.
Set aside 60 to 90 minutes each day to work on chemistry outside of class.
- Read the textbook and work example problems.
- Use all available resources (videos, textbook readings, assignments)
Ask questions. I love to get questions as it provides an opportunity to help you be successful.
Take notes to capture key points and ideas.
- Re-Read the textbook and fill-in your notes with additional details.
- Work at least five new problems a day.
At a minimum you should be working all of the suggested problems.
The way you work through a problem matters.
Try to work problems by minimally looking at your notes or the textbook.
Starting problems is the most difficult part. Give yourself five minutes.
Solve problems from start to finish by yourself.
- Utilize helpful resources.
Form study groups.
Come to office hours.
Ask questions. We can always find a time to meet.

Important Dates

Date	Event
1/27	Last Day to Add or Drop a Course Online
3/9 to 3/15	No Classes for Spring Break
4/3	Last Day to Withdraw from Course and Receive a 'W'
5/6	CHEM 110 Final Exam from 8 - 10 am

Course Schedule

The instructor reserves the right to change this schedule as needed. Any changes will be communicated via an in-class announcement.

Week	Topics	Reading	Quizzes	Exams
1/19	Classifying Matter and Measurement	1.1 - 1.5		
1/26	Measurement Uncertainty and Unit Conversion	1.6 and Appendix B		
2/2	Atoms and Ions	2.1 - 2.5	Quiz 1 on 2/4	
2/9	Molecules and Nomenclature	2.6 - 2.7		
2/16	Formula Mass and Empirical Formulas	3.1 - 3.2		
2/23	Concentration in Solutions	3.3 - 3.4	Quiz 2 on 2/25	
3/2	Chemical Reactions	4.1 - 4.2		Exam 1 on 3/6
3/9	Spring Break			
3/16	Stoichiometry of Chemical Reactions	4.3 - 4.4		
3/23	Quantitative Analysis	4.5		
3/30	Energy	5.1 - 5.2	Quiz 3 on 4/1	
4/6	Light and Spectroscopy	6.1 - 6.3		
4/13	Electron Configurations	6.4		
4/20	Periodic Properties	6.5	Quiz 4 on 4/22	
4/27	Periodic Properties and Compounds			Exam 2 on 5/1
5/4	Review			Final Exam on 5/6