

**General Chemistry**  
**CHEM 1010**  
**Fall Quarter, 2021**

**Instructor** Dr. Keith Miller  
**Office:** SGM 105/MRB 005  
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**Class Lectures:** MWF 8:00 – 8:50; OLIN 105  
**Discussion:** Thursday 8:00 – 8:50; BAUD 101  
**Office Hours:** Announced first week in class

**REQUIRED COURSE ITEMS**

**Textbook:** The required text used for this course is *Chemistry: The molecular nature of matter and change*, 9<sup>th</sup> Edition, Martin S. Silberberg and Patricia Amateis (2021) McGraw-Hill (online version available at the DU Bookstore or directly from McGraw-Hill). Online homework and adaptive learning features of Connect will be assigned. So only the online version is required. If you wish to have a hardcopy of the textbook, there are many available options, and the most recent edition is not needed. ISBN numbers for each available option is below:

Connect Access Card (1 Quarter or 90 days): 9781264400393  
Connect Access Card (210 Days): 9781264400362  
Connect Access Card (2 Years): 9781260477351

**Homework:** The Connect license is needed to access most of your homework. When you purchase the online textbook at the DU Bookstore or online directly from McGraw-Hill, you will be able to sign up for your Connect account. Additional homework will be assigned via Canvas using open-access materials.

**Calculator:** An inexpensive calculator is required. It should have the capabilities for square roots, logarithms, and exponential (scientific) notation operations. The calculator will be used for homework, quizzes, and exams. You are responsible for understanding how to perform each of the operations on your calculator. **NO PHONES WILL BE PERMITTED ON IN-CLASS QUIZZES OR EXAMS.**

**READINGS.** I strongly urge you to complete the assigned readings prior to lecture. Make your best attempt to understand the material, try to solve the problems in the text prior to proceeding to the next section, and come to class with questions on topics/concepts that might confuse you. I will also provide links to online materials that provide explanations to difficult concepts. Please take time to explore these additional materials.

**CLASS MEETINGS.** I will highlight important concepts from your readings during lectures. I will stop periodically and ask you to answer questions. Depending on the progress of the course, modifications to the weekly schedule may occur throughout the quarter.

## ON-LINE COMPONENTS.

First, weekly online homework will be assigned using the Connect system that is linked to this course. These assignments will be graded. **With the exception of the 1<sup>st</sup> and 10<sup>th</sup> week, these assignments will be due every Friday at 7:55 AM (Denver time.)** Homework submitted after the designated time/date will have points deducted.

Second, an adaptive learning program, SmartBook, is provided in the Connect system. In addition to the weekly online homework, you will be required to complete a number of SmartBook activities each week. These modules test your understanding of chemical concepts, and the program will lead you through a series of questions depending on how confident you are in your answers and if you answer the questions correctly. You will receive credit for the completion of LearnSmart activities when you complete them **on time**; however, you will not be graded on how “fast” you get through or how many questions you answered correctly in the activity. My goal here is for you to interact with material a frequent basis

**IN-CLASS ACTIVITIES.** In-class activities will occur on predominantly during the *Discussion* periods to allow you to apply your knowledge. Some, if not most, of these activities will be more challenging than the assigned homework. I will have you work in small groups to complete these activities. These activities will be graded for completion.

**QUIZZES/FINAL EXAM.** There will be five (5) extended-time quizzes given during the quarter and a two-hour, cumulative final exam. **Currently, these quizzes are planned to be given online using Canvas.** Dates for these quizzes and the final exam are posted on the tentative lecture schedule. **NO MAKE-UP QUIZZES WILL NOT BE ACCEPTED.** There is one exception to this policy. If you will be out of town for a function sanctioned by the University (e.g., athletic team or music group) or military service, you are responsible for making arrangements with Dr. Miller at least one week in advance to complete the quiz prior to the scheduled date. If you miss a quiz, then your final exam will be counted twice to replace the missed quiz.

If you take all five quizzes AND your grade on your final exam is higher than one of your quizzes, **then your final exam will be counted twice to replace your lowest quiz grade.**

**GRADES.** At the end of the quarter, your final grade will be determined according to your performance on the exams, online homework/activities, and in-class activities/quizzes. Cooperative learning is encouraged. As such, I will not grade on a curve. If most students do well, there will be a significant number of higher grades. The opposite, however, can also be true! Your final grade will be determined with the following components:

<u>Component</u>	<u>Percentage</u>
Quizzes (extended time; 5 total)	60
Final Exam	20
Adaptive learning modules/in-class activities	10
Online homework/	10
<b>Total</b>	<b>100</b>

Your final grade will be determined by the following scale:

	A		B			C			D		
Letter	A	A-	B+	B	B-	C+	C	C-	D+	D	D-
Percentage minimum	95	90	86	82	77	74	70	65	61	57	55

The values listed in the table are the guaranteed minimum values. So, if your average is 90, you will receive an A- for the course.

**CELLULAR PHONE, PAGER AND LAPTOP POLICY.** I respect the need for each individual to stay in contact with family and friends. The use of cellular phones and pagers, however, is disrupting to the learning environment. Thus, I request that the ringers of all cellular phones and pagers be muted during class. If an emergency arises, and you need to make a call on your phone, I request that you quietly leave the room and conduct your conversation out in the hallway. Laptops can also be quite disrupting in class; therefore, ONLY laptops used for taking notes will be allowed. If you use your laptop, I might request that a copy of your notes.

**LECTURE AND TESTING ACCOMODATIONS.** I will make every effort to accommodate students diagnosed with a learning disability. I will do this in complete confidence. I do, however, request that any student requiring these accommodations inform me the first week of class. For further information, please see the University Disability Services' website at <http://www.du.edu/disability/dsp/index.html>.

**RESTRICTION OF USE OF CONTENT IN ONLINE COURSES.** At the University of Denver, we protect the intellectual property of all our faculty, and safeguard the privacy of all our students in online learning environments. It is possible that some of the lectures will be recorded using Zoom depending on the status of the ongoing public health emergency. To this end, students may not record, reproduce, screenshot, photograph, or distribute any video, audio, or visual content from their online courses. This restriction includes but is not limited to:

- Pre-recorded and live lectures
- Live discussions
- Discussion boards
- Simulations
- Posted course materials
- Faculty feedback forms
- Visual materials that accompany lectures/discussions, such as slides
- Virtual whiteboard notes/equations, etc.

As we engage in online learning as an academic community, it is imperative to be respectful of all. Keep in mind that if any student is identifiable in an online class recording, this may constitute a violation of the educational record protections provided under FERPA.

Students with disabilities who need to record classroom lectures or discussions must contact the Disability Services Program to register, request, and be approved for an accommodation. All students are advised that students may tape classroom activities for this purpose. Such recordings are to be used solely for individual or group study with other students enrolled in the class that

quarter/semester. They may not be reproduced, shared in any way (including electronically or posting in any web environment) with those not in the class in that quarter.

Students who violate this policy will be reported to [The Office of Student Rights & Responsibilities](#) and may be subject to both legal sanctions for violations of copyright law and disciplinary action under *Student Rights & Responsibilities Policies*.

**RELIGIOUS ACCOMMODATIONS.** It is University policy to grant students excused absences from class or other organized activities for the observance of religious holy days, unless the accommodation would create an undue hardship. I will do my best to accommodate your requests if you make arrangement with me *in advance* of your absence. Please notify me by the end of the second week of classes of conflicts that may require your absence from class and/or prevent you from completing an assignment. More information can be found at: <http://www.du.edu/studentlife/religiouslife/about-us/policy.html>.

**ACADEMIC DISHONESTY.** While I advocate collaborative learning and teamwork, I also believe that each individual should maintain the highest ethical standards in all of life's endeavors. As such, I support and will strictly enforce the Honor Code of the University of Denver. For your reference, the link to the Honor Code Student Conduct Policy and Procedures is: <http://www.du.edu/studentlife/studentconduct/>.

**\*TENTATIVE LECTURE SCHEDULE (9.13.2021)**

<b>DATE</b>	<b>TOPIC</b>	<b>READING</b>
		<b>SILBERBERG</b>
<b>WEEK 1</b>		
<b>INTRODUCTION/COMPONENTS OF MATTER</b>		
Sep 13	Introduction/Models/Units/Problem Solving	1.1 – 1.4
15	Atomic Theory Models	2.3 – 2.5
16	Discussion	
17	Elements/Compounds/Mole – intro	2.1, 3.1
<b>WEEK 2</b>		
<b>QUANTUM-MECHANICAL MODEL OF THE ATOM</b>		
20	Atomic spectra/Quantum-Mechanical Model	7.1 – 7.3
22	Many-Electron Atoms	7.4, 8.1
23	Discussion	
24	<b>QUIZ 1</b>	
<b>WEEK 3</b>		
<b>CHEMICAL PERIODICITY/CHEMICAL BONDING</b>		
27	Periodic Table	2.6, 8.2
29	Atomic Trends and Properties	8.3 – 8.4
Oct 30	Discussion	
1	Bonding	2.7, 9.1 – 9.3
<b>WEEK 4</b>		
<b>CHEMICAL BONDING</b>		
4	Bond Energy/Electronegativity	9.4 – 9.5
6	Lewis Dot Structures	10.1
7	Discussion	
8	<b>QUIZ 2</b>	
<b>WEEK 5</b>		
<b>BONDING MODELS AND MOLECULAR SHAPE</b>		
11	VESPR Theory	10.2 – 10.3
13	Types of Covalent Bonds	11.1 – 11.2
14	Discussion	
15	Molecular Orbital Theory	11.3

<b>DATE</b>	<b>TOPIC</b>	<b>READING</b>
<b>WEEK 6</b>		<b>SILBERBERG</b>
<b>STOICHIOMETRY</b>		
18	The mole	3.1
20	Determining compound formulas	2.2, 3.2
21	Discussion	
22	<b>QUIZ 3</b>	
24	<b>Last day to drop course via PioneerWeb</b>	
<b>WEEK 7</b>		
<b>CHEMICAL REACTIONS</b>		
25	Stoichiometry continued	3.3 – 3.4
27	Water as a solvent	4.1
28	Discussion	
29	Precipitation reactions	4.2
<b>WEEK 8</b>		
<b>CHEMICAL REACTIONS AND INTRODUCTIONS TO GASES</b>		
Nov 1	Acid-base reactions; Redox reactions	4.3 – 4.5
3	Pressure/Gas Laws	5.1 – 5.3
4	Discussion	
5	<b>QUIZ 4</b>	
7	<b>Last day to drop course with instructor's permission</b>	
<b>WEEK 9</b>		
<b>GAS LAWS/THERMOCHEMISTRY</b>		
8	Ideal Gas Laws	5.4
10	Application Gas Laws/ Kinetic Molecular Theory	5.5-5.6
11	Discussion	
12	Thermochemistry	6.1 – 6.2
<b>WEEK 10</b>		
<b>THERMOCHEMISTRY</b>		
15	Calorimetry/Stoichiometry of Thermo reactions	6.3 – 6.4
17	Hess's Law/Standard Enthalpies	6.5 – 6.6
18	<b>QUIZ 5</b>	
19	Review/wrap up	
<b>FINAL EXAM</b>		
Nov 20	<b>8:00 – 9:50 am; Cumulative</b>	

\* Tentative means that this is my best approximation of the schedule for the quarter. Actual lecture topics and materials may change.