

Autumn 2019 **Chem 1010**

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Lectures: T/R BAUD 101 10AM-11:50
Office Hours (in Science and Engineering Center): TBA!

COURSE OBJECTIVES

After General Chemistry, you should be able to do the following:

1.) Describe and apply essential concepts in the following areas including:
   a. Atomic/Electronic Structure: Demonstrate foundational knowledge of the quantum nature of electrons and light. Relate atomic spectra to electronic transitions.
   b. Periodic Table: identify the connection between the quantum model and the structure of the periodic table. Recognize and predict periodic trends.
   c. Bonding Theories: Including Lewis, VSEPR, VBT, and MO theory. Identify when a bonding theory is most appropriate for a situation. Predict molecular shapes and polarity by applying VSEPR and electronegativity. Recognize different types of intermolecular interactions
   d. Stoichiometry: Identify and Balance different types of complex chemical reactions. Use stoichiometry to be able to predict amounts of products or reactants necessary for a reaction. Be able to design how to make and dilute solutions with a specific concentration.
   e. Heat & Thermodynamics: Describe and apply the first law of thermodynamics. Calculate heats of reactions from both a theoretical standpoint and using calorimetry.

2.) Develop a growth mindset: Demonstrates significant effort. Acknowledge personal growth in various contexts and applications in chemistry.

REQUIRED COURSE ITEMS

Text: Connect Chemistry with LearnSmart and eBook - *Chemistry: The Molecular Nature of Matter and Change, 8th Edition, Silberberg, McGraw-Hill Publishers* - $95 (6 Months) or $130 (2 Years)
****I recommend you purchase directly from McGraw-Hill.****
No paper text is required but you can buy a used copy of the 5th or 6th editions of the Silberberg text if you wish (The Connect Plus account is still required). Used copies cost about $15 – 50 on Amazon.

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. **Bring your calculator to class each day to work problems.** You are responsible for understanding how to use your calculator. If you need a calculator, please come and talk to me!

Canvas: canvas.du.edu will be the website that you can find all of the online aspects of this course. Please look at the weekly checklist to keep track of tasks.

COURSE COMPONENTS:

Lectures (Online and In-Class): A lecture schedule is below. For this course we will often be watching online lectures prior to our scheduled class meetings. It is your responsibility to watch the lectures before class. You will also be taking notes while watching the online lectures to help absorb the material (see Summary Notes below). You will also be required to complete a weekly reflection assignment. Our scheduled class time will be dedicated time to go through problems associated with material in online lecture.

Readings: Assigned reading should be completed prior to lecture. Scheduled reading is listed in the schedule below. As mentioned above, you will be asked to reflect on your reading through a weekly journal assignment.

Summary Notes: You will be turning in summary notes for each week covering the reading/online lectures that you are watching on your own time (individual space). For each week, you will be starting your notes by summarizing your prior knowledge on a particular topic. Key Terms will be given that must be highlighted in your summary notes. For certain weeks, I may ask for diagrams and drawings. You will turn in these notes on Canvas.

Weekly Reflections: Each week you will complete a weekly reflection after turning in your Summary Notes. The weekly reflection is to help me keep track of what all of you are having questions on. What are you not understanding, etc.

Kahoot/In-class Participation: This quarter we will be using Kahoot (kahoot.com) as a polling software. Kahoot is a FREE app that you can download to your phone or you can use from a laptop. There will also be opportunities for in-class participation points such as quizzes. 10% of you participation points will be dropped, so as long as you attend 90% of class, you will bet 100% of your participation credit. University excused absences or health issues will also be honored.

Buffer Points: You will have the opportunity to collect Buffer points this quarter by sharing summary notes, sharing class notes, or participating in class. Buffer points will be used if you are boarderline (or "on the bubble") between two grades (A−/B+) to help bump you up to that higher grade. These points are NOT extra credit.

Exams:

a) There will be two midterm exams and a final exam. All exams are 2 hours long.

b) If anyone for any reason had to take the exam outside of the scheduled time, arrangements need to be made with the instructor at least one week in advance. Instructor approval of the situation is necessary for any adjustment in exam schedule to occur.

c) If any student is a member of the DSP or LEP programs and need special accommodations for exams, please contact the instructor.

d) All exams will be comprehensive encompassing lecture materials, assignments, and in-class assignments. The exams are designed to test your ability to apply the concepts covered in the lecture.

e) If your grade on your final exam is higher than one of your midterm exams, your final exam will be counted twice to replace your lowest midterm grade.

Grading:

The breakdown of the course grades is as follows:

Homework	200 points
Participation	100 points
Notes/Reflection	100 points
Exam 1	100 points
Exam 2	100 points
Final Exam	200 points
TOTAL	**1000 points**

Grades will be based on the following approximate grade scale:

94%	A	74%	C
90%	A-	70%	C-
87%	B+	67%	D+
84%	B	64%	D
80%	B-	60%	D-
77%	C+	<60%	F

Students who earn at least 94% of the possible points are guaranteed an A in this class; however, it may not be necessary to earn 94% to receive an A since this scale may be modified downward at the discretion of the instructor. Scores will be recorded on Canvas as they are graded. Each student should check Canvas frequently to make sure scores are recorded correctly. Complaints on grading or recording errors should be made within two weeks of each exam.

RESOURCES/ADVICE

Help

Students who need help in this class have several options:
(1) The Science and Engineering Learning Center, located on the first floor of the library, is a great resource! TAs are available throughout the week to answer questions on both lecture and lab material. A schedule is available on canvas.
(2) The instructor has office hours for consultation. If you cannot make the set office hours, you can schedule an appointment.
(3) Peers (Study Groups): Take opportunities to help those around you and to ask for help. You can learn a lot you're your fellow classmates. If you come to the Science and Engineering Learning Center, perhaps you will find a group of classmates to study with!

TAs and the instructor are willing to help anyone in need. There is no excuse for not getting help. Your best help may come from your fellow students. Meeting regularly with a study group, for discussing ideas and working together on homework will be one of the best helps in learning and understanding the material. Even if you don't think you need the help from others, you will often find that teachers learn more than the students.

Science and Engineering Center: Need extra help? The Science and Engineering Learning Center is a collaborative space staffed by undergraduate and graduate learning assistants (LAs) trained to assist students with some first and second year biology, chemistry, physics, computer science and engineering courses. We offer support for both lecture and laboratory courses for chemistry, physics, and engineering courses and lecture only for computer science and biology. Our goal is to help students grow as problem solvers by assisting with homework sets, lab reports, and preparing for exams. The Science and Engineering Learning Center is **not** a one-on-one tutoring center, but is rather a support system where students can get guidance from LAs as well as their peers. This center is open to all DU students. All services are free. Located in the north-west corner of the first floor of the Anderson Academic Commons (west of the writing center). See http://portfolio.du.edu/sec for a complete schedule. Please also follow on Twitter for the most up-to-date announcements: @SELCatDU

Academic Honesty in General Chemistry:

1.) You are encouraged to study with other students in preparing for exams and discussing assigned problems to be submitted as homework.
2.) However, each student is required to provide their own work on homework and exams. Copying an exam or homework is a violation that will not be tolerated in this class, and a zero will be given for the assignment or exam. Repeated offences will result in failure of the course.

TENTATIVE LECTURE SCHEDULE

DATE	TOPIC	READING
9/10/2019	Chapter 1: Keys to the Study of Chemistry	1.1 – 1.5
9/12/2019	Chapter 2: The Components of Matter	*2.1 – 2.6*
9/17/2019	Chapter 7: Quantum Theory and Atomic Structure	7.1 – 7.3
9/19/2019	Chapter 7: Quantum Theory and Atomic Structure	7.4, 8.1
9/24/2019	Chapter 8: Electronic Configuration & Periodicity	8.1 - 8.4
9/26/2019	Chapter 9: Models of Chemical Bonding	2.7 - 2.8, 9.1 - 9.3
10/1/2019	Chapter 9: Models of Chemical Bonding	9.4 - 9.6
10/3/2019	EXAMINATION I (material up to 9.4)	review material up to 9.4
10/8/2019	Chapter 10: The Shapes of Molecules	*10.1 – 10.3*
10/10/2019	Chapter 11: Theories of Covalent Bonding	11.1 – 11.3
10/15/2019	Chapter 12: Intermolecular Forces	12.1 – 12.5
10/17/2019	Chapter 3: Stoichiometry of Formulas and Equations	3.1 – 3.3
10/22/2019	Chapter 3: Stoichiometry of Formulas and Equations	3.4
10/24/2019	Chapter 4: 3 Major Classes of Chemical Reactions	4.1 – 4.3
10/29/2019	Chapter 4: 3 Major Classes of Chemical Reactions	4.4 – 4.7
10/31/2019	EXAMINATION II	review material up to 4.4
11/5/2019	Chapter 5: Gases and the Kinetic-Molecular Theory	5.1 – 5.3
11/7/2019	Chapter 5: Gases and the Kinetic-Molecular Theory	5.4 – 5.6
11/12/2019	Chapter 6:Thermochemistry	6.1 – 6.6
11/14/2019	Ch. 6: Hess's Law	6.1 – 6.6
11/21/2019	FINAL EXAM (cumulative)	