

General Chemistry for Engineers
CHEM 1610
Spring Quarter, 2011

Instructor	Staff
Office:	TBD
Contact info:	TBD
Class Lectures:	MWF 9:00 – 9:50; TBD
Discussion:	Thursday 9:00 – 9:50; TBD (REQUIRED)
Help Sessions:	Tuesday 9:00 – 9:50; TBD (OPTIONAL)
Office Hours:	By arrangement

REQUIRED COURSE ITEMS

Textbook:	<i>Chemistry: The molecular nature of matter and change</i> , 5 th Edition, Martin S. Silberberg (2009) McGraw-Hill (available at the DU Bookstore).
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.
Clicker:	Clickers will be used throughout the course (also available at DU Bookstore). Please purchase during the first week of course.

READINGS AND HOMEWORK. Students are expected to complete the assigned reading prior to lecture. You should understand the material and how to solve the suggested problems before proceeding to the next section. Problem solving is an important component of all chemistry and most science courses. Suggested problems will be posted that correspond to the readings throughout the course. These problem **WILL NOT** be graded. These problems are typical of those you might encounter on quizzes and exams.

CLASS MEETINGS. Important concepts will be highlighted during lectures, and lectures will not simply go over the assigned reading. During portions of the lecture, the instructor will stop and ask you questions. Starting the second week of the quarter, responses to the questions will be collected with Clickers. These questions will help the instructor assess your understanding of the material in a timely manner. Each day that clickers are used, you will receive a total of 5 points. The breakdown of points will be based on both your answers (3 points) and participation (2 points). Faculty members understand that absences occur and people have bad days; only your top 20 scores will count toward your final grade.

DISCUSSION SESSIONS AND QUIZZES. The discussion session is an informal session where you will have the opportunity to ask questions on lecture material and go over questions on suggested problems. There will also be a short, 15-minute quiz worth 20 points. Only your five (5) highest scores on these quizzes will count toward your final grade. This session is **REQUIRED**.

HELP SESSIONS. The Tuesday Help Sessions are optional. Students who did not have high school chemistry or those having difficulty with the course material should attend these sessions. This session is **OPTIONAL**.

EXAMS. There will be three (3) one-hour exams given during the quarter and a two-hour, cumulative final exam. Dates for these exams are posted on the tentative lecture schedule. **NO MAKE-UP EXAMS WILL BE ACCEPTED.** There is one exception to this policy. If you will be out of town for a University sanctioned function (e.g., athletic team or music group), you are responsible for making arrangements with the instructor at least one week in advance to complete the exam prior to the scheduled date. If you miss an exam, then your final exam will be counted twice to replace the missed exam.

If you take all three hour exams AND your grade on your final exam is higher than one of your hour exams, then your final exam will be counted twice to replace your lowest hour exam grade.

GRADES. At the end of the quarter, your final grade will be determined according to your performance on the exams, quizzes, and class participation/clicker scores. Cooperative learning is encouraged. As such, grades will not be based 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 on a maximum of 1000 points with the following components:

<u>Component</u>	<u>Points</u>
Hour Exams (200 points each)	600
Final Exam	200
Quizzes	100
Clickers/Participation	100
Total Points	1000

CELLULAR PHONE AND PAGER POLICY. Faculty members 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, it is requested 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, please quietly leave the room and conduct your conversation out in the hallway.

LECTURE AND TESTING ACCOMODATIONS. Every effort to accommodate students diagnosed with a learning disability will be made and done so in complete confidence. Any student requiring these accommodations should inform the instructor the first week of class. For further information, please see the University Disability Services' website at <http://www.du.edu/disability/dsp/index.html>.

ACADEMIC DISHONESTY. While the faculty advocate collaborative learning and teamwork, we also firmly believe that each individual should maintain the highest ethical standards in all of life's endeavors. As such, the Honor Code of the University of Denver will be strictly enforced. For your reference, a link to the Honor Code Statement, <http://www.du.edu/ccs/honorcode.html>, is included.

TENTATIVE LECTURE SCHEDULE (12.2009)

DATE	TOPIC	READING
WEEK 1		
QUANTUM-MECHANICAL MODEL OF THE ATOM		
	Introduction/Nature of Light	7.1
	Atomic spectra/Quantum-Mechanical Model	7.2-7.4
	[Atomic spectra covered in laboratory]	
WEEK 2		
STOICHIOMETRY AND CHEMICAL REACTIONS		
	Limiting reagent, solutions	3.4-3.5
	Ionic reactions, precipitation reactions	4.1-4.3
WEEK 3		
	Acid-base reactions, redox reactions	4.4-4.5
	HOURLY EXAM I	(Covers Weeks 1-3)
WEEK 4		
ELECTRON CONFIGURATION AND CHEMICAL PERIODICITY		
	Many electron atoms	8.1-8.2
	Periodic Table, atomic properties	8.3-8.4
	Chemical Reactivity	8.5
WEEK 5		
CHEMICAL BONDING		
	Ionic Bonding	9.1-9.2
	Covalent Bonding	9.3-9.4
WEEK 6		
MOLECULAR SHAPE		
	Lewis Structures	10.1
	VSEPR Theory	10.2
	Bond and Molecular Polarity	9.5, 10.3-10.4
	HOURLY EXAM II	(Covers Weeks 4-6)
Friday last day for Automatic Withdraw		
WEEK 7		
THEORIES OF COVALENT BONDING		
	Valence Bond Theory	11.1
	Types of Covalent Bonds	11.2
	Molecular Orbital Theory	11.3

DATE	TOPIC	READING
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WEEK 8

THERMOCHEMISTRY AND THERMODYNAMICS

Enthalpy, Hess's Law	6.1-6.2
Calorimetry	6.3-6.4
Entropy and free energy	20.1-20.3

[Thermochemistry covered in laboratory]

WEEK 9

THERMOCHEMISTRY

Electrochemical cells, voltaic cells, cell potential	21.1-21.3
Free energy and electrical work; galvanic cells	21.4, 21.7

HOURLY EXAM III

(Covers Weeks 7-9)

WEEK 10

INTERMOLECULAR FORCES

Phase changes and phase diagrams	12.1-12.2
Type of intermolecular forces	12.3
Colligative properties and band gap theory	12.6-12.7

FINAL EXAM (Cumulative)