

**GENERAL CHEMISTRY
CHEM 1010-03
AUTUMN 2012**

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Text: Chemistry, 3rd Edition, Gilbert, Kirss, Foster and Davies (2011)
W.W. Norton & Company, Inc. (available at the DU Bookstore)
Lectures: 8-8:50 am, MWF, Olin 105
Office Hours: 2-3:00 pm, MF, SGM253

Welcome to General Chemistry! In this course, you will be introduced to fundamentals of chemistry that are necessary for you to do well in other courses in chemistry, biochemistry, biology, and engineering. Topics to be explored in this course include the structure of atoms and the periodic table, molecular structure, balancing chemical reactions, stoichiometry, and heats of chemical reactions.

This is a hybrid course, which means that there are both online and face-to-face course components which have been carefully designed to help you master the content in the most efficient way. The online modules were developed and are scheduled to prepare you for the face-to-face classroom activities and discussions, and you will be responsible for completing the online components before class. These modules include a variety of interactive elements, including short demonstration videos, online problems to solve, online homework, and quizzes. Participation in both components is required to do well in this course. The amount of time that you will need to spend working through the modules will depend on you and your familiarity with the various topics covered. The goal is for everyone to master the content so that you will all be successful in the course.

Exams: There are 3 X 1-hour midterm exams during the quarter, plus a 2-hour cumulative final exam. Each exam is worth 100 points. Exam questions will be similar to the module quizzes, the homework and the problems worked in class.

If you miss a 1-hour midterm exam, then your final exam will be counted twice and replace the missed midterm exam. With one exception, **THERE WILL BE NO MAKEUP EXAMS**. The only exception to the no-makeup policy will be for members of a university team or group, e.g. athletic team or music group scheduled to be away from campus at the time of the exam. You must inform your instructor of this prior to the exam and make arrangements at that time for a makeup exam.

If you take all 3 midterm exams and your grade on the final exam is better than one of your midterm exam grades, then your final exam will be counted twice and replace your lowest midterm exam grade.

Online Activities: 10 on-line modules will be administered on blackboard throughout the course. The best six module quiz scores (including feedback) will count toward your final grade. Online homework problems are assigned on a weekly basis. Online homework and modules are due by 10:00 p.m. on the date indicated on the below topic list.

Clickers: This class uses the TurningPoint clicker system. Clicker questions will be given during lecture starting from week 2. Points for those questions will be given based on participation (50%) and correctness (50%).

Grading:	Midterm Exams	300 points	
	Final Exam	100 points	
	Quizzes	90 points	(10 pts per Module Quiz + 5 pts for feedback)
	Homework	50 points	(5 pts per set)
	Clicker	50 points	(This is a Clicker Enabled Course)
			http://portfolio.du.edu/click
	Assessment	10 points	

The assignment of a letter grade to a given numerical grade will depend on the overall class performance. However, if everybody does well, grades will not be curved down.

Disability Services Program

1. If you have a disability/medical issue protected under the Americans with Disabilities Act (ADA) and Section 504 of the Rehabilitation Act and need to request accommodations, please make an appointment with the Disability Services Program (DSP); 303.871.2372/ 2278/ 7432; located on the 4th floor of Ruffatto Hall; 1999 E. Evans Ave. Information is also available on line at <http://www.du.edu/disability/dsp>. See the Handbook for Students with Disabilities.

2. Any student who feels s/he may need an accommodation based on the impact of a disability should contact me privately to discuss your specific needs. Please contact the Disability Services Program located on the 4th floor of Ruffatto Hall; 1999 E. Evans Ave., to coordinate reasonable accommodations for students with documented disabilities/medical issues. 303.871. / 2278 / 7432/ 2455. Information is also available online at <http://www.du.edu/disability/dsp>; see the Handbook for Students with Disabilities.

3. If you qualify for academic accommodations because of a disability or medical issue please submit a Faculty Letter to me from Disability Services Program (DSP) in a timely manner so that your needs may be addressed. Disability Services determines accommodations based on documented disabilities/medical issues. DSP is located on the 4th floor of Ruffatto Hall, 1999 E. Evans Ave.; 303.871. 2372/ 2278 / 7432. Information is also available on line at <http://www.du.edu/disability/dsp>; see the Handbook for Students with Disabilities.

DATE	TOPIC*	READING
WEEK 1		
Sep 10	Intro. to class	Ch1, 2.1-2.3, 3.2
12	Waves of Light	Ch7.1-7.3
14	Electrons as Waves	Ch7.4-7.5
Assignments Due:		
Sep 16	Module 1: Significant Figures and Unit Conversion	
16	Homework 1 Chapters 1, 2.1-2.3, 3.2, 7.1-7.5	
WEEK 2		
Sep 17	Quantum, Size & Shapes of Orbitals	Ch7.6-7.7
19	Electron Configurations of Ions	Ch7.8-7.9
21	Chemical Reactivity	Ch7.10-7.12
Assignments Due:		
Sep 20	Module 2: Periodicity	
23	Homework 2 Chapters 7.6-7.12	
WEEK 3		
Sep 24	Chemical Bonds & Lewis Structures	Ch8.1-8.3
26	Resonance Structures, Formal Charge	Ch8.4-8.7
28	EXAM 1	
Assignments Due:		
Sep 25	Module 3: Lewis Structures	
30	Homework 3 Chapters 8.1-8.7	
WEEK 4		
Oct 1	Bond lengths, VSEPR	Ch8.8, 9.1-9.2
3	Presidential Debate	
5	VSEPR & Polar Bonds	Ch9.2-9.3
Assignments Due:		
Oct 4	Module 4: Chemical Compound Naming	
7	Homework 4 Chapters 8.8-9.3	
WEEK 5		
Oct 8	Valence Bond Theory	Ch9.4-9.5
10	Molecular Orbital Theory	Ch9.7
12	Molecular Geometry and Bonding, Review	Ch9
Assignments Due:		
Oct 14	Module 5: Molecular Geometry and Bonding	
Oct 14	Homework 5 Chapters 9.4-9.5, 9.7	

WEEK 6

Oct 15	Solutions, Electrolytes and Acid-Base Rxn	Ch3.2-3.9, 4.1-4.5
17	EXAM 2	
19	Acid-Base Rxn, Titrations, Precipitants	Ch4.5-4.7

Assignments Due:

Oct 21 Module 6: Chemical Reactions
Oct 21 Homework 6 Chapters 3.2-3.9, 4.1-4.7

WEEK 7

Oct 22	Oxidation Numbers & Redox Reactions	Ch4.8-4.9
24	Bronsted-Lowry, pH, K_a & K_b	Ch17.1-17.2
26	Weak Acids & Bases, pH of Salt Solutions	Ch17.3-17.6

Assignments Due:

Oct 28 Module 7: Thermochemistry
28 Homework 7 Chapters 4.8-4.9, 17.1-17.6

WEEK 8

Oct 29	Forms of Energy	Ch5.1-5.3
31	Heat Capacity	Ch5.4-5.6
Nov 2	Hess's Law	Ch5.7-5.8, 14.1

Assignments Due:

Nov 4 Module 8: Entropy
Nov 4 Homework 8 Chapters 5.1-5.8

WEEK 9

Nov 5	Entropy	Ch14.1-14.2
7	Third Law of Thermodynamics	Ch14.3-14.4
9	EXAM 3	

Assignments Due:

Nov 11 Module 9: Free Energy
Nov 11 Homework 9 Chapters 14.1-14.4

WEEK 10

Nov 12	Free Energy	Ch14.5-14.6
15	Electrochemical Cells	Ch19.1-19.3
17	Electrochemistry	Ch19.4-19.5

Assignments Due:

Nov 16 Module 10: Electrochemistry
Nov 16 Homework 10 Chapters 14.5-14.6, 19.1-19.5

Nov 19 **FINAL EXAM** (comprehensive), 8:00-9:50 am, Olin 105
*Daily Topics may change depending on the progress of the class.