

CHE 131: Atomic and Molecular Structure
Fall 2011

Course Description: An introduction to modern ideas of atomic and molecular structure. Topics studied include stoichiometry, gas laws, electronic and nuclear structure of the atom, chemical bonding and molecular structure, and periodic properties of the elements. Laboratory work is required. Prerequisite: MAT 110 or basic skills in math. (four credit hours)

Instructor: Dr. Jennifer Muzyka, Young 118, 238-5413, jennifer.muzyka@centre.edu.

Office Hours: MWF 10:15-11:15, T 9-11 and by appointment. My schedule is available online at <http://web.centre.edu/muzyka/JLMschedule.htm>.

Required Supplies:

Chemistry, by Chang; 10th edition; McGraw-Hill, 2010.

ARIS homework access

Lab notebook (with yellow carbon copy sheets) and safety goggles for use in lab.

Grading:

Exams (3)	35%
Quizzes	10%
Final Exam	15%
Laboratory	25%
Reading Quizzes (Moodle)	5%
Homework (ARIS)	5%
Participation (Clickers)	5%

Attendance is expected at every class and laboratory meeting, and will be monitored. Quizzes and clicker questions may not be made up. Other assignments given will count as additional quiz grades. These assignments may be in-class and unannounced, or they may be for students to complete outside of class. Each unexcused absence will result in the loss of one of the five participation points.

Participation. Your active engagement in this course is important to help you learn the material. Each unexcused absence will result in the loss of one of the five participation points. "Clickers" will be used to help the instructor assess your understanding of concepts as we proceed, which will make up part of your participation grade. (Make sure you pick up your clicker on the way into class each day!) Another aspect of your participation grade will be how well you work with other team members when we do group work in class.

Moodle. (<http://courses.centre.edu>) Reading quizzes will be assigned before most class periods, and due at 4 pm on the day before the class meeting. These quizzes will be accessed via Moodle.

Tests. There will be three in-class exams and one final exam. If a test is missed due to illness or personal emergency, a written, verifiable excuse must be submitted before a make-up exam will

be given. Every student is required to take the comprehensive final exam at the end of the term during the assigned exam period.

Quizzes. There will be quizzes in all weeks except those in which an exam is scheduled. Quizzes may not be made up. Excused absences result in fewer quiz grades. Unexcused quizzes are counted as zeroes. The lowest quiz score will be dropped before determining the quiz average. Other assignments may be given during the term. These assignments will be graded as quizzes.

Laboratory. Every student should be registered for one of the laboratory sections associated with this course. The lab sections meet on Mondays and Tuesdays. You must pass the lab in order to pass the course. All students taking laboratory courses must complete an online safety training program and pass a quiz over the mater contained therein. The training program is found as a separate course in Moodle. You must complete this training program before your first lab meeting. You may not perform lab work until you have passed the quiz.

Classroom Behavior. Students are asked to exhibit classroom behavior that is respectful and considerate of the others in the class and not distracting or disruptive. Please arrive on time, turn off cell phones, and do not wear hats in the classroom. In addition, you should not leave and reenter the classroom in the middle of class (save in cases of dire necessity).

Student Disabilities. Students with physical impairments and learning disabilities will sometimes need accommodations to help them have an equal opportunity to learn. It is the student's responsibility to inform the College of any disabilities for which he or she seeks accommodation. If you wish to seek any accommodations for disabilities, you must initiate the process right away, for relief cannot always be granted at the last minute and will not be granted after the fact. The College has designated as the beginning point of this process its disability services coordinator in the Student Life staff. She is charged with reviewing all documentation of disabilities and with coordinating any accommodations offered to students.

Academic Honesty. Students are reminded of the regulations governing academic honesty, especially with regard to plagiarism and other forms of cheating. Copying the work of another student or using outside sources without proper attribution are serious breaches of academic honesty. These regulations are found on pp 22-23 in the Student Handbook.

Tentative Class Schedule

Date	Chapter	Topic	Tests	
Aug. 29	1	Chemistry: The Study of Change		
31	2	Early Atomic Theory		
Sept. 2	2	Periodic Table, Molecules and Ions	quiz 1	
	5	2	Chemical Formulas and Nomenclature	
	7	3	Atomic and Molecular Mass, Percent Composition	
	9	3	Stoichiometry, Limiting Reagents, and Percent Yield	quiz 2

12	4	Reactions in Aqueous Solutions: Precipitation, Acid/Base, and Redox	
14	4	Concentration of Solutions	
16	4	Solution Stoichiometry	quiz 3
19	-	Test 1 (Ch 1-4)	Test 1
21	5	Gas Laws	
23	5	Gas Stoichiometry	
26	5	Kinetic Molecular Theory	
28	6	Energy Changes in Reactions, Intro to Thermodynamics	
30	6	Enthalpy and Calorimetry	quiz 4
Oct. 3	6	Standard Enthalpy of Formation and Reaction	
5	7	Photoelectric Effect & Bohr's Model	
7	7	Dual Nature of Electron, Quantum Mechanics	quiz 5
10	7	Atomic Orbitals and Electron Configurations	
12		Test 2 (Ch 5-7)	Test 2
17	8	Periodic Variation in Properties	
19	8	Ionization Energy and Electron Affinity	
21	8	Variation in Chemical Properties of Representative Elements	quiz 6
24	9	Lewis Dot Symbols, Ionic Bond	
26	9	Covalent Bonds, Electronegativity	
28	9	Writing Lewis Structures	quiz 7
31	9	Formal Charge and Resonance	
Nov. 2	10	Molecular Geometry	
4	10	Dipole Moment, Valence Bond Theory	quiz 8
7	10	Hybridization of Atomic Orbitals	
9	10	Molecular Orbitals	
11	10	Hybridization	quiz 9

14		Test 3 (Ch 8-10)	Test 3
16	11	Kinetic Molecular Theory of Liquids and Solids	
18	11	Intermolecular Forces	
21	11	Phase Diagrams	quiz 10
28	12	Molecular View of Solution Process	
30	12	Concentration Units	
Dec. 2	12	Effect of Pressure and Temperature on Solubility	quiz 11

Friday December 9 8:30 - 11:30, FINAL EXAM