General Chemistry I
The University of Toledo
College of Natural Sciences and Mathematics
Department of Chemistry and Biochemistry
CHEM1230 – Lecture and Recitations L1 & L6; R002 – 012, -082 & -083

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Tuesdays 9:30am-11:30 am
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Term: Fall 2016
Lecture Location: WO1201
Lecture Day/Time: Secs L1 & L6; M, W, F 9-9:50am
Recitation Day/Time/Location:

Section	Day	Time	Location
002	Tuesdays	8-8:50am	BO2045
003	Tuesdays	8-8:50am	BO2049
004	Tuesdays	9-9:50am	FH2240
005	Tuesdays	9-9:50am	BO2049
006	Tuesdays	9-9:50am	FH2220
007	Tuesdays	10-10:50am	FH1270
008	Tuesdays	10-10:50am	BO2045
009	Tuesdays	11-11:50am	FH2050
010	Tuesdays	11-11:50am	BO2049
011	Tuesdays	12-12:50pm	BO2049
012	Tuesdays	4-4:50pm	BO2049
082	Tuesdays	10-10:50am	FH2860
083	Tuesdays	10-10:50am	BO2049

Credit Hours: 4

General Chemistry I – Syllabus

COURSE/CATALOG DESCRIPTION

An introduction to atomic structure, chemical bonding, kinetic-molecular theory, energy relationships and structural concepts. This sequence is for students who major in science, engineering or other fields which require chemistry as a prerequisite subject. Three hours lecture and one hour discussion per week.

COURSE OVERVIEW

Why Are You Here?   Why Study Chemistry?

CHEM 1230 General Chemistry I and CHEM 1240 General Chemistry II are the lecture courses in the general chemistry sequence. The parallel lab courses are CHEM 1280 and CHEM 1290, which you may be taking with the lecture, but it is not required that you do so. This sequence is appropriate for students who are majoring in the *natural sciences, science education, pharmacy, engineering and some allied health fields*. Chemistry is a central science because the application of chemical principles is central to many other sciences. College chemistry is challenging, but you can be successful if you work diligently. There are many avenues to get help with this course and you are encouraged to use them**.**

STUDENT LEARNING OBJECTIVES
Based on the Textbook: Chemistry, McMurry, Fay, Robinson 7e

Chapter 1 Chemical Tools: Experimentation and Measurement
1.2 Differentiate between a qualitative and quantitative measurement.
1.3 Write numbers in scientific notation and use prefixes for multiples of SI units.
1.5&6 Convert between different prefixes used in mass & length measurements
1.7 Convert between common units of temperature measurements.
1.9 Convert between different prefixes used in volume measurements.
1.10 Calculate mass, volume, or density using the formula for density.
1.11 Predict whether a substance will float or sink in another substance based on density.
1.12 Calculate kinetic energy of a moving object.
1.13 Convert between common energy units.
1.16 Report a measurement to the appropriate number of significant figures.
1.17 Report the answer of mathematical calculations to the correct number of significant figures.
1.19 Change a measurement into different units using appropriate conversion factors.

Chapter 2 Atoms, Molecules, and Ions
2.1 Use symbols to represent element names.
2.2 Identify the location of metals, nonmetals, and semimetals on the periodic table.
2.3 Indicate the atomic number, group number, and period number for an element whose position in the periodic table is given.
2.4 Identify groups as main group, transition metal group, or inner transition metal group.
2.7 Determine the mass of the products of a reaction using the law of mass conservation.
2.11 Describe Rutherford's gold foil experiment and what it contributed to the current model of atomic structure (Figure 2.5).
2.12 Describe the structure and size of the atom (Figure 2.6).
2.13 Calculate the number of atoms in a sample given the size of the atom.
2.14&15 Determine the mass number, atomic number, and number of protons neutrons and electrons from an isotope symbol & write isotope symbols for elements.
2.16 Calculate atomic weight given the fractional abundance and mass of each isotope.
2.17 Convert between grams and numbers of moles or atoms using the molar mass and Avogadro's number.
2.18 Identify an element given the mass and number of atoms or moles.
2.19 Classify molecular representations of matter as a mixture, pure substance, element, or compound.
2.20 Convert between structural formulas, ball-and-stick models, and chemical formulas.
2.21 Classify bonds as ionic or covalent.
2.22 Determine the number of electrons and protons from chemical symbol and charge.
2.23 Match the molecular representation of an ionic compound with its chemical formula.
2.24&25 Convert between name and formula for ionic compounds.
2.26 Convert between name and formula for binary molecular compounds.

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Chapter 3 Mass Relationships in Chemical Reactions
3.1 Visualize bonds broken and formed in a chemical reaction and relate numbers of molecules or atoms to the balanced reaction
3.2 Balance a chemical reaction given the formulas of reactants and products.
3.3 Calculate formula weight, molecular weight, and molar mass given a chemical formula or structure.
3.4 Interconvert between mass, moles, and molecules/ atoms of a substance.
3.5 Relate the amount (moles or mass) of reactants and products in a balanced equation using stoichiometry.
3.6 Calculate percent yield given amounts of reactants and products.
3.7 Visualize the relative amounts of atoms or molecules in the reactants and products of a balanced reaction
3.8 Determine which reactant is limiting and calculate the theoretical yield of the product and the amount of excess reactant.
3.9 Calculate percent yield when one reactant is limiting.
3.10 Calculate the percent composition given a chemical formula or structure.
3.11 Determine the empirical and molecular formula given the mass percent composition and molecular weight of a compound.
3.12 Determine the empirical and molecular formula given combustion analysis data and molecular weight.
3.13 Determine the molecular weight of a substance given a mass spectrum. Determine empirical and molecular formula using both mass spectral and combustion analysis data
3.14 Identify a compound using molecular weight measured with a high mass accuracy mass spectrometer.

Chapter 4 Reactions In Aqueous Solution
4.1 Calculate the molarity of a solution given the mass of solute and total volume.
4.2 Calculate the amount of solute in a given volume of a solution with a known molarity.
4.3 Describe the proper technique for preparing solutions of known molarity.
4.4 Calculate the concentration of a solution after dilution.
4.5 Describe the proper technique for diluting solutions.
4.6 Classify a substance as a strong, weak, or nonelectrolyte.
4.7 Calculate the concentration of ions in a strong electrolyte solution.
4.8 Classify a reaction as a precipitation, acid–base neutralization, or oxidation–reduction (redox) reaction.
4.9 Write an ionic and net ionic equation and identify spectator ions given the molecular equation.
4.10 Use the solubility guidelines in Table 4.2 to predict the solubility of an ionic compound in water.
4.11 Predict whether a precipitation reaction will occur and write the ionic and net ionic equations.
4.12 Convert between name and formula for an acid.
4.13 Classify acids as strong or weak based on the molecular picture of dissociation.
4.14 Write the ionic equation and net ionic equation for an acid-base neutralization reaction.
4.15 Convert between moles and volume using molarity in stoichiometry calculations.
4.16 Determine the concentration of a solution using titration data.
4.17 Visualize the substances present in solution during a titration procedure.
4.18 Assign oxidation numbers to atoms in a compound.
4.19 Identify redox reactions, oxidizing agents, and reducing agents.
4.20 Use the location of elements in the periodic table & activity series to predict if a redox reaction will occur.
4.21 Develop an activity series and predict if a redox reaction will occur based on experimental data provided.
4.22 Use a redox titration to determine the concentration of an oxidizing or reducing agent in solution.

Chapter 5 Periodicity and Electronic Structure of the Atom
5.1 Label the wavelength, frequency and amplitude in an electromagnetic wave and understand their meaning.
5.2 Interconvert between wavelength and frequency of electromagnetic radiation.
5.3 Calculate the energy of electromagnetic radiation in units of J/photon or kJ/mol, when given the frequency or wavelength.
5.4 Describe the photoelectric effect and explain how it supports the theory of particlelike properties of light.
5.5 Calculate the frequency or wavelength of radiation needed to produce the photoelectric effect given the work function of a metal.

5.6 Compare the wavelength and frequency of different electron transitions in the Bohr model of the atom.

5.7 Relate wavelengths calculated using the Balmer-Rydberg equation to energy levels in the Bohr model of the atom.

5.8 Calculate the wavelength of a moving object using the **de Broglie equation**.

5.9 Explain why the wavelength of macroscopic objects is not observed.

5.10 Calculate the uncertainty in the position of moving object if the velocity is known.

5.11 Identify and write valid sets of quantum numbers that describe electrons in different types of orbitals.

5.12 Identify an orbital based on its shape and describe it using a set of quantum numbers.

5.13 Visualize the nodal planes in different types of orbitals and different shells.

5.14 Assign a set four quantum numbers for electrons in an atom.

5.15 Explain how electron shielding gives the order of subshells from lowest to highest in energy.

5.16 Predict the order of filling of subshells based upon energy.

5.17 Assign electron configurations to atoms in their ground state.

5.18 Draw orbital filling diagrams for the ground state of an atom & determine the # of unpaired electrons.

5.19 Identify atoms from orbital filling diagrams or electron configurations.

5.20 Explain the periodic trend in atomic radii.

5.21 Predict the relative size of atoms based upon their position in the periodic table.

Chapter 6 Ionic Compounds: Periodic Trends and Bonding Theory
6.1 Write ground-state electron configurations for main group and transition metal ions.

6.2 Determine the number of unpaired electrons in a transition metal ion.

6.3 Predict the relative size of anions, cations, and atoms.

6.4 Predict the relative size of isoelectronic ions.

6.5 Order elements from lowest to highest ionization energy.

6.6 Explain the periodic trend in ionization energy.

6.7 Compare successive ionization energies for different elements.

6.8 Identify elements based on values of successive ionization energies.

6.9 Compare the value of electron affinity for different elements.

6.10 Explain the periodic trend in electron affinity.

6.11 Use the octet rule to predict charges on main group ions, electron configurations of main group ions, and formulas for ionic compounds.

6.12 Visualize ionic compounds on the molecular level.

6.13 Draw a Born-Haber cycle and calculate the energy change that occurs when an ionic compound is formed from its elements.

6.14 Use the Born-Haber cycle to solve for the energy change associated with one of the steps.

6.15 Predict the relative magnitude of lattice energy given the formula or molecular representation of an ionic compound.

Chapter 7 Covalent Bonding and Electron-Dot Structures
7.1 Describe the difference between an ionic and covalent bond.

7.2 Describe changes in energy that occur as two nuclei approach to form a covalent bond.

7.3 Name a covalent compound given the chemical formula.

7.4 Predict trends in bond length and bond dissociation energy based on bond order and atomic size.

7.5 Rank elements by increasing value of electronegativity.

7.6 Classify bonds as nonpolar covalent, polar covalent, or ionic.

7.7 Visualize regions of high and low electron density in a polar covalent bond.

7.8 Predict trends in bond dissociation energy based upon both atomic size and polarity of the bond.

7.9 Explain the different physical properties of NaCl & HCl based upon the ionic & covalent bonding models.

7.10 Draw an electron-dot structure by using valence electrons to give all atoms (except H) an octet

7.11 Use the five-step procedure for drawing electron-dot structures for all molecules including those with, expanded octets, and those containing multiple bonds

7.12 Draw electron-dot structures for free radicals.

7.13 Draw electron-dot structures for molecules with more than one central atom.

7.14 Draw a complete electron-dot structure given only the connections of atoms.
7.16 Draw resonance structures and use curved arrows to depict how one structure can be converted to another.
7. 17 Calculate formal charge on atoms in an electron-dot structure.
7.18 Use formal charge to evaluate the contribution of different resonance structures to the resonance hybrid.

Chapter 8 Covalent Compounds: Bonding Theories and Molecular Structure
8.1 Use the VSEPR model to predict geometry from the total number of charge clouds and lone pairs of electrons around an atom.
8.2&3 Use the VSEPR model to predict bond angles and overall shape of a molecule or ion with one or more central atoms.
8.4 Describe the difference between a sigma and pi bond.
8.5 Determine the type of hybrid orbitals based upon the number of charge clouds around an atom.
8.6 Write an electron-dot structure for a molecule and determine hybridization and bond angles on non-terminal atoms.
8.7 Identify which orbitals overlap to form sigma and pi bonds in molecules.
8.8 Predict whether a given molecule has a dipole moment and draw its direction.
8.9 Interpret electrostatic potential maps of molecules.
8.10 Calculate the percent ionic character in a bond.
8.11 Identify the types of intermolecular forces experienced by a molecule.
8.12 Relate the strength of intermolecular forces to physical properties such as melting point and boiling point.
8.13 Sketch the hydrogen bonding that occurs between two molecules.
8.14 Interpret the molecular orbital diagram for a first row diatomic molecule or ion.
8.15 Interpret the molecular orbital diagram for a second row diatomic molecule or ion. Calculate the bond order and predict magnetic properties.
8.16 Draw orbital overlap diagrams for molecules and describe the use of both valence bond theory and molecular orbital theory.

Chapter 9 Thermochemistry: Chemical Energy
9.1 Calculate the kinetic energy of an object in motion.
9.2 Convert between common units for energy.
9.3 Identify state functions.
9.4 Identify the sign of heat and work.
9.5 Calculate *PV* work.
9.6 Calculate the internal energy change (ΔE) for a reaction.
9.7 Given a thermochemical equation and the amount of reactant or product, calculate the amount of heat transferred.
9.8 Classify endo- and exothermic reactions.
9.9 Calculate heat capacities, temperature changes, or heat transfer using equation for heat capacity (C) specific heat (c), or molar heat capacity (C_m).
9.10 Calculate enthalpy changes in a calorimetry experiment.
9.11 Use Hess's Law to find ΔH for an overall reaction, given reaction steps and their ΔH values.
9.12 Identify standard states of elements.
9.13 Write standard enthalpy of formation reactions $(\Delta H°_f)$ for compounds from their elements.
9.14 Use values of $(\Delta H°_f)$ for elements and compounds to calculate $\Delta H°$ for a reaction.
9.15 Use bond dissociation energies to estimate $\Delta H°$ for a reaction.
9.16 Calculate $\Delta H°_c$ for various fuels using thermochemical principles such as Hess's Law, calorimetry, or bond dissociation enthalpies.
9.17 Predict the sign of the entropy change (ΔS) given the chemical equation or a molecular diagram.
9.18 Using the relationship between Gibbs free energy and spontaneity, predict the sign of $\Delta G, \Delta H, \Delta S$.
9.19 Use the Gibbs free energy equation to calculate an equilibrium temperature.

Chapter 10 Gases: Their Properties and Behavior
10.1 Convert between different units of pressure.

10.2 Describe how a barometer and manometer measure pressure.

10.3 Use the individual gas laws to calculate pressure, volume, molar amount, or temperature for a gas sample when conditions change.

10.4 Use the ideal gas law to calculate pressure, volume, molar amount, or temperature for a gas sample.

10.5 Calculate volumes of gases in chemical reactions.

10.6 Calculate the density or molar mass of a gas using the formula for gas density.

10.7 Calculate the partial pressure, mole fraction, or amount of each gas in a mixture.

10.8 Use the assumptions of kinetic–molecular theory to predict gas behavior.

10.9 Calculate the average molecular speed of a gas particle at a given temperature.

10.10 Visualize the processes of effusion and diffusion.

10.11 Use Grahams' Law to estimate relative rates of diffusion for two gases.

10.12 Understand the conditions when gases deviate the most from ideal behavior.

10.13 Use the van der Waals equation to calculate the properties of real gases.

10.14 Convert between different units used to express the concentration of pollutants.

10.15 Use the gas laws, Dalton's Law, and stoichiometry to calculate amounts of pollutant gases in the atmosphere.

10.16 Identify the components and causes of photochemical smog.

10.17 Explain the principle of the greenhouse effect.

10.18 Describe the trends in greenhouse gas concentrations over time and predicted effects of climate change.

Chapter 19 Nuclear Chemistry

19.1 Give the different kinds of radioactive decay and the results of each.

19.2 Write balanced nuclear reactions.

19.3 Predict the type of radioactive decay for a given isotope.

19.5 Relate half-life and decay constant.

19.6 Calculate the amount of radioactive isotope remaining after a given amount of time.

19.7 Relate decay rates to decay constant, half-life, or amount remaining.

19.8 Calculate the mass defect and binding energy of a nucleus.

19.10 Calculate the mass defect of a chemical reaction.

19.11 Identify key aspects of fission and fusion reactions and their role in nuclear power and weapons.

19.13 Write balanced equations for nuclear transmutation reactions.

19.15 Calculate the age of an object using radioisotopic dating.

Chapter 22: The Main-Group Elements, selected objectives from this list:

22.1 Use the periodic table to predict the properties of the main-group elements and their compounds.

22.2 Account for differences in the structure and properties of second-row elements and the structure and properties of third- and higher-row elements.

22.3 Describe the preparation of elemental hydrogen.

22.4 Write and balance a chemical equation for the reaction of ionic hydrides with water.

22.5 Classify binary hydrides and describe their bonding and properties.

22.6 Use periodic trends to predict properties of Group 1A and 2A elements.

22.7 Write and balance reactions of alkali and alkaline-earth metals with halogens, oxygen, and water.

22.8 Write electrode reactions & perform calculations in the electrolysis of molten salts to produce alkali & alkaline-earth metals.

22.9 Explain why the properties of boron differ from other 3A elements.

22.10 Describe the structure and bonding in diborane.

22.11 Draw electron-dot structures, predict hybrid orbitals & geometry for molecules & ions in main group compounds.

22.12 Describe the structure and properties of the allotropes of carbon.

22.13 Use the shorthand notation for a silicate anion to represent its structure and interpret the notation to find the formula and charge of a silicate anion.

22.14 Write electron-dot structures and describe the structure, bonding, and properties of molecules and ions in main-group compounds containing N and P.

22.15 Relate compound names, formulas, and oxidation states in compounds.

22.16 Classify the oxide of an element as ionic or covalent, and as acidic, basic, or amphoteric.
22.17 Write reactions of oxides and sulfur compounds.
22.18 Write electron-dot structures and describe the structure, bonding, and properties of molecules in main-group compounds containing O and S.
22.19 Write balanced equations for the formation of halogens and reactions of their compounds.
22.20 Relate compound names, formulas, and oxidation states in compounds.
22.21 Predict the relative acid strengths of oxoacids.

TEACHING STRATEGIES

Lecture: Attendance is required, **please arrive on time**, clicker questions for points will be included in lecture. You are responsible for all material, experiments, and problems covered in class. You will be provided with partial lecture outlines of the course material via Blackboard. You must write your **recitation section number** on all of the papers that you turn in during lecture to ensure that you receive full credit. It is a number between 2-98 and can be found on your registration documents.

Writing Assignments (WA)/ Clicker Points will be given in lecture or recitation or for out of class work.

Textbook We urge you to read the text before the lecture so you are familiar with concepts before hearing about them during the limited time of each class session.

Recitation: A required part of the course. Go to recitation prepared, b*ring your solved homework with you.* Go to recitation prepared, having worked or tried to work the assigned end-of-chapter problems so *bring your solved homework to each session.* Your work and participation are worth 4 points per session.

Homework
- **Recitation Homework:** Your graded homework questions are from the End-Of-Chapter section of your textbook. These are to be completed outside of class and brought to your weekly recitation. You will be asked to show your solutions to the leader and points will be awarded. **Specific problems are listed in a chart below. These problems may show up on exams.**
- **ALEKS Online Homework**: This learning program uses artificial intelligence to create assignments tailored to the unique needs of each student. There will be assignments with deadlines.

Required Textbook: *Chemistry,* 7th Ed, 2015, McMurry /Fay/Robinson, Pearson
Required Online Homework Access Code: *ALEKS website*, **www.aleks.com**
    Here is the ALEKS Course Code for Dr. Jorgensen's section: LG3FE-DVYGR
    See two specific ALEKS handouts for more details on this system which were emailed to you.

Required Clicker with access/license code: LCD clicker with 4 year access*
*A 1 year access/license code is also available. Access/license codes may be purchased without a clicker if you already have one. There is a rebate for your access code such that you can get your money back for this purchase. Your instructor will provide you with specific registration instructions.

Optional Materials (all are part of the package sold by the UT Bookstore):
Selected Solutions Manual for Chemistry, 7th Ed, 2016, Topich for McMurry/Fay/Robinson, Pearson. We strongly recommended that you have this book either by buying or sharing.
Study Guide for Chemistry, 7th Ed, 2016, Zubricky for McMurry/Fay/Robinson, Pearson. There will not be any assignments from this book, but you may find it helpful to your studying.
Mastering Chemistry Access Code: There will no assignments from this online resource but you may find it helpful.

COURSE PREREQUISITES AND CO-REQUISITES:

Your success in CHEM 1230 is important to us, therefore we **require** that you meet a course prerequisite based on your score on one of the chemistry placement exams (paper exam or ALEKS online score of 55% or above) *OR* a grade of **C or above in CHEM 1090**. We require you to drop the course if you do not meet our criteria and register

for CHEM 1090. CHEM 1230 is a prerequisite for CHEM 1240 & 1290. A grade of D in CHEM 1230 is not sufficient preparation for CHEM 1240. If your ALEKS Initial Assessment was below 55% you are required to take CHEM 1200 with 1230.

TECHNOLOGY REQUIREMENTS

Blackboard (https://blackboard.utdl.edu/webapps/login/) and ALEKS (www.aleks.com) will be used on a regular basis in this course. Students need to have access to a properly functioning computer throughout the semester. Student computers need to be capable of running the latest versions of plug-ins, recent software and have the necessary tools to be kept free of viruses and spyware. Updated software is available from the Online Learning Download Center (https://www.utoledo.edu/dl/main/downloads.html).

For exams, students may use an approved calculator. Any calculator that is programmable, whether graphing or non-graphing, and any calculator based on a phone or other device that can receive or transmit data, are prohibited. Students are required to use a clicker in all lecture classes

UNIVERSITY POLICIES

Policy Statement on Non-Discrimination on the basis of Disability (ADA):
The University is an equal opportunity educational institution. Please read The University's Policy Statement on Nondiscrimination on the Basis of Disability Americans with Disability Act Compliance.

ACADEMIC ACCOMMODATIONS

The University of Toledo is committed to providing equal access to education for all students. If you have a documented disability or you believe you have a disability and would like information regarding academic accommodations/adjustments in this course please contact the Student Disability Services Office.

ACADEMIC POLICIES

Examinations
Make-up exams will not be given for any circumstance. Excused absences will be given only to students who miss an hour exam under the conditions listed below. If an excuse is acceptable, your final course grade will be computed with the score on the missed exam equal to the average of the other hour exams. The final exam cannot be excused. For all exams you must show a **photo identification card.** You may use a **non-programmable calculator**, **but you will not be permitted to use a programmable calculator or phone.**

Exam Absence Policies
Students who will not be able to take an exam at the scheduled time due to an irresolvable conflict with a major responsibility must provide some **written** documentation to verify the conflict before the exam date. This situation may occur for students on official university business. The exam will be given at another arranged time before the scheduled test date. *Approval must be obtained in advance.*

Students who unexpectedly miss an exam due to illness, car accident or similar **extreme** circumstance should inform their instructor of their difficulties as soon as possible. These difficulties must also be **documented** by a physician's note, an accident report, etc. An email to your instructor and a telephone call within 24 hours is expected. Students must complete an **Absence Report Form** (obtained from the chemistry office, BO 2022). **Documentation** supporting your excuse must be attached to the form. In all other circumstances a missed exam will result in a grade of 0.

Academic Dishonesty: You are urged to refer to the university's policy on Academic Dishonesty in the university catalogue. Violation of this policy can result in a course grade of **F** with additional university sanctions possible. You will be required to print out an **Academic Honesty Statement**, sign it and submit the statement to your recitation instructor. You can download the statement from the Blackboard site

COURSE EXPECTATIONS

1. Attendance is required for the lecture and recitation classes.
2. Read the textbook before the lecture, the schedule is listed below.

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3. You are responsible for all material and problems covered in class.
4. Bring clicker and a calculator to the every lecture and recitation class.
5. You need to come to the recitation class prepared by completing the provided homework handouts (posted on Blackboard). Each recitation session is worth 4 WA points.
6. ALEKS online homework assignments have to be completed before the deadline
7. If you need extra help, see your instructor during office hours or use email. You will not be graded or judged based on the questions that you ask! Seek help in the **Chemistry Help Center** (BO2043).

GRADING

Course Points The following is the distribution of possible points in the course. Extra points in any category will <u>NOT</u> be counted in any other category or in the total points.

Midterm Exams 3 @ 100 points each	300 pts	46.2 %
Final Exam	150 pts	23.1 %
ALEKS	100 pts	15.4 %
Participation: Clickers, WA, recitation	100 pts	15.4 %
Total: 650 pts		

Grade Scale   These are the minimum percentages of total points needed to receive the indicated grade.

		A	88%	A-	85%
B+	81%	B	77%	B-	73%
C+	69%	C	64%	C-	60%
D+	57%	D	53%	D-	50%

Drop, Withdrawal and Incomplete Grades

Dropped courses do not appear on your transcript. The deadline for dropping is **September 5th.** You may *withdraw* from the course and receive a grade of **W**. The deadline for withdrawal is **October 28th. W**'s do not affect your GPA. Course registration changes might affect your **financial aid**. Throughout the term instructors report student attendance. These reports can also affect your financial aid, so you will want to be sure that you are in attendance for all classes. However, you will remain enrolled in the class independent of these reports, unless you take the action of dropping or withdrawing. A course grade of **Incomplete** is given only to those who have completed all but a small percentage of course requirements for an acceptable reason. The **Incomplete** must be removed before you take CHEM 1240.
Note: If you drop or withdraw from CHEM 1230, you are to drop/withdraw from the lab course CHEM 1280 because you need to know the lecture material to be in lab.

COMMUNICATION GUIDELINES

As your instructor, I am here to help, and will do my best to respond to email within 24 to 48 hours. Students are expected to check their UT email account and blackboard frequently for important course information.

STUDENT SUPPORT SERVICES

Course scheduling assistance: Chemistry Department Secretary, Ms. Samples, is in Room BO 2022, telephone 419-530-2698. She takes care of all scheduling changes.

Chemistry Help Center, Room BO 2043, is where the teaching assistants hold their office hours so it is a great place to receive assistance. It is generally open all day Monday through Friday & evenings Monday through Thursday. A schedule will be posted early in the term. No appointment is necessary.

Tutoring support for all UT students is available through the **Learning Enhancement Center** located in the Carlson Library.

CHEM 1200 PROBLEM-SOLVING IN GENERAL CHEMISTRY
CHEM 1200 is a supplemental course to CHEM 1230 and we encourage you to add it to your schedule if it is not there now. It is a workshop-based class which aims to help you master the CHEM 1230 material. You will work in small groups under the guidance of an advanced student. To sign up speak with your advisor. It is scheduled for 1 hour 50 minutes on Thursdays or Fridays but some sessions are completed in 90 minutes.

End-of-Chapter Questions: Within each chapter there are several Worked Examples to show you how to solve problems & answer questions. After each there are Practice and Apply questions/problems which you can use to test your knowledge. The answers to these questions are at the back of the book and full solutions are in the Selected Solutions Manual (SSM). The following End of Chapter questions/problems are excellent practice and form the basis of the exams.

Chapter	Assigned End of Chapter Questions from the Textbook
1	27, 35, 39, 47, 49, 51, 61, 63, 71, 75, 81, 83, 95, 101, 103
2	37, 39, 43, 45, 59, 73, 87, 91, 99, 101, 103, 109, 115, 119, 125, 129, 137, 139, 145, 151
3	29, 31, 35, 37, 43, 49, 51, 57, 61, 67, 73, 75, 77, 83, 85, 87, 101, 105
4	39, 41, 43, 45, 49, 53, 57, 69, 71, 75, 81, 89, 103, 105, 111, 125, 127, 141
5	25, 27, 35, 37, 39, 45, 51, 61, 69, 71, 75, 77, 81, 95, 107, 109, 113, 123
6	23, 25, 27, 29, 37, 39, 41, 43, 47, 49, 53, 57, 59, 65, 69, 73, 79, 87, 99
7	29, 43, 45, 49, 53, 61, 65, 67, 73, 75, 79, 81, 85, 89, 101
8	39, 43, 45, 47, 49, 53, 59, 63, 65, 67, 73, 77, 81, 83, 87, 91, 93, 95
9	31, 33, 35, 37, 39, 45, 57, 65, 67, 79, 83, 87, 93, 99, 107, 117, 125, 129, 137
10	29, 31, 37, 39, 53, 55, 61, 69, 75, 83, 85, 101, 107, 113, 117, 127, 131, 135, 137
19	27, 29, 33, 39, 47, 53, 69, 77, 93, 105
22	37, 44, 47, 56, 59, 61, 67, 83, 99

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COURSE SCHEDULE

Week	Dates	Chapter: Topic	Notes
1	Aug 22-26	1. Chemical Tools 2. Atoms, Molecules & Ions 3. Mass Relationships in Chemical Reactions	Review Chapters 1, 2 on your own. Chapter 3 will be covered in class.
2	Aug 29-Sept 2	3. Continued	
3	Sept 5-9	4. Reactions in Aqueous Solution	*9/5 is Labor Day. Classes are cancelled.* **Last day to Drop via the web is Mon 9/5**
4	Sept 12-16	4. Continued	**Midterm Exam 1, Wed 9/14, Chapters 1, 2, 3, 4 (partial)**
5	Sept 19-23	4. Continued 5. Periodicity & the Electronic Structure of Atoms	
6	Sept 26-Sept 30	5. Continued	
7	Oct 3-7	6. Ionic Bonds: Periodic Trends & Bonding Theory	*10/3 – 10/4 is Fall Break.* *Classes are cancelled.*
8	Oct 10-14	6. Continued 7. Covalent Bonding & Electron-Dot Structures	
9	Oct 17-21	7. Continued	**Midterm Exam 2, Wed 10/19 Chapters 4 (partial), 5, 6, 7 (partial) and review of Exam 1**
10	Oct 24-28	8. Covalent Compounds: Bonding Theories & Molecular Structure	**Last day to Withdraw via the web is Friday 10/28**
11	Oct 31 – Nov 4	8. Continued	
12	Nov 7 – 11	9. Thermochemistry: Chemical Energy	*11/11 is Veterans Day. Classes are cancelled*
13	Nov 14 – 18	9. Continued 10. Gases: Their Properties & Behavior	
14	Nov 21 – 25	10. Continued	*11/23-11/25 Thanksgiving Break.* *Classes are cancelled.*
15	Nov 28 – Dec 2	19. Nuclear Chemistry	**Midterm Exam 3, Wed 11/30 Chapters 7 (partial), 8, 9, 10, and review of Exams 1 and 2**
16	Dec 5 – 9	22. The Main-Group Elements	
Finals Week	Dec 12 - 16	The Final Exam is comprehensive. A document about the exam will be distributed	******** Final Exam ********* **Thursday 12/15, 8:00 AM -10:00 AM. You Must Take The Final At This Time!**

Be Sure That Your Travel & Employment Plans Do Not Conflict With This Schedule.