



CHEM 011: General Chemistry I

Term: 2020 Winter Session

Instructor: Staff

Language of Instruction: English

Classroom: TBA

Office Hours: TBA

Class Sessions Per Week: 6

Total Weeks: 4

Total Class Sessions: 25

Class Session Length (minutes): 145

Credit Hours: 4

Course Description:

We will study the fundamentals of chemistry. The basic concepts of inorganic, organic, and biochemical systems will be examined. The course also introduces basics of atoms and molecules; molecular structure; periodicity; intermolecular forces; solids, liquids, gases; solution; stoichiometry; spectrometry; light and matter; thermochemistry; diatomic and polyatomic molecules. Students will learn to apply the theories and concepts of chemistry to real world issues.

Course Materials:

Chemistry: A Molecular Approach, Nivaldo J Tro, 4th edition.

Course Format and Requirements:

Material involves taking time to think things through, develop the knowledge (or process) and practice this. It is also very helpful to test yourself on your knowledge development. Using the quiz or exam as a means to test if you have learned something could be too late to determine you still have a gap in knowledge. Remember, lecture is very important in seeing process and models and hearing concepts and their derivation and application BUT is not the beginning and end of learning. It would be unusual to learn something simply from sitting in lecture.



Grading Scale:

A+: 98%-100%

A: 93%-97%

A-: 90%-92%

B+: 88%-89%

B: 83%-87%

B-: 80%-82%

C+: 78%-79%

C: 73%-77%

C-: 70%-72%

D+: 68%-69%

D: 63%-67%

D-: 60%-62%

F: Below 60%

Course Assignments:

Quizzes

There will be 6 quizzes administered through the whole semester and the lowest one will be dropped. Quizzes will always be completed in the first ten minutes of class. There will be no make-up quizzes.

Midterm Exam

The material covered on each examination will include everything in the lecture. To be fair to all, questions about what will be covered on exams will be answered in class only. No such questions will be answered by telephone or e-mail. Students will have three non-cumulative in-class midterm exams.

The only legitimate excuses for missing your testing period are extenuating circumstances that are beyond your control. Examples of these circumstances are illness, death in the family, or car accidents on the way to take the test. Forgetting when to come take your exam or sleeping through your exam period is not legitimate excuses. Excuses must be accompanied with proper documentation. Students that miss an exam due to illness must bring documentation from a physician stating that they were seen in the physician's office and that they were too ill to attend classes on that date. If you miss your exam period because of extenuating circumstances, it is



your responsibility to inform your instructor in a timely fashion. Your instructor will then discuss with you appropriate measures to remedy the situation.

Students who arrive late for the exam will be allowed to begin the exam at the time they arrive but will lose all of the time they are late on the exam.

Any questions regarding credit on an exam question must be submitted in writing within two days after the grades have been posted on Canvas. Any questions regarding exam credit will not be considered after two days.

Final Exam

The final will be cumulative to allow you to demonstrate the breadth of knowledge you've acquired throughout the semester. The final exam will be close-book. The final exam is worth 35% of the total final score. Note that the final will not be taken during the normal class times. Exact time and location for final will be announced in the last week of sessions.

Course Assessment:

Quizzes(5 out 6)	15%
Midterm Exam 1	25%
Midterm Exam 2	25%
Final Exam	35%
Total	100%

Course Schedule:

Week 1- Class 1	Week 1- Class 2
Introduce the Course; Go through the Syllabus; World of Chemistry	Measurement and Problem Solving Methodology; Common Metrics
Week 1- Class 3	Week 1- Class 4
<u>Quiz 1</u> Atoms and Elements: Atoms, ions, electrons, neutrons, protons, atomic mass	Atoms and Elements: Hess's Law; Electromagnetic radiation;



	Wave-particle duality; Atomic spectra
Week 1- Class 5	Week 1- Class 6
Atom Structure and Periodicity: The quantum mechanical atom; Orbitals; Atom Structure and Periodicity: Electron configurations	<u>Quiz 2</u> Valence Electrons; Atom Structure and Periodicity: Periodic Trends
Week 2- Class 7	Week 2- Class 8
Magnetic properties Atom to Molecules	<u>Midterm 1</u>
Week 2- Class 9	Week 2- Class 10
Bonding: General Concepts: Ionic Bonds Metallic Bonds Covalent Bonds	Bonding: General Concepts: Bond Energy Bond Length Lattice Energies
Week 2- Class 11	Week 2- Class 12
<u>Quiz 3</u> Molecular Structures & Orbitals: VSEPR theory Molecular shape and polarity	Molecular Structures & Orbitals: Valence Bond Theory; Molecular Structures & Orbitals: Molecular Orbital Theory
Week 3- Class 13	Week 3- Class 14
<u>Quiz 4</u> Intermolecular forces; Chemical Energy; Matter and Energy;	Laws of conservation; Introduce to thermodynamics first and second law of thermodynamics: Internal Energy



Week 3- Class 15	Week 3- Class 16
<u>Quiz 5</u> first and second law of thermodynamics: Specific heat Enthalpy Entropy	first and second law of thermodynamics (Cont.) Thermochemistry Calorimetry
Week 3- Class 17	Week 3- Class 18
Phase changes: Phase diagrams, Types of solids	Phase Changes: Gas, Liquid and Solid Review for midterm 2
Week 4- Class 19	Week 4- Class 20
<u>Midterm 2</u>	Molar mass, empirical formula; Chemical equations; Stoichiometry
Week 4- Class 21	Week 4- Class 22
Limiting Reactants; Solution Stoichiometry; Precipitation Reactions	<u>Quiz 6</u> Limiting reactants; (Cont.) Solution stoichiometry; (Cont.) Precipitation reactions; (Cont.)
Week 4- Class 23	Week 4- Class 24
Acid-base reactions; Net ionic equations; Reduction of oxidation reactions, oxidation numbers	Acid-base reactions; (Cont.) Net ionic equations; (Cont.) Reduction of oxidation reactions, oxidation numbers (Cont.)
Week 4- Class 25	<u>Final Exam (Cumulative): TBA</u>
Summary of the whole semester; Review for final exam	



Academic Integrity:

Students are encouraged to study together, and to discuss lecture topics with one another, but all other work should be completed independently.

Students are expected to adhere to the standards of academic honesty and integrity that are described in the Shanghai Normal University's *Academic Conduct Code*. Any work suspected of violating the standards of the *Academic Conduct Code* will be reported to the Dean's Office. Penalties for violating the *Academic Conduct Code* may include dismissal from the program. All students have an individual responsibility to know and understand the provisions of the *Academic Conduct Code*.

Special Needs or Assistance:

Please contact the Administrative Office immediately if you have a learning disability, a medical issue, or any other type of problem that prevents professors from seeing you have learned the course material. Our goal is to help you learn, not to penalize you for issues which mask your learning.