CHEM 011: General Chemistry I

Term: 2020 Summer Session Instructor: Staff Language of Instruction: English Classroom: TBA Office Hours: TBA
Class Sessions Per Week: 5 Total Weeks: 5 Total Class Sessions: 25 Class Session Length (minutes): 120 Credit Hours: 4

Course Description:

This course is the first half of introduction to general chemistry study. Topics discussed include measurements, atomic structure, chemical nomenclature, chemical bonding, stoichiometry, matter and energy, gas laws, properties of liquids, solids, solutions, chemical reactions. Upon completion, students are expected to understand and explain real word chemical phenomenon. They shall be able to apply basic chemistry principles and mathematical tools to predict, analyze, calculate and evaluate chemical reactions and results.

Course Materials:

General Chemistry: The Essential Concepts, Raymond Chang, 6thEdition

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. 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.

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 30% 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:

Homework	5%

6 Quizzes	10%
Midterm Exam 1	20%
Midterm Exam 2	20%
Midterm Exam 3	20%
Final Exam	25%
Total	**100%**

Course Schedule:

Week	Topics	Activities
1.	Course syllabus + Overview Metrics and Measurement Chemical Nomenclature Overview of Atoms and Elements: Modern Atomic Theory and Law Atomic Structure, Protons, Neutron, and Electrons , Periodic Law and the Periodic Table, Isotopes, Structure of Ions Hess's Law, Electromagnetic Radiations Atomic mass, Molar Mass	Homework Assignment Quiz 1
2.	Atoms to Molecules Chemical Bond General Concepts Ionic Bonds, Metallic bonds and Covalent Bonds	Homework Assignment Quiz 2 &3 Midterm 1

	Bond Energy and Length, Lattice Energies Mocular Structure and Orbital: VSEPR theory Molecular Shape and Polarity Valence bond theory	
3.	Inter-molecular Forces Chemical Energy Matter and Energy Law of Conservation Introduction to Thermochemistry Ideal Gas Law, Property of Gas Phase Change, Gasses, Liquids and Solids Phase Diagrams	Homework Assignment Quiz 4 Midterm 2
4.	Property of Liquid, solid and solution Chemical Equations and Stoichiometry Solution Stoichiometry Chemical Reactions Limiting reactants Precipitation reactions	Homework Assignment Quiz 5 Midterm 3

5.	Oxidation-reductions Reactions Acid-base reactions Net ionic equations Introduction to Nuclear Chemistry Course summary	Homework Assignment Quiz 6 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.