



Hunan University

CHEM 11: General Chemistry

Professor: To be announced
Total contact hours: 54 hours
Credit: 4

Course Description

The course will introduce the student to the world of chemistry, with emphasis on the structure of matter. Problem solving, data evaluation, and analysis are stressed. Applications of chemistry to daily life are included. The lab complements topics in lecture, with lab calculations providing opportunity to use the data the students have gathered.

Note: Be prepared to purchase protective goggles and bring your lab manual.

Required Textbook

General Chemistry: The Essential Concepts, by Raymond Chang, 6th Edition

Grading

- Attendance 10%
- Quizzes 20%
- Lab 20%
- Midterm 20%
- Final Exam 30%

A+ 96-100	A 90-95	A- 85-89
B+ 82-84	B 78-81	B- 75-77
C+ 71-74	C 66-70	C- 62-65
D 60-61	F < 60	

Course Schedule

The course has 24 class sessions in total. All sessions are 2 hours and 15 minutes in length.
Note: the course outline and required readings are subject to change.



Class 1	Introduction of scientific method, measurement and the metric system Ch. 1
Class 2	Dimensional analysis, significant figures and laboratory calculations Ch. 1
Class 3	Overview of elements, compounds, physical and chemical change Ch. 1
Class 4	Structure of the atom, isotopes, periodic table and molecules Ch. 2
Class 5	Structure of ions and nomenclature Ch. 2
Class 6	Atomic mass, % composition, moles Ch. 3 Quiz 1
Class 7	Avogadro's number, molar mass, determining empirical formulas Ch. 3
Class 8	Chemical reactions and chemical equations Ch. 3
Class 9	Limiting reagents and yields Ch. 4 Quiz 2
Class 10	Aqueous solutions, Precipitation reactions Ch. 4
Class 11	Acid base reactions, Oxidation reactions Ch. 4
Class 12	Molarity, gravimetric analysis Ch. 4
Class 13	Pressure, gas laws, ideal gas law, partial pressure Ch. 5 Midterm
Class 14	Kinetic theory, deviation from ideal gas behavior Ch. 5
Class 15	Enthalpy, calorimetry, enthalpy of formation, thermodynamics Ch. 6
Class 16	Electromagnetic radiation, Bohr's Theory Ch. 7 Quiz 3



Class 17	Introduction to quantum mechanics, quantum numbers Ch. 7
Class 18	Electron configuration, the building-up principle Ch. 7
Class 19	Periodic classification of the elements, periodic variation in physical properties Ch. 8
Class 20	Atomic and ionic radius, ionization energy, electronic affinity Ch. 8
Class 21	Covalent bonds, electro negativity Ch. 9 Quiz 4
Class 22	Writing Lewis structures, formal charge, resonance, exceptions to the octet rule, bond strength Ch. 9
Class 23	Molecular geometry, dipole moments, hybridization of atomic orbitals, double/triple bonds Ch. 10
Class 24	Intermolecular forces, the liquid state, crystal structure, bonding in solids, phase changes and phase diagrams Ch. 12 Final

Laboratory Schedule

Room: To be announced

Hour: 17:30 – 19:30

The lab reports have three parts, the pre-lab (to be completed on-line before the lab commences), the data and calculations and the post-lab. The pre-Lab Assignment due when you enter the lab. You and your partner will work collaboratively on the data and post-lab sections and hand in one report for the two of you.

In order to do a good job in the experiments, it is essential that you come well prepared. Reading the experiment for the first time in lab will put you and your partner at a disadvantage and make it very difficult to complete the experiment on time.

If you have any technical questions on the pre-lab, data section or post-lab assignments, you are encouraged to ask the professor. Some regular topics are as follows. The supplementary topics will be announced by the professor.

1. Basic laboratory techniques
2. Identification of substances by physical properties



3. Separation of the components of a mixture
4. Chemical reactions
5. Reactions in Aqueous Solutions

Attending Policy

Regular and prompt attendance is required. Under ordinary circumstances, you may miss two times without penalty. Each absence over this number will lower your course grade by a third of a letter and missing more than five classes may lead to a failing grade in the course. Arriving late and/or leaving before the end of the class period are equivalent to absences.

Policy on "Late Withdrawals"

In accordance with university policy, appeals for late withdrawal will be approved **ONLY** in case of medical emergency and similar crises.

Academic Honesty

Hunan University expects all students to do their own work. Instructors will fail assignments that show evidence of plagiarism or other forms of cheating, and will also report the student's name to the University administration. A student reported to the University for cheating is placed on disciplinary probation; a student reported twice is suspended or expelled.

General Expectations:

Students are expected to:

- Attend all classes and be responsible for all materials covered in class and otherwise assigned;
- Complete the day's required reading and assignments before class;
- Review the previous day's notes before class and make notes about questions you have about the previous class or the day's reading;
- Participate in class discussions and complete required written work on time;
- Refrain from texting, phoning or engaging in computer activities unrelated to class during the class period;
- While class participation is welcome, even required, you are expected to refrain from private conversations during the class period.

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.