

Extended Syllabus

Course Title	General Chemistry I	Class Time	Mon. -Thur. Morning (9 am – 12pm)
Credits	3	Enrollment Eligibility	All students

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I . Course Overview

1. Description

Chemistry is the study related to compositions, structures and properties of materials. In this course, we will learn overall and basic information about chemistry systematically. We will study atoms and molecules, which are fundamental units of all materials. Also, we will learn diverse principles and theories about chemical reactions between many atoms and molecules.

2. Prerequisites

There are no prerequisites for this course.

3. Course format (%)

Lecture	Discussion	Experiment	Field study	Presentations	Others
95	5				

4. Evaluation (%)

Midterm exam	Final exam	Quizzes	Presentations	Projects	Assignments	Attendance/ Participation	Others
40	40				10	10	

II. Course Objectives

In this course, students have to learn general background of chemistry including structures, properties and reactions of atoms and molecules.

III. Course Format

Lecture slides deals with the textbook (**Chemistry, The Central Science, 14th edition, T. L. Brown et al**) and will be uploaded on **Cyber Campus** the day before the lecture. The course will consist of mainly lectures. During the lectures, student can ask any questions concerning the course. **The assignments will be two or three times. Also, there will be midterm (one time) and final exam (one time).**

IV. Course Requirements and Grading Criteria

Final grade will be based on the total number of points earned on your exams, assignments and attendance.

1. Midterm exam (40%): closed book. The exam will cover materials from the lectures and the textbook including exercise problems.
2. Final exam (40%): closed book. The exam will cover materials from the lectures and the textbook including exercise problems.
3. Assignments (10%): I will choose several exercise problems in the textbook and students will submit their answers including detailed processes about their solution. Late assignments will not be accepted.
4. Attendance/Participation (10%): Students are expected to attend every class. Attendance will be checked every class.

V. Course Policies

General policies are same as those of Sogang University.

No late assignments and no make-up exams.

VI. Materials and References

Chemistry, The Central Science, 14th edition, T. L. Brown et al.

VII. Course Schedule

Class 1	Learning Objectives	Ch.1 Why chemistry is important in natural science? How can we classify materials? What are their properties?
	Topics	Classification and properties of materials, units and uncertainty of measurement.
	Class work	Lecture and Discussion
	Materials	Lecture slides (ppt file)
	Assignments	Reading Ch.1

Class 2	Learning Objectives	Ch.2 Learning Atomic structure and related theories.
	Topics	Atomic theory, atomic structure and period table.
	Class work	Lecture and Discussion
	Materials	Lecture slides (ppt file)
	Assignments	Reading Ch.2
Class 3	Learning Objectives	Ch.3 Learning chemical formula and Stoichiometry.
	Topics	Chemical formula, Avogadro's number and mole.
	Class work	Lecture and Discussion
	Materials	Lecture slides (ppt file)
	Assignments	Reading Ch.3
Class 4	Learning Objectives	Ch.4 Learning chemical reactions in aqueous solutions and related stoichiometry.
	Topics	Properties of solutions, precipitation reaction, acid-base reaction and oxidation-reduction reaction.
	Class work	Lecture and Discussion
	Materials	Lecture slides (ppt file)
	Assignments	Reading Ch.4
Class 5	Learning Objectives	Ch.5 Understanding basic principles, laws and concept of thermodynamics.
	Topics	Properties of energy, 1st law of thermodynamics, enthalpy.
	Class work	Lecture and Discussion
	Materials	Lecture slides (ppt file)
	Assignments	Reading Ch.5
Class 6	Learning Objectives	Ch.5 Understanding basic principles, laws and concept of thermodynamics.
	Topics	Enthalpy of reaction and Hess's law.
	Class work	Lecture and Discussion
	Materials	Lecture slides (ppt file)
	Assignments	Reading Ch.5
Class 7	Learning Objectives	Ch.6 Understanding atomic theories and atomic structures.
	Topics	Wave nature of a material, energy, quantum efficiency of light, spectral lines and Bohr's atomic model.
	Class work	Lecture and Discussion
	Materials	Lecture slides (ppt file)
	Assignments	Reading Ch.6
Class 8	Learning Objectives	Midterm exam.
	Topics	
	Class work	
	Materials	
	Assignments	
Class 9	Learning Objectives	Ch.6 Understanding atomic theories and atomic structures.

	Topics	Atomic orbitals, Pauli's exclusion principle and Hund's rule.
	Class work	Lecture and Discussion
	Materials	Lecture slides (ppt file)
	Assignments	Reading Ch.6
Class 10	Learning Objectives	Ch.7 Learning periodic properties of elements.
	Topics	Effective charge, ionization energy and electron affinity.
	Class work	Lecture and Discussion
	Materials	Lecture slides (ppt file)
	Assignments	Reading Ch.7
Class 11	Learning Objectives	Ch.8 Learning basic chemical bondings.
	Topics	Ionic bonding, covalent bonding, electronegativity, Lewis electron dot structure.
	Class work	Lecture and Discussion
	Materials	Lecture slides (ppt file)
	Assignments	Reading Ch.8
Class 12	Learning Objectives	Ch.9 Learning molecular structures and related bonding theories.
	Topics	VSEPR model, hybrid orbitals, molecular orbitals.
	Class work	Lecture and Discussion
	Materials	Lecture slides (ppt file)
	Assignments	Reading Ch.9
Class 13	Learning Objectives	Ch.10 Understanding properties of gases and ideal gas law.
	Topics	Ideal gas law and kinetic-molecular theory.
	Class work	Lecture and Discussion
	Materials	Lecture slides (ppt file)
	Assignments	Reading Ch.10
Class 14	Learning Objectives	Ch.11 Learning properties of solutions and interaction of various solutions.
	Topics	Properties of solutions, interaction of various solutions and phase diagram.
	Class work	Lecture and Discussion
	Materials	Lecture slides (ppt file)
	Assignments	Reading Ch.11
Class 15	Learning Objectives	Ch.12 Learning properties of solids and new materials.
	Topics	Properties of solids, metallic bonding and nanomaterials.
	Class work	Lecture and Discussion
	Materials	Lecture slides (ppt file)
	Assignments	Reading Ch.12
Class 16	Learning Objectives	Final exam.
	Topics	
	Class work	
	Materials	

VIII. Special Accommodations

Students with disabilities that may cause any difficulties to participate in this course should contact me. Personal help will be available if needed.