

2026 Spring Semester

Syllabus for General Chemistry I-Chemical Principles

1. **Course:** **General Chemistry I (CH.10001)** [lecture: Experiment: Credit = 3:0:3]

2. Lecture Timetable

Time (Mondays and Wednesdays)	Class	Professor	Lecture Room(E11)
09:00~10:30 or 13:00~14:30	TBA	TBA	TBA

3. Summary of Lecture

This General Chemistry I lecture offers an overview of fundamental chemistry topics, including a classical approach to chemical bonding, an introduction to quantum mechanics, and a quantum mechanical perspective on atomic and molecular structures. Additional topics are covered to enhance chemical knowledge and deepen understanding of core chemical principles.

4. Material for Teaching:

- o Principles of Modern Chemistry, 8th ed, Oxtoby/Gillis/Campion (Brooks/Cole)
- o Lecture materials will be provided through the KLMS website of each class (<https://klms.kaist.ac.kr/>).

5. General Guidelines

All basic lecture notes can be downloaded at the General Chemistry Website:

<http://www.gencheminkaist.pe.kr> or a link be found at <http://chem.kaist.ac.kr>.

- 1) Practice Sessions led by TAs are scheduled from 8:00 to 8:50 pm on Mondays. These sessions are optional, providing an opportunity for students who seek additional discussion and problem-solving to participate.
- 2) The grading system will be determined based on the total scores achieved by students. The distribution of A grades (including A+, A_o, and A-) will be less than 50% of the total class. A **C- grade** will correspond to a total score of approximately **50 points**. Students taking the course with a P/NR grading option must achieve a score higher than 50 points (equivalent to a C-).

3) Grading Criteria and Points Distribution (Total 100 points)

I. Mid-term Exam: 34 points II. Final Exam: 34 points

(Out of 8-10 questions: 1-2 will come from assignments, 1-2 from previous exams)

III. Homework: 16 points

- Chapter summary: 8 points (1 point for each chapter, maximum of 3 pages, only **handwritten assignments** will be accepted, each submission is awarded either 0.5 or 1 point, depending on the content)
- Chapter problem: 8 points (1 point for each chapter, each submission is awarded either 0.5 or 1 point, based on the answers provided)

IV. Attendance & Attitude: 16 points

- Maximum of 16 points (1 point for each attendance of lectures and practice sessions)
- This course does not penalize absences, so there is no recognized attendance.

V. Plagiarism of Homework:

- First instance: Warning with a deduction of 10 points, second instance: F grade

6. Waiver Examination

The waiver examination on General Chemistry I will be held at the beginning of the semester, but only for those, who did not take any previous General Chemistry I classes.

7. Lecture Schedule

Week (Mondays, Wednesdays)	Chapters	Topics	Due date for Homework (Chap. Summary & problem)	Practice session (Mon, 20:00 ~ 20:50)	Notes
1 st (3/2, 3/4)	3	Atomic Shells and Classical Models of Chemical Bonding	-	-	3/2 No class (Samiljeol, - substitute holiday)
2 nd (3/9, 3/11)	3, 4	Atomic Shells and Classical Models of Chemical Bonding / Introduction to Quantum Mechanics	-	O	
3 rd (3/16, 3/18)	4	Introduction to Quantum Mechanics	Chap3 (Fri, ~23:59)	O	
4 th (3/23, 3/25)	4, 5	Quantum Mechanics and Atomic Structure		O	
5 th (3/30, 4/1)	5	Quantum Mechanics and Atomic Structure	Chap4 (Fri, ~23:59)	O	
6 th (4/6, 4/8)	6	Quantum Mechanics and Molecular Structure	Chap5 (Fri, ~23:59)	O	
7 th (4/13, 4/15)	6	Quantum Mechanics and Molecular Structure	Chap6 (Fri, ~23:59)	O	
8 th (4/22)	Mid-term Exam	Chapter 3, 4, 5, 6			
9 th (4/27, 4/29)	12	Thermodynamic Processes and Thermochemistry	-		
10 th (5/4, 5/6)	12 and 13	Thermodynamic Processes and Thermochemistry / Spontaneous Processes and Thermodynamic Equilibrium	-	-	
11 th (5/11, 5/13)	13	Spontaneous Processes and Thermodynamic Equilibrium	Chap 12(Fri, ~23:59)	O	
12 th (5/18, 5/20)	17	Electrochemistry	Chap 13 (Fri, ~23:59)	O	
13 th (5/25, 5/27)	17	Electrochemistry	-		5/25: Buddha's Birthday (Substitute Holiday)
14 th (6/1, 6/3)	18	Chemical Kinetics	Chap 17 (Fri, ~23:59)	O	6/3: Local election
15 th (6/8, 6/10)	18	Chemical Kinetics	Chap 18) (Fri, ~23:59)	O	
16 th (6/17)	Final Exam				

8. Assignments

Chapter	Homework		
	Topic	Sub-topics	Problems
3	Atomic Shells and Classical Models of Chemical Bonding	Ionization energies, electron affinity, and electronegativity Types of chemical bonds	85, 91, 94, 101, 110
4	Introduction to Quantum Mechanics	Wave-particle duality Particle-in-a-box models	48, 50, 52, 57, 60
5	Quantum Mechanics and Atomic Structure	Quantum-mechanical description of the hydrogen atom Shell model for many-electron atoms	43, 48, 51, 53, 58
6	Quantum Mechanics and Molecular Structure	Molecular orbital theory LCAO and VB method	65, 67, 69, 73, 74
12	Thermodynamic Processes and Thermochemistry	Thermochemistry Ideal gas processes	67, 70, 74, 80, 82
13	Spontaneous Processes and Thermodynamic Equilibrium	Entropy Spontaneity of chemical reactions	43, 44, 53, 57, 61
17	Electrochemistry	Cell potentials and Gibbs free energy Batteries and fuel cells	76, 83, 90, 92, 97
18	Chemical Kinetics	Rate Laws Reaction mechanisms and rate	54, 61, 64, 67, 75