Fall 2024 KAIST General Chemistry Courses

■ CH101 General Chemistry I, Chemistry Around Us

Time (Tuesdays and Thursdays)	Class	Lecturer
09:00~10:30	A	Professor Kiyoung Park
13:00~14:30	B	Professor Soon Hyeok Hong

A new foundational required chemistry course that deals with chemical understanding of our society's environmental, energy, and food issues, as well as food, nutrition, and health.

Target Students:

1. Students curious about the relationship between chemistry and our society and life.
2. Freshmen at KAIST who do not plan to major in a chemistry-related field.
3. Students who have sufficiently acquired knowledge of general chemistry and do not wish to take a redundant general chemistry course.

■ CH101 General Chemistry I, Chemical Principles

Time (Tuesdays and Thursdays)	Class	Lecturer
09:00~10:30	C	Professor Hyunwoo Kim
13:00~14:30	D	Professor David G. Churchill

A traditional foundational required chemistry course covering the basic chemical principles necessary for understanding compounds and chemical reactions.
(Essential content that students studying natural sciences and engineering must know.)

Target Students:

1. Students who have not studied chemistry in depth during high school.
2. Freshmen at KAIST who will major in chemistry / materials / life sciences.
3. Students who wish to enhance their understanding of chemistry through high-level chemistry lectures.

■ CH103 General Chemistry II

Time (Tuesdays and Thursdays)	Class	Topics	Lecturer
13:00~14:30	A	MetalloChemistry in Biology	Mi Hee Lim
13:00~14:30	B	Chemistry of Plastic Age	Sang Youl Kim

This is an elective introductory course in chemistry that introduces how existing chemical concepts are applied to the latest research findings.

Target Students:

1. Students who intend to major in chemistry / materials / life sciences.
2. Students who want to study chemistry in more depth.
3. Students who wish to experience and understand the latest research findings in chemistry.

■ Notice for All General Chemistry Courses

1. **Grading: A-F**
2. There is a minimum score requirement for each subject based on a 100-point scale. If the minimum requirement is not met, an **F grade** will be given

2024 Fall Semester

Syllabus for General Chemistry I-Chemical Principles

1. **Course and lecturer**: **General Chemistry I (CH101),** [lecture: Experiment: Credit = 3:0:3]

2. **Lecture Timetable**

Time (Tues, Thurs)	Class	Professor	Lecture Room (E11)
13:00~14:30	D	David G. Churchill	Creative Learning Center 303

3. Summary of Course Contents

The students will learn the fundamental principles and applications of chemistry (First Semester). Topics covered and tested on will include atomic structure, aspects of the periodic table, chemical bonding (ionic, covalent, metallic). We will also cover chemical reactions, chemical equations and their balancing, the states of matter, and phase transitions such as melting and freezing. Further we will cover the concepts of (aqueous) solutions and mixtures, acids and bases, and the pH scale concept, and finally coverage of thermochemistry and quantum chemistry, which will involve taking into consideration energy in reactions and electronic orbitals. This overview is thought to be comprehensive and lays the groundwork for understanding chemistry which is considered a central science.

4. Course Material for Teaching:

o *Principles of Modern Chemistry*, 8th edition, Oxtoby/Gillis/Campion (Brooks/Cole).

o Class lecture materials will be provided and maintained through the KLMS website (please see: https://klms.kaist.ac.kr/).

5. General Guidelines

Lecture notes shall be downloaded at the General Chemistry Website: http://www.gencheminkaist.pe.kr A link can be found within the Department of Chemistry homepage http://chem.kaist.ac.kr.

1) Practice Sessions led by Teaching Assistants (Tas) are planned, scheduled from 20:00 to 20:50 pm on Monday evenings. These sessions are optional; they will provide an opportunity for students who seek additional discussion and problem-solving to participate.
2) Grading will be determined based on the total scores achieved by students. The students receiving A grades (including A+, Ao, and A-) will be less than 50% for the total class.

To earn credit for the course, students must obtain **a minimum score of 50 points**. If a student's score falls below 50 points, they will receive an F grade.

Grading Criteria and Points Distribution (Subject to modification at the beginning of the semester)

I. Mid-term Exam: **32 points** II. Final Exam: **32 points**

III. Homework: **18 points**

- Chapter summary: **9 points** (0.6 points for each chapter, maximum of 3 pages)
- Chapter problem: **9 points** (0.6 points for each chapter)

IV. Attendance & Attitude: **18 points**

- Maximum of 18 points (1 point for each attendance of lectures and practice sessions)

V. Plagiarism when submitting Homework:

- First instance: Student will be issued a warning and a deduction of 10 points, Second instance: Student will be issued a F grade for the course.

6. Waiver Examination

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

7. Lecture Schedule

Week (Mon, Wed)	Chapter#	Topic	Homework and its due date (and due time) (Chap. Summary & problem)	Practice session (Mon, 20:00 ~ 20:50)	Notes
1st (9/3, 9/5)	3	Atomic Shells and Classical Models of Chemical Bonding			
2nd (9/10, 9/12)	3, 4	Atomic Shells and Classical Models of Chemical Bonding / Introduction to Quantum Mechanics		O	
3rd (9/17, 9/19)	4	Introduction to Quantum Mechanics	**Chap3** (Fri, ~23:59)	O	9/17 No class
4th (9/24, 9/26)	4, 5	Introduction to Quantum Mechanics / Quantum Mechanics and Atomic Structure	**Chap4** (Fri, ~23:59)	O	
5th (10/1, 10/3)	5	Quantum Mechanics and Atomic Structure		O	
6th (10/8, 10/10)	6	Quantum Mechanics and Molecular Structure	**Chap5** (Fri, ~23:59)		10/3 No class
7th (10/15, 10/17)	6	Quantum Mechanics and Molecular Structure 10/11: Study day, no class	**Chap6** (Fri, ~23:59)		

8th (10/XX) TBA	Mid-term Exam	(Chapters 3, 4, 5, 6)			(19:00 ~ 21:00)
9th (10/29, 10/31)	7	Bonding in Organic Molecules			10/23: Midterm Claim
10th (11/5, 11/7)	7, 8	Bonding in Organic Molecules / Bonding in Transition Metal Compounds and Coordination Complexes	**Chap7** (Fri, ~23:59)	O	
11th (11/12, 11/14)	8	Bonding in Transition Metal Compounds and Coordination Complexes		O	
12th (11/19, 11/21)	9	The Gaseous State	**Chap8** (Fri, ~23:59)	O	
13th (11/26, 11/28)	10	Solids, Liquids, and Phase Transitions	**Chap9** (Fri, ~23:59)	O	
14th (12/3, 12/5)	11	Solutions	**Chap10** (Fri, ~23:59)	O	
15th (12/10, 12/12)		TBA	**Chap11** (Fri, ~23:59)	O	
16th (12/XX)	Final Exam				(19:00 ~ 21:00)

Each lecturer will decide specific chapter-lecture schedules.

* Submit via KLMS by midnight on Saturday of the week. Points will not be awarded for late submissions.

8. Chapter Problems (TBA)

Submission due (12:00 AM)	Chapters#	Topics	problems