Fundamentals of Chemistry I

Undergraduate / Graduate	Undergraduate	**Registration Code**	0061311
Course Category	Sciences Basic	**Credits**	2.0
Term (Semester) / Day / Period	G-I (1st year, Fall Semester) / Mon / 3 (13:00～14:30)		
Instructor	Phung Manh Quan		
Contact e-mail of the Instructor	quan.phung@chem.nagoya-u.ac.jp		

●Goals of the Course

The goal of the course is to grasp what chemistry is all about and to learn important principles and facts in chemistry. Upon completion of the source, the student will be able to understand atomic structure, bonding and molecules, and bulk properties of substances.

●Objective of the Course

Students will gain an understanding of:

- the fundamentals of chemical reactions,
- chemical and physical properties of atoms and molecules in different phases,
- the electronic structure of atoms and molecules and its impact on chemical properties,
- basic laws of thermodynamics and their applications in chemical reactions.

●Course Contents/Plan

1 Chemical Tools: Experimentation and Measurement (Ch. 1)
2 Atoms, Molecules, and Ions (Ch. 2)
3 Mass Relationships in Chemical Reactions (Ch. 3)
4 Reactions in Aqueous Solutions (Ch. 4)
5 Periodicity and the Electronic Structure of Atoms (Ch. 5)
6 Ionic Compounds: Periodic Trends and Bonding Theory (Ch. 6)
7 MIDTERM EXAM (Chs. 1 – 6)
8 Covalent Bonding and Electron-Dot Structure (Ch. 7)
9 Covalent Compounds: Bonding Theories and Molecular Structure (Ch. 8)
10 Thermochemistry: Chemical Energy (Ch. 9)
11 Gases: Their Properties and Behavior (Ch. 10)
12 Liquids and Phase Changes (Ch. 11)
13 Solids and Solid-State Materials (Ch. 12)
14 Solutions and Their Properties (Ch. 13)
15 FINAL EXAM (Chs. 1 – 13)

●Course Prerequisites

None

●Course Evaluation Methods

Students will be evaluated based on one midterm exam (25% weight), one final exam (comprehensive, 45% weight), and homework (30% weight). Multiple choice homework will be given at the end of each class. Homework must be submitted before the next class starts. Both midterm and final exams will be multiple choice.

Grade evaluation will be according to the the GPA System at Nagoya University. Students who enrolled AY2020 and onward: "A+": 100-95%, "A": 95-80%, "B": 70-80%, "C": 65-70%, "C–": 60-65%, "F": 60-0%.

Course Withdrawal: Students need to request a course withdrawal when they have no intention of finishing a course during the semester. Course withdrawal must be in written form (email or paper form) according to Nagoya University's course withdrawal system. The last day to withdraw is the last class day in November.

●Study Load (Self-directed Learning Outside Course Hours)

Homework is crucial for mastering new material and developing skills in applying concepts. Weekly homework will be electronic. A general guideline says an average of 2 hours of study time per week (assignments and reviews) is necessary for each 1 credit hour.

●How to Respond to Questions
By email or in-person during office hours.

●Notice for Students
It is essential to sit in the exams during the scheduled class time. **There will be NO make-up exam.** In the event of a missed exam due to a serious illness, accident, or family emergency, compelling **written** documentation of the reason for the absence will be required. If the reason is accepted, the final grade will be calculated from the appropriately weighted average from the homework and/or the other exam. If the reason is deemed insufficient, the absence will be unexcused, and zero points will be awarded for the missed exam.

Attendance is necessary for successful completion of this course. No points will be awarded for attending lectures, but attendance may be taken. The lectures will be online, records of the lectures will be provided on Microsoft Teams.

The exams focus on problem-solving and will be similar to the homework problems. Both exams and homework will be on Pearson Mastering Chemistry.

Textbook	Chemistry (J. K. Robinson, J. McMurry, and R.C. Fay), 8th Ed. (Global Edition **E-Text**, bundled with Mastering Chemistry) Pearson, 2020
Reference Book	Reference book will be announced in the first class if necessary
Reference website for this Course	https://mlm.pearson.com/northamerica/masteringchemistry/