Basic Chemistry

Syllabus Number 0L193
Remedial Subject
Elective 2 credit
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1. Course Description

Chemistry is one of the basic sciences. The focus of chemistry is to learn the characteristics and structure of all matter of which the universe is composed. Therefore, chemistry is indispensable for all students acquiring higher education in all disciplines, making this course very important for all members of this faculty of science and engineering.
This course is designed as an overview of basic chemistry and will be open to students who did not take high school chemistry or who have a weak background in chemistry. In order to acquire a better understanding of the lectures, many exercises, as well as short tests, will be provided throughout the course. Although this lesson is mainly lecture type, short discussion or group discussion of question form is scheduled as appropriate for exercise problems or contents of lecture within lecture time.
In addition, this lecture aims at content that can be understood even by students who did not take chemistry at high school
In this lecture, you can acquire knowledge and ability on DP3 of the Department of Aerospace Engineering and the Department of Biosciences.

2. Course Objectives

The ultimate goal of this lecture is that students will have gained a fundamental understanding of basic chemistry and will have the background necessary to take Chemistry 1 in the second semester.
(1) By understanding the concept of the periodic table, you can acquire the relationship between elements and the periodic properties.
(2) By understanding the structure of the atom, you can acquire the concept of substances.
(3) By understanding the concept of the amount of substance (mol), you can acquire the ability on the chemical stoichiometry.

3. Grading Policy

(1) Attendance confirmation is taken in each time, and students who do not attend more than 2/3 classes are not allowed to take the regular exam.
(2) A detailed explanation of the exercise will be done every hour.
(3) Mid-term exams will be conducted at the seventh or eighth lesson depending on the progress of the lecture.
(4) After the midterm exam, upon returning the exam, a detailed explanation about the questions will be explained.
(5) The results of the mid-term exam and the regular exam will be 50% each, and they will be combined into the final evaluation.
(6) A retest will not be conducted.

4. Textbook and Reference

Textbook
The text is not designated in particular. Be sure to bring texts that match with your abilities (textbooks and reference books used at high school are also acceptable). In addition, we will distribute prints as necessary. Please do not forget to bring the prints you received each time.

5. Requirements(Assignments)

(1) Please be sure to enter the room at least within 30 minutes. Students who are late more than 30 minutes are allowed to attend, but will be considered as absent.
(2) Eating and drinking during lectures and unnecessary entry and exit are not permitted.
(3) It is prohibited to shoot the content written on the blackboard or taking the video material of PowerPoint with a mobile phone or smartphone.

6. Note

7. Schedule

[1] About Elements: Symbols of Elements and Chemical Formula.
[2] Structure of the Atom: Elementary Particles for the Atom.
[3] Classification of substances: Mixtures and Pure Substances.
[4] Model of the Atom: Bohr's Atomic Model.
[5] Electronic Configuration of Atoms: Electronic Shell and Configuration.
[6] Nature of Atom and Periodicity (1): Atomic Radius and Ionic Radius.
[7] Nature of Atom and Periodicity (2): Ionization Energy and Electron Affinity.
[8] Mid-term exam.
[9] The Chemical Bond : Ionic Bond, Covalent Bond, and Metallic Bond.
[10] Acids and Bases: Definition of Acid and Base.
[11] Neutralization and pH: Definition of pH and Stoichiometry of the Neutralization Reaction.
[12] Oxidation and Reduction (1): Definition of Oxidation Number.
[13] Oxidation and Reduction (2): Redox Reaction and Battery.
[14] The Chemical Equation: Stoichiometric Calculations.
[15] Summary and Exams.