Chemistry2

Syllabus Number 1A206
Basic Major Subjects
Elective Requisites 2 credit

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1. Course Description

This course targets students who under performed in Chemistry 2 in the second semester of the previous academic year, and allows them to re-study content related to Chemistry 2. The aim is to This course targets students who under performed in Chemistry 2 in the second semester of the previous academic year, and allows them to re-study the contents related to Chemistry 2. The aim is to help them acquire a basic knowledge of chemistry and the ability to think in terms of chemistry, which is necessary for students of the Faculty of Science and Technology. In this course, we particularly concentrate on changes in matter (① chemical reactions and heat, ② reaction rates and chemical equilibrium, ③ acids and bases and their reactions, ④ oxidation and reduction reactions, ⑤ batteries and electrolysis) and inorganic compounds (⑥ the properties of non-metallic elements, ⑦ the properties of metallic elements) that are considered to be particularly important.

2. Course Objectives

This course targets students who under performed in Chemistry 2 in the second semester of the previous academic year, and allows them to re-study the contents related to Chemistry 2. The aim is to help them acquire a basic knowledge of chemistry and the ability to think in terms of chemistry, which is necessary for students of the Faculty of Science and Technology.

3. Grading Policy

Performance is evaluated based on in-class quizzes (30%) and periodic examinations (70%).
Overall feedback is provided and test answers are explained during the final lecture.

4. Textbook and Reference

Textbook
Textbook: 井口洋夫　他　共著　『基礎シリーズ　化学入門』実教出版　ISBN978-4-407-03148-5

5. Requirements(Assignments)

Before class: Read in advance the scope of the next lecture in the designated textbook, and sort out the points that you do not understand or have issues with before attending the class. (1 hour)
After class: Revise your answers to the quiz held during the previous class, and then make sure you can completely answer the quiz without looking at the answers. (2 hours)

6. Note

Prepare the special notes for this class and a scientific calculator (required when doing the quizzes).

7. Schedule

[1] Chemical reactions and heat (heat of reaction, thermochemical equations)

[2] Chemical reactions and heat (Hess's law, binding energy, quiz)

[3] Reaction rates and chemical equilibrium (reaction rate, reaction mechanisms)

[4] Reaction rates and chemical equilibrium (chemical equilibrium, transitions in chemical equilibrium, quiz)

[5] Acids and bases and their reactions (acids and bases, acidic oxides and basic oxides)

[6] Acids and bases and their reactions (hydrogen ion concentration and pH, neutralization reactions and titration, salts, quiz)

[7] Oxidation and reduction reactions (oxidation, reduction, oxidation number)

[8] Oxidation and reduction reactions (oxidants, reductants, quiz)

[9] Batteries and electrolysis (ionization tendency and reactivity of metals, batteries)

[10] Batteries and electrolysis (electrolysis, quiz)

[11] Properties of non-metallic elements (noble gases and hydrogen, halogens and their compounds, oxygen, sulfur, and their compounds)

[12] Properties of non-metallic elements (nitrogen, phosphorous, and their compounds, carbon, silicon, and their compounds, quiz)

[13] Properties of metallic elements (alkali metal elements and their compounds, group 2 elements and their compounds, aluminum and its compounds)

[14] Properties of metallic elements (tin, lead, and their compounds, zinc, mercury, and their compounds, transition metal elements and their compounds, quiz)

[15] Test, summary