

Code	12004		
Class name	Chemistry: Chemistry of solid earth		
Semester	1st	Lecture target	1
Unit Classification	Elective	Unit count	2
Charge teacher	KANO Takashi		
Category	Basic educational subjects		
Class style	Lecture		
Class time	Intensive course		
NO.	Ac11020x		

Professional career-experienced

- a course taught by a teacher with practical experience
 On practical contents related to class

Languag

- using languages other than Japanese

Active learning elements

- problem-solving-learning in cooperation with
 external organizations based on agreements
- discussion,debate
- group work
- presentation
- practical training,fieldwork

Class outline,goal

The aims of this class are to (1) obtain the basic knowlrdge of inorganic chemistry, such as element, atom, molecule and principles of the periodic table, (2) understand the structure, chemical compositions and reactions of solar and earth systems, and (3) introduce the industrial use of elements and discuss the sustainability of mineral resources.

This class will consist of following chapters:

1. Introduction, order and structure of the natural system
2. What are elements, atom and molecule ?
3. Structure of the atom, nucleus, electron, proton, neutron, atomic number
4. Mass number, atomic weight, molecular weight, mol, Avogadoro's number
5. Ion, cation and anion, electron shell, valence electron, chemical bond
6. Principles of the periodic table based on the structure of atom
7. Classification and characteristics of elements on the periodic table
8. Structure and composition of the cosmic and solar systems
9. Structure and composition of the earth system
10. Minerals, silicate, ionic radius, solid solution
11. Rocks: heterogeneous components of the solid earth

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12. Radioisotopes, radiometric age, geologic age
13. Industrial use of elements, mineral resources, oxidation and reduction of iron
14. Abundance of elements in the crust, ore and ore grade, ore reserves
15. Sustainability of mineral resources
Class plan
Cf. chapters 1 to 15
Grading method
Term-end examination 60% with report 20% and class attendance 20%, approximately
Assigned books
The essential points in print will be distributed for this class.
Classroom equipment
Projector, PC
Advice on preparation and review
There is no particular preparation for this class.
Class rules
More than 2/3 class attendance are required.
Grading Criteria
Total amount of points: A>80, B>70, C>60, F<60
Feedback method
Question-Answer during school hour is available.
Note
Office hour
On occasion
Improvements from the results of the previous year's class evaluation questionnaire
The order of chapters and contents were reformed from last year's class