Universidad Zaragoza

Academic Year/course: 2023/24

29914 - Chemistry extension II

Syllabus Information

Academic year: 2023/24
Subject: 29914 - Chemistry extension II
Faculty / School: 110 - Escuela de Ingeniería y Arquitectura
Degree: 435 - Bachelor's Degree in Chemical Engineering
ECTS: 6.0
Year: 2
Semester: First semester
Subject type: Compulsory
Module:

1. General information

It is intended that students acquire a general idea of the behavior of the chemical elements and their compounds, using the systematization of the table of periods, as well as the synthesis and reactivity of the organic chemical compounds according to their functional groups. This study includes that the student knows and handles the inorganic and organic nomenclature.

These approaches and goals are aligned with some of the Sustainable Development Goals, SDGs, of the Agenda 2030 (https://www.un.org/sustainabledevelopment/es/) and certain specific targets, such that the acquisition of the learning results of the subject provides training and competence to the student to contribute in some measure to the achievement of Objective 2.4 of Goal 2, Objective 6.1 of Goal 6, Objective 7.1 and 7.3 of Goal 7, Objective 9.4 of Goal 9, Objective 12.2, 12.4 and 12.5 of Goal 12, Objective 13.3 of Goal 13 and Objective 14.1 and 14.3 of Goal 14.

2. Learning results

Know the general characteristics and the ways of obtaining the most important chemical elements and compounds from an industrial, technological and environmental point of view, as well as their environmental impact.

Know the general characteristics, the way of obtaining and reactivity of compounds based on the functional groups present in organic molecules.

Solve exercises in a complete and reasoned way. Use rigorous language in chemistry.

3. Syllabus

I: Introduction to the study of Inorganic Chemistry.

- Historical evolution of Inorganic Chemistry.
- Reactions in Inorganic Chemistry.
- Periodic properties.

II: Representative elements.

- Hydrogen, Noble Gases, Halogens, Groups 16, 15, 14, 13, 1 and 2.

III: Metallurgy. Transition elements.

- Metallurgical processes.
- Transition Elements.

IV: Introduction to the study of Organic Chemistry.

- Introduction to the study of the main families of organic compounds.

V: Structure and properties of organic compounds.

- Isomerism, conformational analysis.
- Physical, acid-base and spectroscopic properties.

VI: Reactivity of organic compounds.

- Acid-base reactions. Nucleophilic substitution reactions.
- Elimination reactions.

4. Academic activities

ACTIVITY	PRESENT (hours)	STUDENT WORK (hours)	TOTAL

Theory class	46	54	100
Problems and issues	10	14	24
Scheduled tutoring	4	4	8
Directed work (2 groups)	3 X 2	6	12
Examinations		6	6
TOTAL	66	84	**150**

The subject is designed to promote active learning of students so that in the classes of at theoretically, general introductions to each topic will be made and will be completed later with practical classes of questions and problems and scheduled tutorials.

5. Assessment system

The subject Chemistry II Extension will be considered as two independent subjects: Inorganic Chemistry (Blocks I-III) and Organic Chemistry (Blocks IV-VI), being necessary to pass the two subjects of which the subject is composed. The final grade will be the arithmetic mean of the grades obtained in the two subjects.

For both Inorganic Chemistry and Organic Chemistry there will be a midterm exam that will deal with the contents of the subject. It will account for 50% of the overall grade. At the end of the subject, students must take a global assessment test on the dates scheduled by the center. This test will include questions corresponding to the topics included in the first test, which will account for 50% of the overall assessment, and questions corresponding to the remaining topics included in the subject, which will account for 50% of the overall grade. The questions and issues corresponding to the first test must be taken by students who have obtained a grade lower than 5 during the course, or by those who wish to improve their grade. In the global test, the minimum grade in each of the parts of the test must be greater than or equal to 3.