

26407 - Chemistry

Syllabus Information

Academic year: 2023/24**Subject:** 26407 - Chemistry**Faculty / School:** 100 - Facultad de Ciencias**Degree:** 296 - Degree in Geology

588 - Degree in Geology

ECTS: 6.0**Year:** 1**Semester:** First semester**Subject type:** Basic Education**Module:**

1. General information

This subject aims to provide an overview of chemistry, creating awareness of its importance in society. In addition, it aims to provide the fundamental tools of chemistry in its various aspects, to be able to interpret the behaviour of different types of chemical systems, both quantitatively and qualitatively.

These approaches and objectives are aligned with the following Sustainable Development Goals (SDGs) of the Agenda 2030 of the United Nations (<https://www.un.org/sustainabledevelopment/es/>), in such a way that the learning results of the subject provide training and competence to the student to contribute to some extent to their achievement, specifically Goals 2,3,6,7,9,11, 12 and 13.

2. Learning results

- To relate the knowledge about the structure and composition of matter with the properties manifested by it, establishing relationships between composition, structure, bonding, properties and reactivity of elements, compounds and materials, as well as their possible technological application.
- To know the main types of chemical reactions and their most important characteristics. To apply the theoretical criteria that determine chemical stability and reactivity to specific problems related to their field. In particular, to be able to determine the equilibrium position of chemical reactions.
- To use thermodynamic data tables to quantify both the energetic aspects involved in chemical reactions and the spontaneous evolution of a chemical system.
- To be able to analyse and construct phase diagrams of pure substances and simple systems, with special attention to those involving solid phases.
- To transmit knowledge and reasoning in written form using specific vocabulary and relate this knowledge to other disciplines of the degree.
- To follow the basic rules of working in a laboratory: basic safety rules, work methodology and data collection, analysis and interpretation.

3. Syllabus

Theory

1. The origin of the chemical elements.
2. External structure of atoms. The Periodic Table of the Elements.
3. Chemical bonding I. Structure and bonds in molecular compounds.
4. Chemical bonding II. Structure and bonding of non-molecular solids.
5. Composition-bonding-structure-properties relationships.
6. Introduction to Thermodynamics.
7. Phase equilibrium in one-component systems.
8. Multi-component systems.

9. Chemical equilibrium.
10. Equilibria in aqueous solution.
11. Thermodynamics of electrochemical systems.
12. Introduction to chemical kinetics.

Laboratory practices

Two sessions: Introduction to laboratory work, preparation of electrolyte solutions and pH measurement.

Determination of an equilibrium constant.

4. Academic activities

Master classes: 40 hours

Problems: 14 hours

Laboratory practices: 6 hours

Preparation of reports: 6 hours

Personal study. 80 hours

Assessment tests. 6 hours

5. Assessment system

- Formulation and Inorganic Nomenclature: Test taken during the term that must be passed with a 65% success rate. This test will be graded as PASS or FAIL and will not contribute to the overall grade of the subject, but it will be essential to pass it in order to pass the subject. Those who fail or do not show up will have two opportunities in the official calls..
- Written test in the official examinations subdivided into two parts:
 - Theory: reasoned theoretical and practical questions and issues. Mastery of the contents, accuracy of concepts, use of chemical terminology and justification of arguments will be valued. The grade will be 60% of the final grade (6 points).
 - Problem solving. The overall grade in problems will account for 27% of the final grade (2.7 points). The evaluation of the problems in the written exercise will be worth up to 2 points. The rest (0.7 points) corresponds to the evaluation of the student's work through the resolution of problems proposed throughout the term or the completion of a test of problems.

NOTE: Passed sections of the written test will not be saved for the second call.
- Laboratory practices: Compulsory attendance to the laboratory practice sessions and delivery of a report of each practice with a reasoned answer to the questions posed. The overall grade of the practices represents 13% of the final grade (1.3 points). Passed practices are saved during the academic year. Students who have not passed the practices during the semester will have two opportunities in the official calls.