Universidad Zaragoza

Academic Year/course: 2023/24

27200 - General Chemistry

Syllabus Information

Academic year: 2023/24
Subject: 27200 - General Chemistry
Faculty / School: 100 - Facultad de Ciencias
Degree: 452 - Degree in Chemistry
ECTS: 15.0
Year: 1
Semester: Annual
Subject type: Basic Education
Module:

1. General information

This subject deals with the basic contents of chemistry. Given its general nature, it is essential to approach the rest of the chemistry subjects of the degree The subject and its expected results respond to the following objectives:

- To provide the student with an overview of chemistry.
- To create awareness of the importance of chemistry in society.
- To provide the fundamental tools of chemistry in its different aspects.
- To enable the student to interpret simple chemical systems both quantitatively and qualitatively.

These goals are aligned with the following Sustainable Development Goals (SDGs) of the United Nations 2030 Agenda (www.un.org/sustainabledevelopment/es/): 2 (Zero Hunger), : Health and Wellbeing. 6: Clean water and sanitation. 7: Affordable and clean energy. 9: Industry, innovation and infrastructure. 11: Responsible production and consumption. 13: Climate action.

2. Learning results

- Accurately handle the nomenclature and chemical representation, the mole concept and stoichiometry of chemical processes
- Explain the basic knowledge of atomic structure, chemical bonding, phases, thermodynamics and chemical kinetics, chemical equilibria and properties of inorganic and organic compounds.
- Solve basic chemistry problems.

3. Syllabus

- Topic 1. Introduction to current chemistry
- Topic 2 Atoms and atomic theory.
- Topic 3 Types of chemical compounds and their formulas.
- Topic 4 Chemical reactions and stoichiometry.
- Topic 5 Chemical thermodynamics.
- Topic 6 Kinetics of chemical reaction.
- Topic 7 Electronic structure of the atom.
- Topic 8 The periodic table and some properties of atoms.
- Topic 9 Chemical bonding I: basic aspects.
- Topic 10 Chemical bonding II: bonding theories.
- Topic 11 Solids and intermolecular forces.
- Topic 12 Gases.
- Topic 13 Liquids.
- Topic 14 Dissolutions.
- Topic 15 Principles of chemical equilibrium.
- Topic 16 Acid-base equilibrium.
- Topic 17 Complex formation equilibria.
- Topic 18 Solubility equilibrium.
- Topic 19 Redox equilibrium.
- Topic 20 Electrochemistry.
- Topic 21 Physical and chemical properties of the elements.
- Topic 22 Obtaining the elements.
- Topic 23 Stereochemistry in organic compounds.

- Topic 24 Introduction to the reactivity of organic compounds.
- Topic 25 Nuclear chemistry.

4. Academic activities

The program offered to the student to achieve the expected results comprises the following activities:

- **Theory** classes, in the form of lectures.
- **Problem** classes in groups with half of the students in each theory group.
- Personalized **tutoring** .
- Training **support** through the resources available in the space assigned to the subject on the **Moodle Platform**, where the contents of the presentations, problems, forums, didactic videos, etc. can be accessed.

5. Assessment system

In order to pass the subject it will be necessary to pass the formulation and nomenclature tests of Inorganic Chemistry (FQI) and Organic Chemistry (FQO) and to obtain a minimum grade of 5 in all the other evaluation tests (NA → 5,0).

The FQI test will be conducted in the first semester and the FQO test in the second semester. To pass FQI a minimum of 75% success rate is required , and to pass FQO a minimum of 65% success rate is required. Those who do not pass these tests may recover them in the official calls for exams. The grade will be PASS or FAIL.

The rest of the subject is graded in two parts, S1 and S2, corresponding to the subjects taught in each semester, which may be averaged when the grade in each is equal to or higher than 4.0.

NA = 0,5*NS1 + 0,5*NS2

In each semester there will be two tests (C1a-C1b and C2a-C2b) and a final test (P1 and P2). All of them will consist of the resolution of problems or theoretical-practical questions.

P1 will take place during the official exam period of the first semester and P2 will be part of the regular exam period of the subject.

If a grade equal to or higher than 4.0 is obtained in a P, it may be averaged with the C's of its semester to obtain the grade (NS) for the semester as follows:

NS1 = 0.15*NC1a + 0.15*NC1b + 0.7*NP1

NS2 = 0,15*NC2a + 0,15*NC2b + 0,7*NP2

This average will only apply if NS improves NP. Otherwise, the latter will be maintained.

Whoever passes any of the semesters **does not need to retake** that part of the subject in the same academic year , although they will be able to take the exams to improve their grade if they wishes to do so.

In the two official calls there will be the option of taking all parts of the subject. Taking any of the parts of the subject in one of the official calls implies the call is used up- When only one semester is passed, the grade for the failed semester will appear on the official transcript ; when only the FQI and/or FQO tests are failed, a 4.0 will appear on the transcript.