Universidad Zaragoza

Academic Year/course: 2024/25

29803 - Chemistry

Syllabus Information

Academic year: 2024/25
Subject: 29803 - Chemistry
Faculty / School: 110 - Escuela de Ingeniería y Arquitectura
326 - Escuela Universitaria Politécnica de Teruel
Degree: 440 - Bachelor's Degree in Electronic and Automatic Engineering
444 - Bachelor's Degree in Electronic and Automatic Engineering
ECTS: 6.0
Year: 1
Semester: 440-First semester o Second semester
107-First semester
444-First semester
Subject type: Basic Education
Module:

1. General information

In the subject "Chemistry" it is intended that students acquire a general vision of chemistry and its importance in our society and that they are able to apply the knowledge acquired in the development of their profession. It is considered part of the basic training that an industrial branch engineer must have.It is a subject whose contents are essential to base later knowledge of the rest of the degree, such as Materials Engineering, Fundamentals of Electronics and Environmental Engineering.

2. Learning results

In order to pass this subject, the students shall demonstrate they have acquired the following results:

- Master the basic principles of general chemistry, organic chemistry and inorganic chemistry.
- Master the basic laws that regulate reactions: thermodynamics, kinetics and equilibrium equilibrium.
- Solve exercises and problems in a complete and reasoned way.
- Properly apply theoretical concepts in the laboratory through the correctly and safely use of basic material and equipment.
- Use rigorous language in chemistry.
- Present and interpret data and results.

3. Syllabus

- Chemistry concepts I: Fundamental laws. Atomic theory. Measurement of mass. Aggregation states and kinetics theory. Stoichiometry of reactions.
- Chemistry concepts II: Electronic structure of atoms. Periodic system and periodic properties. Link Chemist: Ionic and covalent bonding. Linkage theories: Lewis, valence bond and molecular orbitals. Basic nomenclature.
- Chemical thermodynamics.
- Chemical kinetics.
- Chemical equilibrium.
- Electrochemistry.
- Organic and inorganic chemistry applied to engineering: Types of materials: metals, semiconductors, insulators, ceramics, superconductors, polymers, biomaterials, silicon panels, liquid crystals, light-emitting diodes, nanoparticles and carbon nanotubes.

4. Academic activities

- Theoretical sessions (30 hours) of theoretical and practical contents, with the support of ICTs.
- Problem solving sessions (20 hours) of direct or complementary application to what was covered in the lectures. Student participation will be encouraged.
- Laboratory practices (10 hours) oriented to enable the student to acquire skills in the handling of laboratory material and to be able to work on experimental procedures related to the contents seen in the theoretical sessions.
- Personal study and work (85 hours).
- Assessment tests (5 hours)

At EUPT, the degree is offered in two different modalities: on-site and blended learning. All the above mentioned applies in the

classroom. In the blended mode, the necessary work material will be available (Moodle platform) to follow the course in an autonomous way. The resolution of problems and cases, as well as the explanation of the content of the laboratory practices, will be supported by teaching videos and virtual tutorials.

5. Assessment system

- Laboratory practicals (10% of the overall grade): the grade for this part of the subject will be obtained on the basis of the reports/exercises to be carried out in relation to the content of the practicals. Failure to attend any of the practical sessions will result in a grade of 0 for that practical.

At EUPT, the course is taught in two different modalities: classroom and blended learning. For the modality, the above mentioned applies. For the blended mode, the laboratory practice part will be evaluated through the performance of teaching tasks in which the students have to interpret experimental data provided by the teacher.

In both EINA and EUPT a minimum grade of 4 out of 10 is required to pass this part of the subject.

A lower grade will result in the completion of a practice test.

- Individual written tests

1. Intermediate test (15% of the overall grade at EINA; 30% of the overall grade at EUPT): there will be a follow-up control of the learning process consisting of exercises that combine the knowledge and skills acquired so far.
2. Final exam (75% of the overall grade at EINA; 60% of the overall grade at EUPT): it will consist of theoretical-practical questions and problems. It will be held on the date of the official call.

Students who do not take or do not pass the intermediate test, or who would like to improve their grade, will have the right to take the final test on the dates assigned to the official exams, assigning a weight of 90% of the overall grade, and in any case, the best of the grades obtained will prevail.

In order to pass the subject, the student must obtain a minimum grade of 4 points out of 10 in each of the described tests and a minimum average grade of 5 points.

6. Sustainable Development Goals

3 - Good Health & Well-Being
7 - Affordable and Clean Energy
14 - Life Below Water