Universidad Zaragoza

Academic Year: 2025/26

63237 - Instructional and Curricular Design in Experimental Sciences

Teaching Plan Information

Academic year: 2025/26
Subject: 63237 - Instructional and Curricular Design in Experimental Sciences
Faculty / School: 107 - Facultad de Educación
Degree: 584 - Master's Degree in Teaching Compulsory Secondary Education
595 - Master's Degree in Teaching, specializing in Biology and Geology
596 - Master's Degree in Teaching, specialization in Physics and Chemistry
Ambit: Educational sciences
ECTS: 6.0
Year: 1
Semester: First semester
Subject type: Optional
Module:

1. General information

The general objective of the subject is to provide students with basic knowledge to address, in a professional manner, the teaching of Science in Secondary Education. To do so, they must:

- have an updated knowledge of the nature of science and its social, technological and ethical implications, - know the theoretical framework of Didactics of Experimental Sciences and the specific documentary sources, - handle the language of the educational field,

- program the teaching of an ESO/Bachillerato science subject,

- create well-founded and contextualized classroom situations.

These approaches and objectives are aligned with the Sustainable Development Goals (SDGs) of the 2030 Agenda of United Nations (https://www.un.org/sustainabledevelopment/es/), specifically, the learning activities planned in this subject will contribute to the achievement of Goal 4: Quality Education.

2. Learning results

1. Describe the provisions of the official Spanish and Aragonese documents referring to the curriculum of the corresponding subjects, as fundamental reference frameworks for the programming of these subjects.

2. Critically comment on these provisions, situating the curricular and psychoeducational principles on which they are based, the choices they make and the margin of decision they leave for subsequent levels of curricular specification and adaptation.

3. Describe and analyse the different teaching-learning methodologies related to the curricular subject, situating them in their corresponding epistemological framework.

4. Recognize teaching-learning methodologies, assessing their relevance according to the conditions that present and, if necessary, adapting them to achieve more effective teaching.

5. Elaborate a basic proposal of annual sequencing of contents for a curricular subject of the specialty.

3. Syllabus

Part 1: Curriculum design and programming

- Curriculum of Aragón for experimental science subjects in ESO and Bachillerato. Legislative aspects and methodological recommendations.

- Competency-based curriculum design.

- Annual programming of a subject.

Part 2: Fundamentals of Experimental Science Didactics

- Specific documentary sources.
- Didactic Content Knowledge.
- Alternative conceptions of the student body.
- Active and collaborative methodologies for scientific literacy.
- Role of language and images in the development of scientific practices.

Transversal: Analysis of experiences, projects and curricular proposals in Experimental Sciences.

4. Academic activities

The subject is based on the following types of activities:

1. Master classes. Presentation of theoretical foundations.
2. Problem and case sessions. Critical reading of scientific and legislative references, presentations and classroom discussions.
3. Individual or group work as described in the evaluation section.
4. Study for the elaboration of individual works.

5. Assessment system

The global test of the subject will consist of the delivery of two individual papers, described below, which represent a maximum of 80% of the grade of the subject. The remaining 20% will depend on the participation, discussion and delivery of the corresponding individual or group reports of the activities programmed for the resolution sessions of problems and cases within the deadlines established throughout the term. In case of not being able to attend in person, this 20% can be reached through the completion of an alternative work of individual character focused on the Didactic Content Knowledge(CDC) of a specific topic of the curriculum..

1) Paper on Fundamentals of Didactics of Experimental Sciences (30%).

2) Work on Programming of a subject of the specialty (50%)

3) Alternative 1: Delivery of reports made and discussed in the face-to-face sessions (20%). Alternative 2: Delivery of a single report on the Didactic Knowledge of a specific content of the linked specialties (20%).

In any case, as part of the evaluation, the teacher may request, at random, the oral defense of the test or assignment submitted in writing, for the verification of the grade.

Second and subsequent calls, including fifth and sixth: In the same terms as described as global.

Finally, it must be taken into account that the Regulations of the Norms of Coexistence of the University of Zaragoza will be applicable to the irregularities committed in the evaluation tests by means of academic fraud, as well as the application of article 30 of the Regulations of the Norms of Evaluation of Learning in relation to irregular practices other than academic fraud.

6. Sustainable Development Goals

4 - Quality Education