Universidad Zaragoza

Academic Year of Degree: 2026/27

26615 - Didactics: Physical and Chemical Media

Teaching Plan Information

Academic year: 2026/27
Subject: 26615 - Didactics: Physical and Chemical Media
Faculty / School: 107 - Facultad de Educación
202 - Facultad de Ciencias Humanas y de la Educación
301 - Facultad de Ciencias Sociales y Humanas
Tipo de enseñanza: In person
Ambit: Educational sciences
Degree: 298 - Degree in Primary School Education
299 - Degree in Primary School Education
300 - Degree in Primary School Education
ECTS: 6.0
Year: 2
Semester: First semester
Subject type: Compulsory
Module:

1. General information

This subject constitutes a first contact with a disciplinary didactics in the specific field of experimental sciences and the starting point for the construction of a Didactic Knowledge of Physics and Chemistry Content in Primary Education that facilitates a sustainable professional development . It is an opportunity to improve one's own culture in the scientific dimension, contributing especially to the development of skills and strategies for rigorous thinking.

It is relevant in the preparation of primary education teachers for a professional practice committed to a society more aware of environmental and social challenges, sustainable and resilient.

An open and positive attitude towards experimental sciences, grounded in principles of inclusivity and equity, will support students in achieving a successful learning experience.

2. Learning results

The student, in order to pass this subject, must demonstrate the following results...

1. Possesses basic knowledge (at least equivalent to the level required in Compulsory Education) on the physical-chemical aspects of the environment and their application in Primary Education.

2. Is able to make reports of the experimental activities performed, including explanatory diagrams and drawings.

3. Contributes specific arguments or ideas based on scientific and didactic criteria in seminars and current debates proposed by the faculty.

4. Shows communication skills and uses reasoning and tools appropriate to the didactic situations that arise both in the theoretical and practical sessions of the subject.

5. Designs and presents didactic proposals for a quality scientific literacy, appropriate to the educational level to which they are addressed for their application in Primary Education and that, in addition, collect the various aspects covered in the theoretical and practical sessions.

3. Syllabus

1. The physical-chemical aspects in Nature sciences and their contribution to the educational competences in the curricular framework of Primary Education.

2. Teaching models and characteristics of children's scientific thinking.

3. Relevant physical-chemical contents in the context of school science in Primary Education. Specific difficulties in teaching and learning of the selected contents.

4. Experimental learning activities of a physical-chemical nature, outings and visits in Primary Education.

5. Analysis, planning and design of didactic proposals on physical-chemical aspects of the environment.

6. Introduction of current scientific topics on physicochemical aspects of the environment.

4. Academic activities

The program includes...

- Theoretical presentations given by the faculty and collaborators of the subejct

- Visits and outings outside the center
- Experimental work in the physics and chemistry laboratory
- Small and large group reflection activities
- Preparation of individual reports
- Group elaboration of some of the design and planning tasks
- Presentations of both individual and group works

The calendar of activities, key dates, classroom sessions and presentation of work will be communicated through the Digital Teaching Ring (ADD) at the beginning of the subject period.

The dates of the final exams can always be consulted on the center's website.

5. Assessment system

The student must demonstrate that they have achieved the expected learning outcomes through the following assessment activities.

- Attendance to seminars and theoretical-practical sessions.
- Oral and written presentation of didactic proposals to teachers and classmates.
- Preparation of reports based on the experimental activities.
- Partial tests and final written test of theoretical and practical nature on the different contents covered in the subject.

In those cases inwhich participation and attendance is not approved or the grade obtained is to be improved, there is the option of to present an alternative written work together with the final written test. This work will be duly specified from the beginning of course.

Assessment criteria

The evaluation of the subejct will be based on the following aspects:

- Attendance to seminars and theoretical-practical sessions. Participation and collaboration among peers will be valued in the development of this type of activities.
- Oral and written presentation of didactic proposals to teachers and classmates. The quality didacticquality , the justification of the proposal to the peers and the expository clarity will be valued.
- Preparation of reports based on the experimental activities. For the presentation of these reports, it is mandatory the realization in person of the corresponding experimental activity.

The evaluation of the course will take into account the appropriate use of language, both written and oral (correct spelling in written texts, careful speech during oral presentations, appropriate writing style, clarity of expression, lexical and terminological precision, correct use of punctuation, etc.).
The presentation of work is expected to meet university-level standards in terms of clarity, neatness, organization, and legibility.
A lack of rigor in these aspects may result in grade penalties and could even lead to failing the course.

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

Grading criteria and requirements for passing the subject

1. *Contributing 40% of the final grade:*

Attendance to seminars and theoretical-practical sessions and the elaboration of reports based on the experimental activities contribute up to 20% of the final grade.

For all cases, including alternative projects, the oral and written presentation of didactic proposals to teachers and classmates contribute up to a maximum of 20% of the final grade.

Make effective the calculation of the weighted average in the final grade it is necessary to have submitted both papers and obtained at least 4.0 out of 10.0 in this section.

2. *Contributing 60% of the final grade: Written tests*

It is necessary to pass (obtain a grade of at least 5.0 out of 10.0) in the final written test (or partial tests) of the subject in order to pass it, regardless of the results obtained in the rest of the evaluable activities (active participation, report of practicals and didactic proposals).

If the student does not achieve any of the minimum required grades needed to apply the weighted average and therefore does not pass the course, the final grade for the corresponding exam session will be the lowest of the grades below 5.0, provided the student has taken the final written exam. If the student has not taken the final written exam, the final grade will be recorded as "Not Present" (NP).

The grade for each approved activity or test will be valid throughout the academic year, including the second call. These evaluation criteria are the same for students in the 5th and 6th call.

Generative AI may be used to support learning, but never to replace students' individual work or to violate the University's academic integrity standards. Students are responsible for the content they submit and must cite the use of AI when relevant, indicating the software used, the affected parts of the system, the prompts, the responses obtained, and how the information was verified. Faculty may use tools such as Compilatio to verify authorship, originality, and appropriate use of AI, and may invite students to an interview, applying, where applicable, the University of Zaragoza's current regulations on assessment and

academic integrity.

5.1. Academic fraud prevention

The use of unauthorised electronic materials or devices during the assessment may result in immediate exclusion from the examination and a fail mark (a numerical mark of ‘0’ for the assessment).

Furthermore, the lecturer in charge may complete the grade report and submit it to the General Inspectorate of Services, so that it may, where appropriate, consider initiating disciplinary proceedings against the student for academic fraud.

In the case of a continuous assessment exam [continuous assessment cannot continue, unless otherwise specified in the academic guide.]

In the case of a regular or extraordinary exam session, the initiation of disciplinary proceedings will result in the grade ‘pending resolution’ until the proceedings are concluded.

6. Sustainable Development Goals

4 - Quality Education

7. Bibliography

Didáctica de las ciencias experimentales: teoría y práctica de la enseñanza de las ciencias / dirección, Francisco Javier Perales Palacios, Pedro Cañal de León. Marfil, 2000
Cañal, P., García-Carmona, A. y Cruz-Guzmán, M. (2016). Didáctica de las Ciencias Experimentales en Educación Primaria. Paraninfo Universidad
Gálvez Esteban, R. Couso, D.[... et al.] (coords.). Enseñando Ciencia con Ciencia / FECYT & Fundacion Lilly. Penguin Random House, Madrid: 2020. [s. l.], n. 22, p. 149–151, 2020.
Martí Feixas, Jordi. Aprender ciencias en la educación primaria / Jordi Martí. 1ª ed. Barcelona: Graó, 2012
Good practice in science teaching: what research has to say / edited by Jonathan Osborn and Justin Dillon. 2nd ed. Maidenhead; New York: Open University Press, 2010
Precursor Models for Teaching and Learning Science during Early Childhood. CHAM: SPRINGER, 2022. ISBN 978-3-031-08158-3.
Prieto Ruz, Teresa. La materia y los materiales / Teresa Prieto Ruz, Ángel Blanco López, Francisco González García. Síntesis, 2010
Kolb, D.A. (2015). Experiential learning: experience as the source of learning and development. Pearson Education.
Rodríguez-Casals, C. y Cavero, R. (Coords.) (2024) Aulas en residencia en los Laboratorios CESAR de Innovación Abierta de la Universidad de Zaragoza. Talleres y experiencias didácticas en el contexto de las ciencias experimentales. Servicio de publicaciones de la Universidad de Zaragoza. DOI: 10.26754/uz.978-84-10169-12-8.
De Echave Sanz, A. y Serón Torrecilla, F.J. (coords.) (2026). Los trabajos prácticos: Aprendizajes y reflexiones para la didáctica del medio físico y químico en la escuela. Servicio de publicaciones de la Universidad de Zaragoza. ISBN: 979-13-88046-25-4