

COURSE DESCRIPTION

COURSE DETAILS

Title (of the course): **DIDÁCTICA DE LAS CIENCIAS EXPERIMENTALES EN EDUCACIÓN PRIMARIA**

Code: 100810

Degree/Master: **GRADO DE EDUCACIÓN PRIMARIA**

Year: 3

Name of the module to which it belongs: ENSEÑANZA Y APRENDIZAJE DE LAS CIENCIAS EXPERIMENTALES

Field: DIDÁCTICA DE LAS CIENCIAS EXPERIMENTALES EN EDUCACIÓN PRIMARIA

Character: OBLIGATORIA

Duration: ANUAL

ECTS Credits: 9.0

Classroom hours: 90

Face-to-face classroom percentage: 40.0%

Study hours: 135

Online platform:

LECTURER INFORMATION

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PREREQUISITES AND RECOMMENDATIONS

Prerequisites established in the study plan

None

Recommendations

None specified



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INTENDED LEARNING OUTCOMES

CE1	To know the curricular areas of Primary Education, the interdisciplinary relationship between them, the evaluation criteria, the body of didactic knowledge around the respective teaching and learning processes. In addition, to know and understand the contents that constitute these curricular areas and that allow the achievement of the basic competences in Primary Education.
CE2	To design, schedule and evaluate teaching and learning processes, both individually and in cooperation with teachers and professionals at the centre.
CE3	To effectively approach language learning situations in multicultural and multilingual contexts. To promote reading and critical commentary of texts from the different scientific dominions and cultural contents in the academic curriculum.
CE5	To foment harmonious relationships inside and outside the classroom and to tackle conflict resolution in a peaceful way. To know how to systematically observe apprenticeship and coexistence contexts as well as to reflect about them.
CE8	To appreciate culture and knowledge, and maintain an autonomous and critical relationship with respect to knowledge, values and social institutions both private and public.
CE9	To recognise the worth of the individual and collective responsibility in achieving a sustainable future and acquire the necessary training for the promotion of a healthy life.
CE10	To think about the practices in the classroom in order to innovate and improve the educational work. To acquire habits and skills for the autonomous and cooperative learning and to promote it with students.
CE11	To know and apply the technologies of the information and communication in classrooms . Selectively distinguish audiovisual information that contributes to the learning processes, civic formation and cultural richness.
CE14	To create an updated view of the natural and social world.
CM4.1	Understand the basic principles and fundamental laws of experimental sciences (Physics, Chemistry, Biology and Geology).
CM4.2	To know the school curriculum of these Sciences.
CM4.3	To consider and to solve problems which deal with sciences in daily life
CM4.4	To recognise the worth of sciences as a cultural fact.
CM4.5	To acknowledge mutual influence between science, society and technological development, as well as the pertinent civic conducts, in order to ensure a sustainable future.
CM4.6	To develop and evaluate curriculum contents through appropriate didactic resources and promote the acquisition of basic competences among students.

OBJECTIVES

- To acquire skills and competences for professional development of the student.
- To learn and understand the basic principles, fundamental laws, scientific methodology and teaching models of experimental science and its impact on educational practice.
- To design and use appropriate teaching resources for teaching experimental sciences and also implement procedures and suitable activities in learning contexts.
- Planning and evaluating teaching-learning processes in Experimental Science in Primary Education

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CONTENT

1. Theory contents

- Block 1: Scientific and didactic foundations in science learning.
- Block 2: Curriculum of sciences in the legislative frame.
- Block 3: The Area of Experimental Sciences in Primary Education.
- Block 4: Design and realization of projects and curricular materials.

2. Practical contents

- Fulfillment of didactic resources related to the thematic units programmed.
- Study and commentary of basic documents.
- Programming, exposition and debates of specific themes.
- Laboratory practical sessions.
- Field practical sessions.

SUSTAINABLE DEVELOPMENT GOALS RELATED TO THE CONTENT

Good health and well-being
 Quality education
 Gender equality
 Clean water and sanitation
 Affordable and clean energy
 Reduced inequalities
 Sustainable cities and communities
 Climate action
 Life on land

METHODOLOGY

General clarifications on the methodology (optional)

Theoretical and practical approach to the contents. Active and participative methodology with the purpose of facilitating the implication of the students and favouring the development of their critical and creative ability to acquire competences.

Practical activities: In these practices, It will encourage work in small groups. The faculty will present the activity, for which it will facilitate a script, will attend to the doubts and will guide the work of the students. Complying with the institutional commitment of the University of Córdoba and the teaching staff of this subject, education in the field of equality (for effective equality of women and men) will be considered throughout the course both in written texts and in classroom behavior and with the rest of the community university.

Methodological adaptations for part-time students and students with disabilities and special educational needs

Following the Academic Regime Regulation, the teaching and evaluation methodologies will have enough flexibility to meet the needs of students with disabilities and part-time (Article 68). The Students enrolled parttime must communicate this at the beginning of the course to the teachers responsible of the subject, in order to establish the follow-up mechanisms that are considered appropriate

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Face-to-face activities

Activity	Large group	Medium group	Total
<i>Assessment activities</i>	4	-	4
<i>Excursions</i>	6	-	6
<i>Group presentation</i>	5	5	10
<i>Group work (cooperative)</i>	5	5	10
<i>Lab practice</i>	-	20	20
<i>Lectures</i>	30	-	30
<i>Speaking Activities</i>	1	-	1
<i>Text analysis</i>	8	-	8
<i>Writing Activities</i>	1	-	1
Total hours:	60	30	90

Off-site activities

Activity	Total
<i>Analysis</i>	10
<i>Group work</i>	70
<i>Information search</i>	15
<i>Reference search</i>	15
<i>Self-study</i>	25
Total hours	135

WORK MATERIALS FOR STUDENTS

Coursebook
Exercises and activities
Lessons summary
Oral presentations

EVALUATION

Intended learning	Exams	Laboratory Practice	Oral Presentation
CE1		X	

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Intended learning	Exams	Laboratory Practice	Oral Presentation
CE10		X	
CE11		X	
CE14		X	X
CE2		X	
CE3		X	
CE5		X	
CE8		X	
CE9		X	X
CM4.1		X	X
CM4.2	X	X	X
CM4.3		X	X
CM4.4	X	X	X
CM4.5	X	X	X
CM4.6	X	X	
Total (100%)	50%	40%	10%
Minimum grade	5	5	0

(*)Minimum mark (out of 10) needed for the assessment tool to be weighted in the course final mark. In any case, final mark must be 5,0 or higher to pass the course.

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Method of assessment of attendance:

The non-attendance to the practices will be evaluated with less 0,5 in the final note in the laboratory practices for each practice that is not come, unless the fault is duly justified (medical or judicial). It is necessary to attend at least 50% of the total sessions of practices to pass the subject

General clarifications on instruments for evaluation:

General clarifications on instruments for evaluation: The final score (weighed average) and to pass this subject entails to reach the minimum levels set in each one of the evaluation instruments and the weighted average of all the assessment instruments must be equal to or greater than 5 in each ordinary call.

Grammatical, syntactic and spelling correction will be taken into account, being able to deduce part of the qualification in all written evaluation tests. The practices will be evaluated continuously during the course, through reports, exhibitions or questionnaires. In case of not reaching the minimum to make average in this instrument (practices carried out during the course), the Practices will be evaluated by exam in the July call. The qualifications of each instrument will only be saved during the ordinary calls of the current course. Complying with the institutional commitment of the University of Córdoba and the teaching staff of this subject, education in the field of equality (for effective equality of women and men) will be considered throughout the course.

Clarifications on the methodology for part-time students and students with disabilities and special educational needs:

The final score (weighed average) and to pass this subject entails to reach the minimum levels set in each one of the evaluation instruments Following the Academic Regulations, the teaching and evaluation methodologies will have enough flexibility to meet the needs of students with disabilities and part-time (Article 26).

Clarifications on the evaluation of the extraordinary call and extra-ordinary call for completion studies:

The evaluation of the subject in the extraordinary calls may be carried out by means of an exam (theory and practices) that will constitute 100% of the total grade for the subject, having to obtain a minimum grade of 5 out of 10 to pass the course. In this case, the exam will be the instrument that will evaluate all the competencies of the subject.

Qualifying criteria for obtaining honors:

Get more than 9.8 out of 10 in the final grade of the subject

BIBLIOGRAPHY

1. Basic Bibliography

- Anderson, C., and K. Roth. 1992. Teaching for meaningful and self-regulated learning of science. In *Advances in Research on Teaching*, Vol. 1., J. Brophy, ed. Greenwich, Conn.: JAI.
- Cheek, D. W. 1992. *Thinking Constructively about Science, Technology, and Society Education*. Albany, NY: SUNY Press.
- Minstrell, J. 1989. Teaching science for understanding. Pp.129-149 in *Toward the Thinking Curriculum: Current Cognitive Research*, L. Resnick and L. Klopfer, eds. Alexandria, Va.: Association for Supervision and Curriculum Development.
- National Academies of Sciences, Engineering, and Medicine. 1997. *Science Teaching Reconsidered: A Handbook*. Washington, DC: The National Academies Press. <https://doi.org/10.17226/5287>.
- Olschewski P, Herzmann P, Schlüter K. Group Work during Inquiry-Based Learning in Biology Teacher Education: A Praxeological Perspective on the Task of (Collaborative) Protocol Generation. *Education Sciences*. 2023; 13(4):401. <https://doi.org/10.3390/educsci13040401>



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- Membiela, P., Acosta, K., Yebra, M. A., & González, A. (2023). Motivation to learn science, emotions in science classes, and engagement towards science studies in Chilean and Spanish compulsory secondary education students. *Science Education*, 1? 25. <https://doi.org/10.1002/sce.21793>
- BENLLOCH, M. (comp.) (2001).- La educación en ciencias: ideas para mejorar su práctica.- Paidós
- CANDELA, A. (1999).- Ciencia en el aula. Los alumnos entre la argumentación y el consenso.- Paidós
- CARRETERO, M. (2000).- Construir y enseñar las ciencias experimentales.- AIQUE -GARRIDO, J. M.; GALDON, M. (2003).- Ciencias de la naturaleza y su didáctica.- GEU - JIMENEZ, M. P. (coord.) (2003).
- Enseñar ciencias.- Graó -KAUFMAN, M.; FUMAGALLI, L. (comp) (1999).- Enseñar ciencias naturales. Reflexiones y propuestas didácticas.- Paidós -PERALES, F. J.; CAÑAL, P. (dir.) (2000).
- Didáctica de las ciencias experimentales.- Marfil -POZO, J.I.; GOMEZ, M. A. (1998).
- Aprender y enseñar ciencia.- Morata -PUJOL, M. R. (2003).- Didáctica de las Ciencias en la Educación Primaria.- Síntesis
- Real Decreto 126/2014, de 28 de febrero, por el que se establece el currículo básico de la Educación Primaria. - SAEZ, M. J. (2007).
- La cultura científica en la escuela.- Univ. de Valladolid - SANCHEZ, G. (coord.) (2005).- Didáctica de las ciencias experimentales (I y II).- DM
- DIDACTICA DE LAS CIENCIAS PARA EDUCACION PRIMARIA I. CIENCIAS DEL ESPACIO Y DE LA TIERRA- VILCHEZ GONZALEZ JOSE MIGUEL COORD. (2021). Piramide.

2. Further reading

Current legal regulations referring to Primary Education

COORDINATION CRITERIA

Common evaluation criteria

Common learning outcomes

Joint activities: lectures, seminars, visits ...

Tasks deadlines

Visits organization

SCHEDULE

Period	Assessment activities	Excursions	Group presentation	Group work (cooperative)	Lab practice	Lectures	Speaking Activities	Text analysis	Writing Activities
1# Fortnight	0,0	0,0	0,0	1,0	2,0	2,0	0,0	1,0	0,0
2# Fortnight	0,0	0,0	1,0	1,0	2,0	3,0	0,0	1,0	0,0
3# Fortnight	0,0	0,0	1,0	1,0	2,0	3,0	0,0	0,0	1,0
4# Fortnight	0,0	0,0	0,0	1,0	2,0	3,0	0,0	1,0	0,0
5# Fortnight	0,0	0,0	1,0	1,0	2,0	2,0	1,0	0,0	0,0
6# Fortnight	0,0	3,0	1,0	0,0	0,0	3,0	0,0	1,0	0,0
7# Fortnight	2,0	0,0	1,0	0,0	0,0	0,0	0,0	0,0	0,0
8# Fortnight	0,0	0,0	1,0	1,0	2,0	3,0	0,0	1,0	0,0



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Period	Assessment activities	Excursions	Group presentation	Group work (cooperative)	Lab practice	Lectures	Speaking Activities	Text analysis	Writing Activities
9# Fortnight	0,0	0,0	1,0	1,0	2,0	2,0	0,0	1,0	0,0
10# Fortnight	0,0	0,0	1,0	1,0	2,0	3,0	0,0	0,0	0,0
11# Fortnight	0,0	0,0	1,0	1,0	2,0	3,0	0,0	1,0	0,0
12# Fortnight	0,0	0,0	1,0	1,0	2,0	3,0	0,0	1,0	0,0
13# Fortnight	2,0	3,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0
Total hours:	4,0	6,0	10,0	10,0	20,0	30,0	1,0	8,0	1,0

The methodological strategies and the evaluation system contemplated in this Course Description will be adapted according to the needs presented by students with disabilities and special educational needs in the cases that are required.