

COURSE PROGRAM

Academic Year: 2024/2025

Identification and characteristics of the course			
Code	502870 FFP (Bilingüe)	ECTS Credits	6
Course name (English)	Earth and Life Science Education		
Course name (Spanish)	Didáctica del Medio Físico y los Seres Vivos		
Degree programs	BA in Primary Education -3rd year		
Faculty/School	Facultad de Formación del Profesorado (Teacher Training College)		
Semester	6th	Type of course	Compulsory
Module	Didactic - disciplinary		
Matter	Teaching and Learning of Experimental Sciences		
Lecturer/s			
Name	Office	E-mail	Web page
Javier Vaquero Martínez	14	javier_vm@unex.es	https://www.unex.es/conoce-la-unex/centros/profesorado/centro/profesores/info/profesor?id_pro=javier_vm
Subject Area	Teaching Experimental Sciences (Science Education)		
Department	Teaching Experimental Sciences and Mathematics		
Coordinating Lecturer (If more than one)	Javier Vaquero Martínez		
Competencies*			
<p>1. General competencies</p> <p>GC-9: To value individual and collective responsibility in achieving a sustainable future</p> <p>GC-11: To know and apply information and communication technologies in the classroom. Selectively discern audiovisual information that contributes to learning, civic training and cultural richness</p>			
<p>2. Specific competencies</p> <p>SC-25: To understand the basic principles and laws of Experimental Sciences (Physics, Chemistry, Biology and Geology).</p> <p>SC-26: To know these sciences curriculum.</p> <p>SC-27: To suggest and solve problems by applying sciences to daily life and appreciate sciences as a cultural fact</p>			

** The sections concerning competencies, course outline, educational activities, teaching methodologies, learning outcomes and assessment systems must conform to that included in the ANECA verified document of the degree program.

SC-28: To value sciences as a cultural fact.
 SC-29: To recognize the mutual influence between science, society and technological development, as well as appropriate citizen behavior, to ensure a sustainable future.
 SC-30: To develop and evaluate curriculum content through appropriate teaching resources and promote students' acquisition of competencies (Experimental Sciences).

3. Transversal competencies

TC-1: To know how to transmit information, ideas, problems and solutions to both specialized and non-specialized audiences

TC-1.3: To use ICTs as an essential tool for intellectual work, information, learning and communication

TC-2.2: Efficiently use a set of learning resources, techniques and strategies that guarantee autonomous, responsible and continuous learning throughout life

TC-3.6: Reflect critically and logically on the need to eliminate all forms of discrimination, direct or indirect, in particular, racial discrimination and discrimination against women, derived from sexual orientation or that caused by a disability

Contents

Course outline*

The environment and its teaching.
 Main natural systems: lithosphere, atmosphere, hydrosphere and biosphere.
 Living beings and their teaching. Diversity of life. Dependence relations between living beings the environment.
 Ecology, environment and environmental education.

Course syllabus

Name of lesson 1: The physical environment and its teaching
 Contents of lesson 1: The atmosphere. The hydrosphere. The Earth as a dynamical planet and in evolution. The Earth has a past: history of the Earth. The geosphere. Structure and composition of the Earth. Plate tectonics. Terrestrial materials: minerals and rocks. Introduction to the design of teaching-experimental experiences in Primary Education: exposition, analysis and discussion.
 Description of the practical activities of lesson 1: Outings to the environment and experimental laboratory and classroom activities, based on different methodologies, for the teaching-learning of the physical environment.

Name of lesson 2: Living beings, their diversity and functioning
 Contents of lesson 2: Bioelements. Biomolecules. Diversity of living beings. Their classification, new trends and the five kingdoms. Other forms of organization: virus. The cell: prokaryotic and eukaryotic organization. Nutritional types: autotrophs and heterotrophs. Monerans. Protists. Pluricellularity: cells, tissues, systems, apparatuses and organs. Fungi. Plants. Animals. The human body and health, its structure and functioning. Introduction to the design of experiences teaching-experimental experiences in Primary Education: exposition, analysis and discussion.
 Description of the practical activities of lesson 2: Outings to the environment and experimental laboratory and classroom activities, based on different methodologies, for the teaching-learning of the living beings.

Name of lesson 3: The environment and its conservation: ecology and physical environment.
 Contents of lesson 3: Ecology, physical environment and environmental education. Introduction to the study of the ecosystems and their dynamics. The flow of energy and the cycling of matter. Consequences of human interaction in the ecosystems. Teaching use of physical environment in Primary Education. The natural environment in the different landscapes of Extremadura. Introduction to the design of teaching-experimental experiences in Primary Education: exposition, analysis and discussion.

Description of the practical activities of lesson 3: Outings to the environment and experimental laboratory and classroom activities, based on different methodologies, for the teaching-learning of the physical environment and living beings.

Educational activities *

Student workload in hours by lesson		Lectures	Practical activities				Monitoring activity	Homework
Lesson	Total	L	HI	LAB	COM	SEM	SGT	PS
1	24.25	6.25		3				15
2	82	28		9				45
3	26.75	8.75		3				15
Assessment **	17	2						15
TOTAL	150	45		15				90

L: Lectures (85 students)

HI: Hospital internships (7 students)

LAB: Laboratory or field practices (15 students)

COM: Computer room or language laboratory practices (20 students)

SEM: Problem classes or seminars or case studies (40 students)

SGT: Scheduled group tutorials (educational monitoring, ECTS type tutorials)

PS: Personal study, individual or group work and reading of bibliography

Teaching Methodologies*

- 1.- Verbal presentation. Direct teaching. Large group classes aimed at the exposition of the different concepts and procedures associated with the subject with the help of bibliographic and audiovisual materials.
- 2.- Discussion and debate. Verbal exposition is combined with discussion activities and with questions to be answered by the students so that they can build new concepts from known concepts (related to other subjects already studied or to other subjects of the program with which there are important interrelationships).
- 3.- Annotated reading of bibliographic materials.
- 4.- Viewing of audiovisual materials (documentaries, films, etc.) and discussion and debate on them.
- 5.- Exhibition of the works carried out in an autonomous way. This activity is programmed so that the students expose or present the works and the materials elaborated in an autonomous way.
- 6.- Realization of exams. The purpose of this activity is to evaluate the learning results of the students in relation to the objectives or competencies set out in the teaching plan of the subjects that make up a subject.
- 7.- Experiences and practical applications. This activity is aimed at the simulation and practice of the strategies and techniques presented by specialists and professionals, discussion and analysis of scientific-technical documentaries.
- 10.- Analysis and discussion of bibliographic and audiovisual materials.
- 11.- Debates and discussion on current topics related to the subject matter.
- 13.- Guidance, decision making and resolution of the doubts raised by the student. Follow-up of individual or small group work. Individual and group consultation and advice.
- 15.- Study of the subject and preparation of exams.
- 16.- Search and consultation of bibliographic material for project work.
- 18.- Analysis of texts, audiovisual materials and sociological data.

Learning outcomes *

*** Indicate the total number of evaluation hours of this subject.

- Explain, connect and apply the most relevant concepts and procedures of the general fundamentals of Natural Sciences.
- Conceptualize and critically analyze the aspects related to Science, Technology and Society and their development in Primary School.
- To know the general theories of Didactics of Science necessary to contextualize, adapt and apply the methodology and didactic contents of Natural Sciences in the Primary Education classroom.
- Report writing, valuing the scientific-didactic knowledge, the correctness of the language, the capacity of interrelation and synthesis, as well as the active participation.
- Deep knowledge of the contents of the subjects related to the Knowledge of the Natural Environment in Primary Education and the didactics of Experimental Sciences.

Assessment systems *

In accordance with the provisions of the Evaluation Regulations of the Official Undergraduate and Master's Degrees of the University of Extremadura (DOE 212, November 3, 2020), the evaluation may be continuous or global. The choice between the continuous evaluation system or the global evaluation system corresponds to the student, who will be able to carry it out during the first quarter of the period of teaching of the subject, for each of the calls (ordinary and extraordinary). For this purpose, the faculty will manage these requests through a specific space created for this purpose in the Virtual Campus. When a student does not make his/her decision explicit through the established procedure, it will be understood that he/she chooses the continuous evaluation. Once the type of evaluation has been chosen, the student will not be able to change in the ordinary call of that semester and will abide by the evaluation regulations for the extraordinary call.

<i>Training</i>	<i>Assessment instruments</i>	<i>Weighting</i>
Theoretical	Face-to-face written or oral tests	70 %
Practical	Participation in seminars and practical activities planned in them, in class and on the virtual campus	30 %

In order to pass the course it is an indispensable condition to pass (5 points) in each of the two parts. The part of the grade corresponding to the practical training (seminars and practical activities) is not recoverable in the ordinary call. In the extraordinary call the student will be able to recover this part, for this he/she will have to take a written test, with a value of 30%, on the contents treated in the practical training (seminars and practical activities).

Global Assessment:

Students who opt for this global evaluation system must take, in addition to the written test on the theoretical training (70 %), another written test, with a value of 30 %, on the contents covered in the practical training (seminars and practical activities). It will be an essential condition to pass the course to pass (5 points) in each of the two parts.

The evaluation of the written tests and activities will take into account the correct use of language, including proper spelling and grammar.

Bibliography (basic and complementary)

Legislative texts such as Decree 107/2022, of July 28, establishing the organization and curriculum of Primary Education for the Autonomous Community of Extremadura.

Basic bibliography:

- Anguita, F. y Moreno F. (1993). *Procesos geológicos externos y geología ambiental*. Madrid: Rueda.
- Caballero Armenta, M. (2011). *Enseñar Ciencias Naturales en Educación Primaria*. Madrid: CCS.
- Cañal de León, P. (Coord.), García-Carmona, A., & Cruz-Guzmán, M. (2016). *Didáctica de las Ciencias Experimentales en Educación Primaria*. Madrid: Paraninfo.
- Curtis, E.; Barnes, N.S.; Schnek, A.; Massarini, A. (2008). *Biología*. Buenos Aires: Panamericana.
- Garrido, J.M.; Perales, J.J.; Galdón, M. (2008). *Ciencia para educadores*. Madrid: Pearson educación.
- González García, F. (Coord.) (2015). *Didáctica de las Ciencias para Educación Primaria. I- Ciencias de la vida*. Madrid: Pirámide.
- Jiménez-Aleixandre, M.P. (Coord.). (2003). *Enseñar ciencias (Serie Didáctica de las ciencias experimentales)*. Barcelona: Graó.
- Martí Feixas, J. (2012). *Aprender ciencias en la educación primaria*. Barcelona: Graó.
- Pujol, R. M. (2003). *Didáctica de las ciencias en la educación primaria*. Madrid: Síntesis.
- Romero, J.M., Perales Palacios, F.J., & Galdón Delgado, M. (2007). *Ciencia para Educadores*. Madrid: Pearson.
- Vílchez González, J.M. (Coord.) (2014). *Didáctica de las Ciencias para Educación Primaria. I- Ciencias del espacio y de la Tierra*. Madrid: Pirámide.

Complementary bibliography:

- De las Heras Pérez, M.A., & Jiménez Pérez, R. (2011). La enseñanza del ser vivo en primaria a través de una secuencia de estrategias indagatorias. *Alambique: Didáctica de las Ciencias Experimentales*, 67, 71-78.
- De las Heras Pérez, M.A., & Jiménez Pérez, R. (2011). Experiencias investigadoras para el estudio de los seres vivos en primaria. *Investigación en la Escuela*, 74, 35-44.
- Martín del Pozo, R. (Coord.). (2013). *Las ideas "científicas" de los alumnos y alumnas de primaria: Tareas, dibujos y textos*. Madrid: Universidad Complutense.
- Roberts, R.G.; Larson, A.C. (2009). *Zoología. Principios Integrales*. (14ª Edición). Madrid: Mcgraw-Hill
- Rodríguez Miranda, F.P., De las Heras Pérez, M.A., Rodríguez Fernández, R., & Cañal de León, P. (2014). El conocimiento escolar sobre los animales y las plantas en primaria: Un análisis del contenido específico en los libros de texto. *REEC: Revista Electrónica de Enseñanza de las Ciencias*, 13 (1), 97-114.

Throughout the course, due to teaching needs, this bibliography may be updated, modified and completed, and students will be notified of the changes.

Other resources and complementary educational materials

