COURSE PROGRAM

ACADEMIC YEAR: 2023/2024

IDENTIFICATION AND CHARACTERISTICS OF SUBJECT				
ID CODE	502870 (TTC-B)		ECTS Credits	6
Name of Subject (Original)	Didáctica del Medio Físico y los Seres Vivos			
Name of Subject (English)	**Earth and Life Science Education**			
Course and Level	BA in Primary Education -3rd year			
Centre	Facultad de Formación del Profesorado (Teacher Training College)			
Semester	6th	Type	Compulsory -2 (3)	
Module	Didactic - disciplinary			
Area / Field	Subject matter: Teaching and Learning of Experimental Sciences			

Academic Personnel.			
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Knowledge Area / Field	Teaching Experimental Sciences (Science Education)
Department	Teaching Experimental Sciences and Mathematics
Coordinator	Javier Vaquero Martínez

Skills

General Competences to be achieved by the students

GC-9: To value individual and collective responsibility in achieving a sustainable future

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

Grade Transversal Competences

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

Specific Competences (didactic-disciplinary module)

SC-25: To understand the basic principles and laws of Experimental Sciences (Physics, Chemistry, Biology and Geology)

SC-26: To know these sciences curriculum

SC-27: To suggest and solve problems by applying sciences to daily life and appreciate sciences as a cultural fact

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)

Content

Overview of subject content

Learning how to apply different methodologies to teach scientific content to Primary Education students. Scientific and didactic contents will enable teachers to practice in relation to Knowledge of the Physical Environment and Living Organisms in Primary Education.

Knowledge Modules

Unit 1: Teaching on Physical Environment.

Atmosphere. Hydrosphere. The Earth: a dynamic and evolving planet. The Earth has a past. Plate Tectonics. Structure, composition and history of the Earth. Terrestrial materials: minerals and rocks. Introduction to didactic experimental experience design in Primary Education: exposition, analysis and discussion.

Description of the practical activities of topic 1: 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

Unit 2: Teaching on Living organisms: diversity and functioning.

Diversity of living organisms: classification, new trends and the five kingdoms.
Other forms of organization: the virus. Monera. Cells: prokaryotic and eukaryotic organization. Autotrophic and heterotrophic organisms. Protists. Multicellularity: cells, tissues, organs and organ systems. Fungi. Plants. Animals. The human body and health, structure and functioning. Introduction to didactic experimental experience design in Primary Education: exposition, analysis and discussion.

Description of the practical activities of topic 2: 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

Unit 3: Teaching on Ecology and Environment. Conservation.

Ecology and Environmental Education. Introduction to the study of ecosystems and their dynamics. The flow of energy and the cycling of matter. Impact of man interaction with ecosystems. Educational use of the environment in Primary Education. The natural environment in different landscapes in Extremadura. Introduction to didactic experimental experience design in Primary Education: exposition, analysis and discussion.

Description of the practical activities of topic 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

Lecture activities

Students' working hours		Face-to-face		Follow-up	Autonomous
Unit or activity	**Total**	**LEC**	**SL**	**PT**	**P**
1	24.25	6.25	3		15
2	82	28	9		45
3	26.75	8.75	3		15
Global evaluation	17	2			15
Total	**150**	**45**	**15**		**90**

LEC: Lecture in a large group (100 students).
SL: Seminar or Laboratory (hospital clinic placements = 7 students; field or laboratory work = 15; computer simulations or language lab = 30, case studies or problem-solving sessions = 40).
PT: Programmed tutorial sessions (follow-up sessions, ECTS tutorial hours).
P: Personal study, individual or group work and course reading.

Methodology

- Verbal exposition. Management teaching. Classes in large groups aimed at exposing the different concepts and procedures associated with the subject with the help of bibliographic and audiovisual materials.
- Discussion and debate. The verbal presentation is combined with discussion activities and questions to be answered by the students to build new concepts based on known concepts (related to other subjects already studied or with other topics of the program with which there are important interrelations).
- An annotated reading of bibliographic materials.
- Viewing audiovisual materials (documentaries, films, etc.) and discussing and debating them.
- Exhibition of the works carried out autonomously. This activity is scheduled for students to present or present the results and materials produced independently.
- Conducting exams. This activity aims to assess students' learning outcomes concerning the objectives or competencies that arise in the teaching plan of the subjects that make up a subject.
- Experiences and practical applications. This activity aims to simulate and practise strategies and techniques presented by specialists and professionals and discuss and analyze scientific-technical documentaries.
- Analysis and discussion of bibliographic and audiovisual materials.
- Debates and discussions on current issues related to the subject.
- Orientation, decision making and resolution of the questions raised by the student. Follow-up of individual works or in small groups. Consultation and individual and group advice.
- Study of the subject and preparation for exams.
- Search and consultation of bibliographic material for project realization.
- Analysis of texts, audiovisual materials and sociological data.

Learning Outcomes

- Students will be able to explain, interlink and apply the most relevant and general scientific concepts.
- Students will be able to contextualize and critically analyze different aspects related to Science, Technology and Society in the Primary Education context.
- Students will be able to know and understand the main didactics theories of Sciences and know-how to apply the methodologies and contents to teach Science in Primary Education.
- Students will be able to write scientific reports using appropriate scientific language, different interlinking concepts, and a proactive attitude in the classroom.
- Students will be able to understand scientific content and how to teach them deeply.

Assessment

Under regulations for the Evaluation of Official Bachelor's and Master's Degrees of the University of Extremadura (Resolution of October 26, 2020), the evaluation may be CONTINUOUS or GLOBAL.

The choice between the continuous assessment system or the global assessment system corresponds to the student, who may carry it out during the first quarter of the course teaching period for each call (ordinary and extraordinary). The teaching staff will manage these requests through a specific space created for this in the Virtual Campus. When a student does not make his decision explicit through the established procedure, it will be understood that he opts for continuous evaluation. Once the type of evaluation has been chosen, the student will not be able to change the ordinary call for that semester and will abide by the evaluation regulations for the extraordinary call.

Continuous assessment:

Formation	Typology of activities	Weighing
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 %

To pass the course, it is an essential condition to pass (get 5 points) in each of the two parts
The part of the grade corresponding to continuous assessment (participation in 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, they must take a written test, with a value of 30%, on the contents treated in seminars and practical activities

Global assessment:

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

In the evaluation of the written tests and the activities, the correct use of the language will be taken into account, including the correct spelling and grammar

Bibliographic References

Legislative texts such as DECREE 103/2014, of June 10, by which the Curriculum of Primary Education for the Autonomous Community of Extremadura is established. (2014040122).

Cañal de León, P. (Coord.), García-Carmona, A., & Cruz-Guzmán, M. (2016). *Didáctica de las Ciencias Experimentales en Educación Primaria*. Madrid: Paraninfo.

Cross, A. & Bowden, A. (2009). *Essential Primary Science*. London: McGraw-Hill.

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.

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Garrido, J.M.; Perales, J.J.; Galdón, M. (2008). *Ciencia para educadores*. Madrid: Pearson

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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.
Martín del Pozo, R. (Coord.). (2013). *Las ideas "científicas" de los alumnos y alumnas de primaria: Tareas, dibujos y textos*. Madrid: Universidad Complutense.
Rivero, A., Martín, R., Solís, E. & Porlán, R. (2017). *Didáctica de las ciencias experimentales en educación primaria*. Madrid: Síntesis.
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.
Romero, J.M., Perales Palacios, F.J., & Galdón Delgado, M. (2007). *Ciencia para Educadores*. Madrid: Pearson.
Sharp, J., Peacock, G., Johnsey, R., Simon, S. & Smith, R. (2000). *Primary Science: Teaching Theory and Practice*. Exeter: Learning Matters.
Vílchez González, J.M. (Coord.) (2014). *Didáctica de las Ciencias para Educación Primaria. I-Ciencias del espacio y de la Tierra*. Madrid: Pirámide.

Learning Tools and Additional Material

- The subject is promoted through the use of Moodle Platform at the University. Participants may also acquire achievable skills through the readings and bibliographic material uploaded to the course virtual site. The virtual course site will also suggest additional material in different visual supports.
- In addition, as a means to aid participants in the assessment activities, some rubric documents will be at public disposal during the course.

Recommendations for Students.

Attendance to seminars/laboratories is recommended to follow the dynamics of the subject, take learning opportunities and take advantage of their contribution to their final grade.

Students who completed an art branch during the previous educative stages should revise the Primary Education textbook of Natural Sciences.

Participation actively in class and constantly working throughout the course is recommended.

It is highly recommended to check the Virtual Campus, with additional information about the lessons, which will allow a better following of the subject.