

COURSE PROGRAM

Academic Year: 2020/2021

Identification and characteristics of the course			
Code	502870	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 – 3 rd Year		
Faculty/School	College of Education and Teacher Training College		
Semester	6th	Type of course	Compulsory -2(3)
Module	Didactic – disciplinary		
Matter	Subject matter: Teaching and learning of Experimental Sciences		
Lecturer/s			
Name	Office	E-mail	Web page
J. Samuel Sánchez Cepeda	1505-1-3	samuel@unex.es	https://campusvirtual.unex.es/zonaunex/avunex/course/view.php?id=23866
Subject Area	Didactics of Experimental Science		
Department	Didactics of Experimental Science and Mathematics		
Coordinating Lecturer (If more than one)			
Competencies*			
Basic Competences to be achieved by the students			
CB2 - Students can apply professionally their knowledge to their work or vocation and possess the skills that are usually demonstrated through the elaboration and defence of arguments and the resolution of problems within their study area.			
CB3 - Students have the ability to gather and interpret relevant data (usually within their study area) to make value judgements that includes reflection on relevant social, scientific or ethical issues.			
CB4 - Students are able to convey information, ideas, problems and solutions to both specialised and non-specialised audiences.			
CB5 - Students have developed the required learning skills to undertake further studies with a high degree of autonomy.			
General Competences to be achieved by the students			
CG1 - To be familiar with the interdisciplinary nature of Primary Education curricular areas, the assessment criteria and the body of didactic knowledge required for teaching and learning processes.			
CG9 - To assess individual and collective responsibility in the achievement of a sustainable future.			
CG10 - To reflect upon classroom activities so as to innovate and improve teaching practices. To acquire habits and skills for autonomous and cooperative learning and promote it among students.			
Grade Transversal Competences to be achieved by the students			
CT1.3 - To use new information technologies as a tool for intellectual work and as an essential			

* 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.

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element for gathering information, learning and communicating.
CT1.4 - To manage and use social and interpersonal skills in relationships with other peoples and work in multidisciplinary groups in a cooperative way.
CT2.4 - To maintain an attitude of innovation and creativity in the exercise of their profession.
Specific Competences to be achieved by the students
CE25 - To understand the basic principles and fundamental laws of the experimental sciences (Physics, Chemistry, Biology and Geology).
CE26 - To know the school curriculum of these sciences.
CE27 - To raise and solve problems associated with life sciences.
CE29 - To recognize the mutual influence between science, society and technological development, as well as the relevant citizen behaviour, to ensure a sustainable future.
CE30 - To develop and evaluate curriculum content through appropriate teaching resources and promote the acquisition of basic skills in students (Experimental Science).
Contents
Course outline*
Teaching and learning science in Primary Education in general, and specifically teaching about Physical Environment and Living Organisms. Learning how to apply different methodologies to teach scientific contents to Primary Education students.
Course syllabus
<p>Name of lesson 1: Teaching on Physical Environment.</p> <p>Contents of lesson 1: 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.</p> <p>Description of the practical activities of lesson 1: Practical experiences about the Physical Environment in Primary Education.</p> <p>Name of lesson 2: Teaching on Living organisms: diversity and functioning.</p> <p>Contents of lesson 2: 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.</p> <p>Description of the practical activities of lesson 2: Practical experiences about Living Organisms in Primary Education.</p> <p>Name of lesson 3: Teaching on Ecology and Environment. Conservation.</p> <p>Contents of lesson 3: Ecology and Environmental Education. Introduction to the study of ecosystems and their dynamics. The flow of energy and 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.</p> <p>Description of the practical activities of lesson 3: Practical experiences about Ecology and Conservation in Primary Education.</p>

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Educational activities *								
Student workload in hours by lesson		Lectures	Practical activities				Monitoring activity	Homework
Lesson	Total	L	HI	LAB	COM	SEM	SGT	PS
1	31	10		3				18
2	68	20		8				40
3	31	10		3				18
Assessment **	20	5		1				14
TOTAL	150	45		15				90

L: Lectures (100 students)
 HI: Hospital internships (7 students)
 LAB: Laboratory or field practices (15 students)
 COM: Computer room or language laboratory practices (30 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*
<ul style="list-style-type: none"> ➤ Lecture in large group: To explain general concepts and procedures related with the subject by means of multimedia material or bibliographic documents. ➤ Debate and discussions: To foster students to construct knowledge from the previous knowledge students have. To achieve this learning goal, the instructor will combine lecturing with discussion activities. ➤ Multimedia material: Some of the contents will be delivered by means of video-lessons or other multimedia material (movies, documentaries or speeches) together with discussion activities. ➤ Assessment activities: These activities aim to assess the students' learning outcome regarding the learning objectives and skills included in the course syllabus. ➤ Analysis and discussion of bibliographic and multimedia materials. ➤ Project design: Through these activities, students will learn how to design and use a project for teaching. ➤ Guidance, 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 counseling. ➤ Reading of documents prior to the teacher's oral presentation. ➤ Study of the subject and preparation of exams.

Learning outcomes *
<ul style="list-style-type: none"> - 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 with Science, Technology and Society in the Primary Education context. - Students will be able to know and understand the main didactics theories of Sciences, as well as know how to apply the methodologies and contents to teach Science in Primary Education. - Students will be able to write scientific reports, using a proper scientific language, interlinking different concepts, as well as having a proactive attitude in the classroom. - Students will be able to deeply understand Scientific contents and how to teach them.

Assessment systems *

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

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Assessment system*	Activities	Weight
Exams	Final exam (written test)	70%
Continuous assessment	Seminars assessment and practical activities will depend on attendance, teacher monitoring, submitted projects and practical tests. At the end of the seminars students will to do a written test (exam).	30%

All students must inform the professor during the first 3 weeks of each semester the type of assessment selected. If no information is provided, the continuous assessment system will be assigned to the student. No changes of assessment systems are allowed up until the following evaluation. Students following continuous assessment system must attend at least the 80% of the sessions. Students following global assessment system will do a final theoretical exam (70%), and a practical exam (30%) covering the contents worked in the subject.

In both assessment system, students must get **at least 5 points of 10 in each part** (final exam and practical exam) **in order to pass the subject**.

Bibliography (basic and complementary)

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.
- 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.
- 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.
- 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.

Other resources and complementary educational materials

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

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