

**COURSE DATA****Data Subject**

Code	33653
Name	Teaching science: environment, biodiversity and health
Cycle	Grade
ECTS Credits	4.5
Academic year	2021 - 2022

Study (s)

Degree	Center	Acad. year	Period
1305 - Degree in Primary School Education	Faculty of Teacher Training	4	First term

Subject-matter

Degree	Subject-matter	Character
1305 - Degree in Primary School Education	12 - Teaching natural sciences in primary education	Obligatory

Coordination

Name	Department
HURTADO SOLER, DESAMPARADOS	90 - Methodology of experimental and social sciences
MAYORAL GARCIA-BERLANGA, OLGA	90 - Methodology of experimental and social sciences
TALAVERA ORTEGA, MARTA	90 - Methodology of experimental and social sciences

SUMMARY

This is a compulsory four-monthly subject that addresses the challenge of how to ensure that children successfully approach the Biology and Geology content proposed in the Primary Education curriculum.

The fundamental purpose is to ensure that future teachers learn to teach science in a reflective and innovative way, so that they can make decisions, considering the contributions of the Didactics of Science, about what, why and what for to teach science and technology and how to ensure their learning in Primary Education, specifically in the field of the environment, the diversity of living beings and the human body and health.



The aim is to overhaul the usual expository teaching method of science so that primary school teachers can encourage interest in the study of science and thus promote scientific literacy among citizens, enabling them to deal with the risks and challenges of an increasingly globalized world and preparing them to act towards a sustainable future.

This subject is linked to:

- Natural Sciences for Teachers (2nd year).
- Didactics of Natural Sciences I: Matter, energy and machines (3rd year).
- Practicum III (4th year).

PREVIOUS KNOWLEDGE

Relationship to other subjects of the same degree

There are no specified enrollment restrictions with other subjects of the curriculum.

Other requirements

Students are recommended to successfully have passed the subject Natural Sciences for Teachers (2nd year).

OUTCOMES

1305 - Degree in Primary School Education

- Express oneself orally and in writing correctly and appropriately in the official languages of the autonomous region.
- Use information and communication technologies effectively as usual working tools.
- Analyse critically the most relevant issues in today's society that affect family and school education: social and educational impact of audiovisual languages and of screens; changes in gender and inter-gender relations; multicultural and intercultural issues; discrimination and social inclusion, and sustainable development; Also, carry out educational actions aimed at preparing active and democratic citizens, committed to equality, especially between men and women.
- Promote cooperative work and individual work and effort.
- Assume that teaching must be perfected and adapted to scientific, pedagogical and social changes throughout life.
- Know the processes of interaction and communication in the classroom.



- Recognise the identity of each educational stage and their cognitive, psychomotor, communicative, social and affective characteristics.
- Design, plan and evaluate teaching and learning classroom activities in multicultural and co-educational contexts.
- Know how to work as a team with other professionals within and outside the school to attend to each student, to plan the learning sequences and to organise work in the classroom and in the play space.
- Know and apply basic educational research methodologies and techniques and be able to design innovation projects identifying evaluation indicators.
- Understand that systematic observation is a basic tool that can be used to reflect on practice and reality, and to contribute to innovation and improvement in education.
- Identify and plan the resolution of educational situations that affect students with different abilities and different learning rates, and acquire resources to favour their integration.
- Know the natural science school curriculum.
- Develop and evaluate curriculum content through appropriate teaching resources and promote the corresponding basic competences in students.
- Raise and resolve issues of everyday life related to science by applying scientific reasoning.
- Promote the competences proposed in the curriculum among students.
- Create teaching proposals in relation to the interaction between science, technology, society and sustainable development.
- Promote interest in and respect for the natural environment through appropriate educational projects.
- Develop the ability to use scientific language, symbols, concepts and texts to maintain a dialogue with the natural world.
- Develop the ability to identify, locate and evaluate sources of information, assess their quality and value and organise information and knowledge based on these sources.
- Know the scientific methodology and promote scientific thinking and experimentation.
- Encourage respectful attitudes towards the preservation of the environment and health.

LEARNING OUTCOMES

English version is not available



WORKLOAD

ACTIVITY	Hours	% To be attended
Theoretical and practical classes	45,00	100
Study and independent work	67,00	0
TOTAL	112,00	

TEACHING METHODOLOGY

Presential activities (around 40%):

- Theoretical-practical classes. Classes in which subject content will be addressed, debates will be held and activities will be carried out using different teaching resources: lectures, seminars, workshops, working groups, etc.; 25-30% ECTS credits; General (a-l) and specific competences (1-11).
- Group work. The purpose of group work is to highlight the importance of cooperative learning and to reinforce individual learning. The presentation of this work can be individual or collective and can be done with the whole group in the classroom or in tutorials and seminars with reduced audiences; 5-10% ECTS credits; General competences (a-l) and specific competences (1-11).
- Tutorials. Individual and group tutorials should serve as a means to coordinate students in individual and group tasks, as well as to evaluate individual progress, activities and teaching methodology; 5% ECTS credits; general (a-e) and specific competences (1-11).

Non-presential activities (around 60%):

Autonomous work and study. The model of the teacher as a researcher in the classroom focuses the student's activity on formulating relevant questions, searching for information, analysis, elaboration and subsequent communication. There will be individual and cooperative work, all of which will be guided, supervised and assessed by the lecturers; 60 ECTS credits; general (a-l) and specific competences (1- 11).

EVALUATION

Both the objectives and competences common to the degree and those specific to each subject will be assessed.

Assessment will be continuous and global, orientative and formative, and will involve an analysis of individual and collective learning processes.

The grade, the final representation of the assessment process, should reflect individual learning, understood not only as the acquisition of knowledge, but also as a process that has to do fundamentally with intellectual and personal changes in students as they encounter new situations that require them to develop new comprehension and reasoning skills at the same time.



Learning outcomes will be collected mainly by means of the following:

- Periodic monitoring of students' progress, both in the classroom and in individual and group tutorials.
- Assessment of assignments, including the analysis and evaluation of observations on work produced by others.
- Assessment of individual and group participation, both in the classroom and in tasks outside the classroom.
- Oral and written assignments.

The student assessment process may include the preparation of a report on the individual's learning achievement.

REFERENCES

Basic

- Brown, L.R. (2004). Salvar el planeta. Plan B: ecología para un mundo en peligro. Barcelona, Paidós.
- Cañal, P. (2005). La nutrición de las plantas: enseñanza y aprendizaje. Madrid, Síntesis Educación.
- Duarte, C. (coord.) (2006). Cambio Global. Impacto de la actividad humana sobre el sistema Tierra. Madrid, CSIC.
- Field, A. (2005). Enseñar ciencias a los niños. Barcelona: Gedisa.
- Gibbs, G.; Simpson, C. (2009). Condiciones para una evaluación continuada favorecedora del aprendizaje. Barcelona, ICE, Universitat de Barcelona - Octaedro.
- Izquierdo, M. (coord.) (2011). Química a infantil y primaria. Barcelona, Graó.
- Novo, M. (2006). El desarrollo sostenible. Su dimensión ambiental y educativa. Madrid: UNESCO Pearson.
- Orts i Alis, M. (2011). L'aprenentatge basat en problemes (ABP). Barcelona, Graó.
- Perales, F.; Cañal, P. (coords.) (2000). Didáctica de las Ciencias Experimentales. Marfil, Alcoy.
- Pujol, R.M. (2007). Didáctica de las Ciencias en la Educación Primaria. Madrid, Síntesis.
- Quintanilla, M.; Daza, S.; Merino, C. (2010). Unidades Didácticas en Biología y Educación Ambiental. Su contribución a la promoción de competencias de pensamiento científico. Barrancabermeja, FONDECYT - Diseños Litodigital: Greci.
- Sans, A. (2004). L'avaluació dels aprenentatges: construcció d'instruments. Quaderns de Docència Universitària 2. Barcelona, ICE- Universitat de Barcelona. Didáctica de las Ciencias: Medio Ambiente, Biodiversidad y Salud



Additional

- Astolfi, J.P. (2001). Conceptos clave en la didáctica de las disciplinas. Sevilla, Díada Editora.
- Carratalà, A. y otros (1995). Una aventura celular. Valencia: ECVSA.
- Diamond, J. (2006). Colapso. Barcelona: Debate.
- Escrivá, J. (1988). Les barraquetes de la Ciència. Valencia, Gregal llibres.
- Gavidia, V. y otros. (2004). El Mundo de los sentidos. Valencia, Martín Impresores.
- Hann, J. (1981). Los amantes de la ciencia. Barcelona, Ed. Blume.
- Jiménez Aleixandre, M.P. (1996). Dubidar para aprender. Vigo, Edicións Xerais.
- Novak, J.; Gowin, D. (1988). Aprendiendo a aprender. Barcelona, Martínez Roca.
- Ramiro, E. (2010). La maleta de la ciencia. Barcelona, Graó.
- Rifkin, J. (2010). La civilización empática. La carrera hacia una conciencia global en un mundo en crisis. Barcelona, Paidós.
- Sachs, J. (2005). El fin de la pobreza. Cómo conseguirlo en nuestro tiempo. Barcelona, Debate.
- Sachs, J. (2008). Economía para un planeta abarrotado. Barcelona, Debate.
- The Earth Works Group (2006). 50 cosas sencillas que tú puedes hacer para salvar la Tierra, Barcelona, Naturart.

ADDENDUM COVID-19

This addendum will only be activated if the health situation requires so and with the prior agreement of the Governing Council

1- TEACHING CONTENTS

The teaching contents initially included in the teaching guide will be maintained. In addition, the difficulty derived from the development of non-classroom teaching will be taken into account.

2- WORKLOAD and TEACHING PLANNING TIME FRAME

The scheduling of teaching will be based on the model established by the Teacher Training Faculty on the basis of the 50% reduction in attendance agreed for the whole of the University of Valencia. Non-presential work will include different proposals for autonomous work and study activities. Should new situations of confinement due to the pandemic arise again, distance and telematic teaching will be increased.

3- TEACHING METHODOLOGY



As long as the health crisis caused by COVID-19 lasts, and whenever health conditions permit, teaching will combine face-to-face and remote teaching, either synchronous or asynchronous. When, due to health regulations, presential teaching is not possible, it may be substituted by synchronous non-presential teaching.

Attendance-based teaching will focus on the more practical aspects: face-to-face activities and presentations of didactic proposals. On the other hand, the remote teaching will consist of the autonomous work of the students to prepare the classroom sessions through readings, individual and/or group activities, learning diaries and the elaboration of didactic proposals. If the teacher considers it appropriate, work would be done through the virtual classroom:

- Materials (elaborated by teachers, texts and links to different publications and websites) related to the contents of the subject would be provided.

- Some sessions would be programmed to solve doubts collectively (chat and/or videoconferences).

- A series of individual and/or group tasks would be proposed. These tasks would deal with different theoretical-practical aspects of the subject: definition of basic concepts, text commentaries, exploration workshops with materials available at home and design of didactic proposals.

- Documents with orientations and guidelines would be prepared to facilitate the achievement of these assignments. In any case, tutorial attention will be promoted in a non-presential way by means of the virtual tutoring system through the tools provided in the Virtual Classroom or the institutional e-mail.

4. EVALUATION

The assessment of the subject will be continuous. Theoretical-practical activities and individual and/or group teaching proposal will be assessed.

In the case of students who have opted for non-continuous assessment, they will take a final test, adequately reasoned with bibliographical references, which will cover all the theoretical and practical learning addressed in the subject. This test will take place on the dates established by the University at the beginning of the course and will be presential as long as the health measures are fulfilled. When, due to health regulations, the written test cannot be taken in person, it will be replaced by a test taken on the established date using the tools available in the Virtual Classroom

5- REFERENCES

All the references initially recommended in the teaching guide will be maintained. In addition, other materials considered by the teachers will be provided.