VNIVERSITAT DE VALÈNCIA

Course Guide
33626 Teaching natural sciences at nursery school

COURSE DATA

DATA SUBJECT

Code: 33626
Name: Teaching natural sciences at nursery school
Cycle: Undergraduate Studies
ECTS Credits: 6
Academic year: 2026-27

STUDY (S)

Degree	Center	Acad. year	Period
1304 - Degree in Preschool Education	Facultat de Formació del Professorat	4	First quarter
1324 - Degree in Preschool Education (Ontinyent)	Facultat de Formació del Professorat	4	First quarter

SUBJECT-MATTER

Degree	Subject-matter	Character
1304 - Degree in Preschool Education	Teaching natural sciences in preschool education	COMPULSORY
1324 - Degree in Preschool Education (Ontinyent)	TEACHING NATURAL SCIENCES IN PRESCHOOL EDUCATION	COMPULSORY

COORDINATION

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SUMMARY

This course is a mandatory component of the Degree in Early Childhood Education. It is a semester-long course (6 credits) and is taught during the first semester of the fourth year. It consists of 4.8 theoretical-practical credits and 1.2 practical credits (6 credits in total).

The course begins with a section that addresses the curricular aspects of the teaching and learning process of natural sciences in early childhood education. Next, different methodologies considered appropriate by research for the teaching and learning of natural sciences in early childhood education are presented and analysed. Finally, a set of topics is introduced for students to design and propose various didactic approaches. In addition, several practical laboratory sessions are offered, focused on implementing teaching experiences related to each of the three specific curricular competencies of Area II: Discovery and exploration of the environment.

Its main objective is to ensure that future teachers become familiar with and use specific didactic tools for teaching natural sciences in an innovative way that is adapted to the early childhood education stage.

PREVIOUS KNOWLEDGE

RELATIONSHIP TO OTHER SUBJECTS OF THE SAME DEGREE

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

OTHER REQUIREMENTS

COMPETENCES / LEARNING OUTCOMES

1304 - Degree in Preschool Education

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; multiculturalism and interculturalism; 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.

Assume that teaching must be perfected and adapted to scientific, pedagogical and social changes throughout life.

Awaken interest in and curiosity for one's own body and for others' bodies, respecting differences. Develop autonomy, body care and awareness of gender differences.

Create teaching proposals in relation to the interaction between science, technology, society and sustainable development.

Design, plan and evaluate teaching and learning classroom activities in multicultural and co-educational contexts.

Design, plan and evaluate teaching and learning processes, both individually and in collaboration with other teachers.

Express oneself orally and in writing correctly and appropriately in the official languages of the autonomous region.

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 and apply basic educational research methodologies and techniques and be able to design innovation projects identifying evaluation indicators.

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 the most outstanding moments in the history of science and technology and their significance.

Know the processes of interaction and communication in the classroom.

Know the scientific and technological principles of the curriculum of this stage as well as the theories on the acquisition and development of the corresponding learning. Know the scientific and technological principles of the curriculum of this stage as well as the theories on the acquisition and development of the corresponding learning.

Know the scientific methodology and promote scientific thinking and experimentation.

Promote cooperative work and individual work and effort.

Promote experiences of initiation into information and communication technologies, value their contribution to improving learning and understand their implications for children's education.

Promote interest in and respect for the natural environment through appropriate educational projects.

Recognise the identity of each educational stage and their cognitive, psychomotor, communicative, social and affective characteristics.

Stimulate sensory perception through multiple experiences with one's own body and in the natural environment as a basis for learning.

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.

Use information and communication technologies effectively as usual working tools.

1324 - Degree in Preschool Education (Ontinyent)

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; multiculturalism and interculturalism; 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.

Assume that teaching must be perfected and adapted to scientific, pedagogical and social changes throughout life.

Awaken interest in and curiosity for one's own body and for others' bodies, respecting differences. Develop autonomy, body care and awareness of gender differences.

Create teaching proposals in relation to the interaction between science, technology, society and sustainable development.

Design, plan and evaluate teaching and learning classroom activities in multicultural and co-educational contexts.

Design, plan and evaluate teaching and learning processes, both individually and in collaboration with other teachers.

Express oneself orally and in writing correctly and appropriately in the official languages of the autonomous region.

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 and apply basic educational research methodologies and techniques and be able to design innovation projects identifying evaluation indicators.

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 the most outstanding moments in the history of science and technology and their significance.

Know the processes of interaction and communication in the classroom.

Know the scientific and technological principles of the curriculum of this stage as well as the theories on the acquisition and development of the corresponding learning. Know the scientific and technological principles of the curriculum of this stage as well as the theories on the acquisition and development of the corresponding learning.

Know the scientific methodology and promote scientific thinking and experimentation.

Promote cooperative work and individual work and effort.

Promote experiences of initiation into information and communication technologies, value their contribution to improving learning and understand their implications for children's education.

Promote interest in and respect for the natural environment through appropriate educational projects.

Recognise the identity of each educational stage and their cognitive, psychomotor, communicative, social and affective characteristics.

Stimulate sensory perception through multiple experiences with one's own body and in the natural environment as a basis for learning.

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.

Use information and communication technologies effectively as usual working tools.

DESCRIPTION OF CONTENTS

1. CURRICULAR ASPECTS IN THE TEACHING AND LEARNING PROCESS OF NATURAL SCIENCES IN EARLY CHILDHOOD

EDUCATION

This unit offers an overview of the teaching¿learning process of natural sciences in early childhood education from a curricular perspective, covering the entire stage (ages 0-6). It considers both regulatory guidelines and the underlying didactic and pedagogical values and principles. Topics that may be addressed include: specific competencies, core knowledge, learning situations, holistic treatment, links with other areas, assessment, inclusion, and attention to diversity.

2. METHODOLOGICAL ASPECTS IN THE TEACHING AND LEARNING PROCESS OF NATURAL SCIENCES IN EARLY CHILDHOOD EDUCATION

This unit aims to study and/or analyse a range of methodological examples for teaching natural sciences to children aged¿0¿6. The goal is to foster the development of distinctive features of scientific thinking and practice, such as observing with all the senses, posing questions and hypotheses, planning, critical analysis, scientific practices (inquiry, argumentation and/or modelling), contact with, enjoyment of, and respect for the natural environment, and the acquisition of healthy, sustainable habits.

Topics include, for example: a historical overview of science education; the importance of STSE (Science-Technology-Society-Environment) relationships; environmental education for sustainability; methodologies and educational experiences (Science 0-3, Science from Birth, Reggio Emilia, forest schools, Montessori, etc.); and the search for and study of different methodological resources (learning corners, workshops, experiments, field trips, and so on).

3. ANALYSIS, DESIGN, AND DEVELOPMENT OF TEACHING PROPOSALS FOR THE TEACHING AND LEARNING OF NATURAL SCIENCES IN EARLY CHILDHOOD EDUCATION

In this unit, students will analyse, design, and/or develop didactic proposals or learning situations aimed at early childhood pupils (or at teachers) in the field of natural sciences, adopting a holistic approach. Example themes include: the body and its care; physical elements and living beings in the environment; and the characteristics, properties, and uses of materials in the childs surroundings.

To achieve this, various working dynamics will be used, such as: reading and analysing specialised literature; critically reviewing curricular materials (school-produced, online, or publisher-produced); using digital tools; and designing and developing teaching proposals or learning situations, learning corners, workshops, experiments, field trips, etc.

WORKLOAD

PRESENCIAL ACTIVITIES

Activity	Hours
Theoretical and practical classes	48,00
Laboratory	12,00
Total hours	**60,00**

NON PRESENCIAL ACTIVITIES

Activity	Hours
Attendance at other activities	0,00
Individual or group project	0,00
Independent study and work	90,00
Preparation of lessons	0,00
Preparation for assessment activities	0,00
Resolution of case studies	0,00
Total hours	**90,00**

TEACHING METHODOLOGY

The methodology adopted in this course draws on the typical pedagogical approaches used in early childhood education such as games, experiential learning, storytelling, and hands-on activities integrating natural sciences within the broader scope of the early years curriculum.

Both face-to-face and independent learning activities are incorporated to support a comprehensive and active learning process. The types of activities students will engage in are outlined below:

Face-to-Face Activities (40%)

- **Theoretical-Practical Sessions**. These in-person sessions will combine theoretical input with practical application. Course content will be explored through a variety of teaching strategies, including lectures, group discussions, seminars, workshops, and collaborative tasks.

- **Group Work**. Students will engage in group projects aimed at fostering cooperative learning while strengthening individual understanding. Presentations may be delivered individually or as a group, either in plenary sessions or smaller tutorials and seminars.

- **Practical Laboratory Sessions**. To promote discovery, observation, and scientific experimentation, the class will be split into smaller groups. Activities will focus on exploring the physical and natural environment, aiming to foster scientific thinking and attitudes of care and respect for nature. These sessions are designed to develop students professional skills in the area of natural sciences through active, hands-on engagement.

- **Tutorials**. Both individual and group tutorials will provide guidance and support for student learning. They will be used to coordinate work on assignments and projects, provide feedback on progress, and evaluate the effectiveness of teaching and learning strategies.

Independent and Remote Activities (60%)

- **Independent Study and Research**. Following the model of the teacher as a researcher, students will be encouraged to formulate meaningful questions, seek out relevant information, engage in critical analysis, and develop educational proposals. This process will culminate in the creation and presentation of their work.

EVALUATION

Both the programme wide objectives and competencies, and the specific competencies of this course, will be assessed. The final grade, the formal outcome of the assessment process will represent each students individual learning, understood not merely as knowledge acquisition but as a process of intellectual and personal change when facing new situations that demand new capacities for understanding and reasoning.

Assessment will be **continuous, global, formative, and developmental**, analysing both individual and group learning processes. The weighting is as follows:

Component	Description	Weight
Practical activities in class and other assigned work	Includes critical analysis of the literature and other tasks carried out during the semester	**20%**
Attendance, participation, and submission of evidence in laboratory sessions	Individual and/or group work produced in lab sessions	**30%**
Design and oral presentation of didactic proposals	Teaching proposals prepared for implementation in an Early Childhood classroom	**30%**
Final written examination	Assesses knowledge gained in the theoretical practical classes	**20%**

Attendance requirement. Laboratory sessions are compulsory and cannot be retaken. Students must attend at least **80%** of the lab sessions for the corresponding mark to be added to the final grade.

Calculation of the final grade. The final grade is the sum of the marks obtained in all scheduled individual and group tasks (theoretical and practical activities, didactic proposals, laboratory work, etc.) **plus** the final written exam mark. However, the written exam must be passed for it to count toward the final grade.

Alternative assessment routes

- **First call (ordinary sitting).** Exceptionally, students may choose to take a single written exam worth **100%** of the final grade.
- **Second call (resit).** Students may either (a) keep the marks earned through continuous assessment or (b) take a single written exam worth **100%** of the final grade.

All assessment will follow the current **Regulations on Assessment and Grading of the Universitat de València (2017/108)**.

Academic integrity. Plagiarism or the improper use of artificial¿intelligence tools may be penalised in accordance with Article 15 of the aforementioned regulations.

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Basic

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Complementary

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