



Universitat de Lleida

DEGREE CURRICULUM  
**LEARNING OF EXPERIMENTAL  
SCIENCES I**

Coordination: IBAÑEZ PLANA, MANUEL

Academic year 2022-23

Subject's general information

|   |   |               |                  |                  |
|---|---|---------------|------------------|------------------|
| <b>Subject name</b>                             | LEARNING OF EXPERIMENTAL SCIENCES I   |               |                  |                  |
| <b>Code</b>                                     | 100988  |               |                  |                  |
| <b>Semester</b>                                 | 1st Q(SEMESTER) CONTINUED EVALUATION  |               |                  |                  |
| <b>Typology</b>                                 | <b>Degree</b>   | <b>Course</b> | <b>Character</b> | <b>Modality</b>  |
|   | Bachelor's Degree in Primary Training   | 3             | COMPULSORY       | Attendance-based |
|   | Double bachelor's degree: Degree in Pre-school Education and Degree in Primary Training | 4             | COMPULSORY       | Attendance-based |
| <b>Course number of credits (ECTS)</b>          | 6   |               |                  |                  |
| <b>Type of activity, credits, and groups</b>    | <b>Activity type</b>  | PRAULA        |                  | TEORIA           |
|   | <b>Number of credits</b>  | 1.8           |                  | 4.2              |
|   | <b>Number of groups</b>   | 4             |                  | 4                |
| <b>Coordination</b>                             | IBAÑEZ PLANA, MANUEL  |               |                  |                  |
| <b>Department</b>                               | ENVIRONMENT AND SOIL SCIENCES   |               |                  |                  |
| <b>Important information on data processing</b> | Consult <a href="#">this link</a> for more information.                                 |               |                  |                  |

| Teaching staff        | E-mail addresses      | Credits taught by teacher | Office and hour of attention |
|-----------------------|-----------------------|---------------------------|------------------------------|
| AGUILAR CAMAÑO, DAVID | david.aguilar@udl.cat | 2                         |                              |
| CANELA XANDRI, ANNA   | anna.canela@udl.cat   | 12                        |                              |
| IBAÑEZ PLANA, MANUEL  | manel.ibanez@udl.cat  | 6                         |                              |
| RICART ARANDA, MARTA  | marta.ricart@udl.cat  | 4                         |                              |

## Subject's extra information

The Didactics of Experimental Sciences I is a compulsory subject that introduces the fundamental didactic knowledge for science education. This set of knowledge should allow students to plan well-founded classroom interventions aimed at promoting both the construction of scientific knowledge and the active research of boys and girls.

## Learning objectives

The course emphasizes the scientific ideas that must be worked with the primary school students (what we will call school science content), and how to approach the teaching-learning process as an activity that integrates inquiry, modeling and communication.

The objectives of the subject are:

- Acquire a vision of science and scientific activity well founded epistemologically.

- Become familiar with scientific activity by actively participating in short research.

- To form a didactic model focused on the active investigation of boys and girls and on the processes of conceptual evolution, and to use it in the planning of sequences of activities.

- Know the contents and curricular orientations of the Natural Environment area

- Know, propose and evaluate activities to promote the development of scientific competence in primary school.

## Competences

The competences to be developed in the subject "Learning Experimental Sciences I" are the following:

### Basic Competences

BC1. Possess and understand knowledge in an area of study -Education- that starts from the base of general secondary education, and is usually found at a level that, although it is supported by advanced textbooks, also includes some aspects that imply knowledge coming from the forefront of your field of study.

## General Competences

GC1. To promote democratic values, with special emphasis on tolerance, solidarity, justice and non-violence, and to know and value human rights.

GC2. Know the intercultural reality and develop attitudes of respect, tolerance and solidarity towards different social and cultural groups.

GC3. Know the right to equal treatment and opportunities between women and men, in particular by eliminating discrimination against women, whatever their circumstance or condition, in any of the areas of life.

GC4. Know the measures that guarantee and make effective the right to equal opportunities for people with disabilities.

GC5. Develop the ability to critically analyze and reflect on the need to eliminate all forms of discrimination, direct or indirect, in particular racial discrimination, discrimination against women, that derived from sexual orientation or that caused by a disability.

GC6. Assume the commitment of personal and professional development with oneself and the community. Adapt the learning proposals to the most significant cultural evolutions.

## Specific Competences

SC2. Design, plan and evaluate teaching and learning processes, both individually and in collaboration with other teachers and professionals at the center.

## Transversal Competences

TC5. Apply essential notions of scientific thought

## Subject contents

1. The nature of science. Implications for school science to Primary education.

Characteristic processes of scientific activity. Questions in science. Generate data and establish facts. Elaborate explanations. Models and modeling.

2. Learn science in primary education. Matter and energy. Physical processes and chemical changes

3. Learn science in primary education. Health and human body. Keep them alive. Changes and evolution.

## Methodology

The teaching methodology and the proposed evaluation may undergo some modification depending on the restrictions on attendance that the health authorities impose.

### *TEORIA group sessions:*

Presentations by the teaching staff of the content and basic issues on the agenda. It is carried out with the whole class group and allows the exhibition of the main contents through open and active participation by the students. Activities are included that can be done individually, in pairs or in small groups and are shared in the class group.

This year these sessions will be mostly virtual.

### *PRAAULA group sessions:*

Small group work spaces supervised by the teaching staff aimed at delving into the content and topics worked on in the large group.

## Tutorials:

Tutorials for solving doubts, preparing for written tests. Exam reviews.

## Student work:

Preparation of activities, search for information and materials, study and preparation of tests, readings  
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## Development plan

### SCHEDULE: LEARNING ACTIVITIES

TEORIA GROUP SESSIONS, 42 classroom hours

Indicative planning of classroom sessions

| DESCRIPTION                            | DURATION/WEEKS | OBJETIVES  | STUDENT'S TASKS   | % EVALUATION |
|--|----------------|--|---|--------------|
| Inquiry                                | 1 -5           | Introduction to research at Primary school                             | Video analysis of scientific practices<br>Planning and conducting inquiries | 20           |
| Model Matter and Energy                | 6 - 9          | Construction of this model<br>Introduction to its didactic application | Diary, exercises and other activities<br>Planning                           | 20           |
| Model the living: Staying alive        | 10 -12         | Construction of this model<br>Introduction to its didactic application | Diary, exercises and other activities<br>Planning                           | 15           |
| Model the living: Change and Evolution | 13 -15         | Construction of this model<br>Introduction to its didactic application | Diary, exercises and other activities<br>Planning                           | 15           |

PRAAULA GROUP SESSIONS, 18 hours of face-to-face modality

Orientative planning of classroom sessions. Seminars, workshops, problem solving

| DESCRIPTION                     | DURATION/WEEKS | OBJECTIVES   | STUDENT'S TASKS                                   | % EVALUATION |
|---------------------------------|----------------|--|---|--------------|
| Model Matter and Energy         | 1 - 5          | Construction of this model<br>Introduction to its didactic application | Diary, exercises and other activities<br>Planning | 10           |
| Model the living: Staying alive | 6 - 10         | Construction of this model<br>Introduction to its didactic application | Diary, exercises and other activities<br>Planning | 10           |

|  |        |  |   |    |
|--|--------|--|---|----|
| Model the living: Change and Evolution | 11- 15 | Construction of this model<br>Introduction to its didactic application | Diary, exercises and other activities<br>Planning | 10 |
|--|--------|--|---|----|

## Evaluation

### GRUP DUAL MORNING

|                                |     |
|--------------------------------|-----|
| 1. Project 'The human body'    | 20% |
| 2. Project 'Science at school' | 30% |
| 3. Productions                 | 25% |
| 4. Final exam                  | 25% |

## Bibliography

GENÉ, A. et al. 2007. Pensar, que bé! Com acompanyar els infants a descobrir el món. Lleida: Pagès.

MARTÍ, J. 2012. *Aprendre ciències a l'educació primària*. Barcelona: Graó

MORIN, E. 2001. Los siete saberes necesarios para la educación del futuro. Paidós.

PUJOL, R. M. 2003. Didáctica de las Ciencias en la Educación Primaria. Síntesis.

### Documents oficials

Currículum l'àrea del medi natural, social i cultural. DECRET 119/2015, de 23 de juny, d'ordenació dels ensenyaments de l'educació primària. <http://portaldogc.gencat.cat/utillsEADOP/PDF/6900/1431926.pdf>

Annex I. Competències bàsiques .Currículum educació primària - Decret 142/2007 DOGC núm. 4915  
[http://www.xtec.cat/alfresco/d/d/workspace/SpacesStore/c54ef8e6-58a5-4e21-9987-35144cbb88b9/competencies\\_pri.pdf](http://www.xtec.cat/alfresco/d/d/workspace/SpacesStore/c54ef8e6-58a5-4e21-9987-35144cbb88b9/competencies_pri.pdf)

### Webs d'interès

CDEC (Centre de Documentació i Experimentació en Ciències), <http://srvcnpbs.xtec.cat/cdec/>

Aplicatiu de Recobriment Curricular (materials didàctics del CDEC) <http://apliense.xtec.cat/arc/cercador>

Guies Habitat per a l'educació ambiental <http://80.33.141.76/habitat/>

Teachingchannel [www.teachingchannel.org](http://www.teachingchannel.org)

Annenberg Learner [www.learner.org](http://www.learner.org)

National Science Teacher Association [www.nsta.org](http://www.nsta.org)

National STEM Center [www.nationalstemcentre.org.uk](http://www.nationalstemcentre.org.uk)