

Degree	Type	Year
2500798 Primary Education	OB	3

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Teaching groups languages

You can view this information at the [end](#) of this document.

Prerequisites

It is advisable to have passed the module "Teaching and Learning about the Natural, Social and Cultural Environment in Primary Education".

Objectives and Contextualisation

This module forms part of the Programme of Primary Teacher Education and is intended to deepen the content knowledge and competencies necessary to teach the module "Environmental Knowledge" in primary schools.

This module puts an emphasis on the scientific ideas that should be discussed with primary school students (what we call "content knowledge of school science"). This module also looks at pedagogical approaches that promote an understanding of science as an activity that integrates inquiry, modelling and communication.

The objectives of the module are:

1) To identify and discuss basic content knowledge of school science - key ideas - that are studied in primary education.

- 2) To embed pedagogical approaches that promote an understanding of school science as an activity that integrates inquiry, modelling and communication (doing, thinking and talking).
- 3) To become familiar with, design and evaluate teaching activities that promote students' development of scientific competencies in primary school.

Competences

- Design and regulate learning spaces in contexts of diversity that take into account gender equality, equity and respect for human rights and observe the values of public education.
- Design, plan and evaluate education and learning processes, both individually and in collaboration with other teachers and professionals at the centre.
- Develop the functions of tutoring and guidance of pupils and their families, attending to the pupils' own needs. Understand that a teacher's functions must be perfected and adapted in a lifelong manner to scientific, pedagogical and social changes.
- Foster reading and critical analysis of the texts in different scientific fields and cultural contents in the school curriculum.
- Know and apply information and communication technologies to classrooms.
- Know the curricular areas of Primary Education, the interdisciplinary relation between them, the evaluation criteria and the body of didactic knowledge regarding the respective procedures of education and learning.
- Know the school curriculum for these sciences.
- Maintain a respectful attitude to the natural, social and cultural environment to foster values, behaviours and practices that attend to gender equality, equity and respect for human rights.
- Make changes to methods and processes in the area of knowledge in order to provide innovative responses to society's needs and demands.
- Raising and solving problems related to everyday life.
- Reflect on classroom experiences in order to innovate and improve teaching work. Acquire skills and habits for autonomous and cooperative learning and promote it among pupils.
- Understanding the basic principles and fundamental laws of the experimental sciences (physics, chemistry, biology and geology).
- Value science as a cultural event.
- Work in teams and with teams (in the same field or interdisciplinary).

Learning Outcomes

1. Apply knowledge of science education to critically analyse the curriculum and establish interdisciplinary relations with other curricular areas.
2. Being able to apply scientific knowledge in order to understand and act on the phenomena in everyday life.
3. Being able to evaluate teaching units as a way of guiding the processes for improving the quality of teaching.
4. Being able to use basic models of the experimental sciences in order to interpret and act on the phenomena in everyday life.
5. Being able to use the diversity of cognitive-linguistic skills to reflect on the processes of teaching/learning in the sciences.
6. Being capable of developing innovative didactic units for teaching and learning the scientific content in the area of Environmental Studies that incorporate attention to diversity and the interdisciplinary focus of the curriculum.
7. Demonstrate a critical ability to use a range of cognitive linguistic skills to reflect on processes in the teaching and learning of science.
8. Demonstrate an understanding of science as part of cultural heritage.
9. Demonstrate that attitudes regarding human rights as knowledge and tools for coexistence, as well as gender equality, are identified, practiced and defended.

10. Demonstrate that attitudes regarding sustainability of the natural environment are identified, practiced and defended.
11. Demonstrate the ability to incorporate the above values in the school curriculum.
12. Demonstrate the ability to work in teams when designing a curriculum.
13. Identifying the purposes, content and structure of the experimental sciences in the environmental studies curriculum in primary education.
14. Meaningfully apply ICT resources to educational proposals.
15. Propose new methods or well-founded alternative solutions.

Content

1. Learning and teaching about the Earth and its changes in primary school.

What are the key ideas? What does the official curriculum include? What are the most common students' previous ideas? How to make them evolve?

2. Learning and teaching about materials and their changes in primary school.

What are the key ideas? What does the official curriculum include? What are the most common students' previous ideas? How to make them evolve?

3. Learning and teaching about living beings in primary school.

What are the key ideas? What does the official curriculum include? What are the most common students' previous ideas? How to make them evolve?

4. Learning and teaching about physical systems in primary school.

What are the key ideas? What does the official curriculum include? What are the most common students' previous ideas? How to make them evolve?

5. Transversal issues: Attitudes towards science, gender and science, field trips, interdisciplinarity

Activities and Methodology

Title	Hours	ECTS	Learning Outcomes
Type: Directed			
Seminars	15.5	0.62	
Whole group sessions	22.5	0.9	
Type: Supervised			
Tutorials	25	1	
Type: Autonomous			
Students' work	62	2.48	

Whole group sessions:

Teacher presentations about basic content knowledge. These sessions are offered to the whole group and allow for discussion of the main contents promoting students' active participation. These sessions include activities that can be performed individually, in pairs or in small groups of students, and then, the results of their reflections and discussions are shared with the rest of the group.

The 1st class starts at 8h or at 16h for the morning or afternoon groups, respectively (whole group class). A detailed chronogram is published in the Campus Virtual.

Seminars:

Workspaces in small groups (1/2 out of the whole group) supervised by the teacher. These sessions are aimed at embedding the contents studied in whole group sessions. Seminars are held at the Lab. Lab coat is required.

Laboratory spaces are a space for reflection. A methodology will be implemented to promote the emergence of ideas by focusing attention on the activity being developed. No computers will be allowed inside.

The 1st class starts at 8h or at 16h for the morning or afternoon groups, respectively (whole group class). A detailed chronogram is published in the Campus Virtual.

Tutorials

Tutorials to address queries and questions about the topics studied during the course in order to prepare for the written exam or the assignments to be submitted. Exam review.

Students' autonomous work:

Students' elaboration of papers, seminar reports, and tasks related to the whole group sessions. Students search for information and materials, study and preparation for exams, and readings. Digital tools are utilized for preparing and implementing activities related to the subject's content.

Transnatura Project.

Transnatura is the title of the multidisciplinary project designed by the teaching teams of five subjects in the 3rd year of the Degree in Primary Education. It consists of a two days trip and a night out in Vall de Núria, aimed at providing an intense and formative experience in the natural environment which, besides working on specific objectives of each of the disciplines, also facilitates the approach of transversal aspects such as sustainability, healthy living, coexistence and the relationship between school and nature, among others.

Subjects involved: Didactics of Experimental Sciences, Learning and Development II, Visual Music Education and Learning, Physical Education and Didactics I, Language and Learning.

The departure will be held on the 21st and 22nd of October for groups 21 and 71, and on the 24th and 25th of October for groups 31 and 41, so it involves an overnight stay. Attendance is mandatory. If someone cannot attend it, they will have to prove the reason for missing it and perform compensatory work previously agreed with the teaching team. The activities carried out during the trip will be part of the continuous evaluation of the different subjects. At the beginning of the academic course, each teacher will specify the learning evidence and the corresponding evaluation criteria.

With the information available in June we can announce that:

- Price: 50 euros APPROXIMATELY (includes the rack railway, dinner, sleep, breakfast and lunch on the second day).
- The students will have to organize themselves independently to reach the meeting point (Ribes Enllaç rack station).

During the 1st term, the UAB opens a call for scholarships to finance the departure

Annotation: Within the schedule set by the centre or degree programme, 15 minutes of one class will be reserved for students to evaluate their lecturers and their courses or modules through questionnaires.

Assessment

Continuous Assessment Activities

Title	Weighting	Hours	ECTS	Learning Outcomes
Group assessment activities	20%	0	0	14, 7, 11, 12, 10, 9, 13, 15, 2, 3, 6, 4, 5
Individual assessment activities	30%	0	0	14, 7, 8, 10, 13, 15, 2, 6, 4, 5
Written exam about content knowledge	50%	0	0	1, 7, 11, 8, 13, 15, 2, 3, 4, 5

CONTINUOUS ASSESSMENT

Throughout the course, several activities will be required that are mandatory even though they do not have an associated grade. This subject includes activities for the development of Teaching Digital Competence.

The evaluation of the Science Education course consists of 3 evaluative activities:

- Individual exam (50% of the final grade): final evaluation test where to develop different issues related to both conceptual and pedagogical aspects worked throughout the course. Recoverable.
- Individual assessment activities (30% of the final grade):
 - 10% Scientific activity related to Transnature. It must be submitted one week after the trip.
 - 10% Individual reflective essay and proposals for improving the use of a model.
 - 10% Individual reflective essay and improvement proposals on the implementation of a dialogical science activity.
- Group assessment activities (20% of the final grade). Group activity where you will put into practice what you learned both conceptually and didactically.
 - 10% Design and development of a model as a teaching tool.
 - 10% Design and implementation of a dialogic scientific activity.

Finally, throughout the course, some activities that are compulsory will be requested, despite not having a specific associated grade.

Both the individual assessment activities and the group assessment activities must be delivered through the virtual campus and are not recoverable each activity separately.

An activity not submitted will be graded with a 0.

The exam is recoverable.

To be able to calculate the average, the student needs to have a 5 in the exam.

To be able to participate in the recovery process, students must have previously been assessed in a set of activities whose weight is equivalent to a minimum of 2/3 of the subject's grade.

The following recovery situations are considered:

- If a student fails the exam and passes the assessment activities, he/she must retake the exam, with a maximum exam grade of 5.
- In the event that a student passes the exam and fails the other assessment activities:
If the average of the subject is passed, the subject is passed.

If the average of the subject is failed, the student will be able to make up the individual assessment activities through a specific test that will be carried out on the day of the make-up exam. The maximum mark for this specific test will be 5.

- If both the exam and the individual assessment activities are suspended, both parts can be retaken on the day of the make-up exam.

As a guideline, and according to the number of credits of the course, you should invest 68h of personal work in the course, according to the following proposal:

Final exam		10h
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Individual assessment activities	Transnatura	6h
	Reflective essay model	6h
	Reflective essay activity	6h
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Group assessment activities	Elaboration of the model	14h
	Scientific dialogical activity	14h
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DATES FOR EVALUATIVE ACTIVITIES

GROUPS 21 and 41

Final Exam	19/12/24
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Individual assessment activities*	Transnatura: 29/10/24 (G21) i 01/11/24 (G41)
	Reflective essay model: 24/10/24
	Reflective essay activity: 28/11/24
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Group assessment activities*	Elaboration of the model: 31/10/24
	Scientific dialogical activity: 05/12/24
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Make-up Exam	30/01/25 18h-21h (G21 and G41)
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GROUPS 31 and 71

Individual assessment activities*

Transnatura: 29/10/24 (G71) i 01/11/24 (G31)

Reflective essay model: 21/10/24

Reflective essay activity: 18/11/24 (G31) i 25/11/24 (G71)

Group assessment activities*

Elaboration of the model: 28/10/24

Scientific dialogical activity: 25/11/24 (G31) i 2/12/24 (G71)

Make-up Exam

27/01/25 18-21h (G31 and G71)

* These dates may vary if due to unplanned circumstances, the timeline must be modified.

All the assessment tasks carried out throughout the course must be submitted before the deadline established in the subject program by the professor.

SINGLE ASSESSMENT

The evaluation of the science didactics subject consists of 3 types of evaluation activities:

- Individual exam (50% of the final mark): final assessment test where the development of several questions related to both conceptual and didactic aspects worked on throughout the course is requested. You must have a minimum grade of 5 to be able to calculate the subject average.
- Evaluation of didactic reflection on the design, implementation and analysis of activities (25% of the final mark): Presentation and defence of the design and implementation of classroom activity and its analysis taking into account communicative approaches, difficulties expressed by the students and evolution of their ideas about the matter or chemical change model.
- Didactic reflection evaluation on the use of models (25% of the final grade). Presentation and analysis of the design of a model to answer a question about the living being model. Didactic reflection on the contribution and limitations of models as a didactic resource.

The three evaluation activities will take place on the same day, 19/12/24 (groups 21 and 41), 16/12/24 (groups 31 and 71).

If the exam is failed or if, despite having passed it, the average does not reach 5, a make-up exam must be taken. The make-up exam will collect the three aspects described in the previous assessment and will be done:

- G31 and G71: Monday 27/01/25 18-21h.
- G21 and G41: Thursday 30/01/25 18h-21h.

If the make-up exam is passed, the overall grade for the subject will be 5.

GENERAL ASPECTS OF THE EVALUATION

The return and grading of the assessment and examination activities will be carried out no later than 20 working days after their delivery.

Attendance at the trips is mandatory. There is no mandatory minimum attendance at the seminars.

In case of failing the final exam or average final grade, the final mark will be 4.5 (if the average grade is equal to or higher than this grade) or the average grade itself (if it is lower than 4.5).

To be able to participate in the make-up process, students must have previously been assessed in a set of activities whose weight is equivalent to a minimum of 2/3 of the subject's grade. If it is not achieved, the subject will be classified as Not Assessable.

To pass this subject, students must show good general communicative competence, both oral and written and should master the working languages included in the teaching guide. Therefore, in all (individual and group) tasks, linguistic accuracy, appropriate writing and presentation formal aspects will be taken into consideration.

Students should be able to express themselves fluently and accurately and show a high degree of understanding of academic texts. Any task can be handed back (without any assessment) or failed if the professor considers that it does not fulfil these requirements.

Take into consideration that, in the case of the Catalan language, in 1st and 2nd-grade students are required to have a linguistic competence equivalent to Level 1 for preschool and Primary Education Teachers; and from 3rd grade on students must have proved a linguistic competence equivalent to Level 2 for Pre-school and Primary Education Teachers (more information on these levels at

<https://www.uab.cat/web/estudiar/graus/graus/competencia-linguistica-1345737529755.html>

In accordance with UAB regulations, plagiarism or copying of any individual or group paper will be punished with a grade of 0 on that paper, losing any possibility of the remedial task. During the elaboration of a paper or the individual exam in class, if the professor considers that a student is trying to copy or s/he discovers any non-authorised document or device, the student will get a grade of 0, without any chance to take a make-up exam.

For further general details, the so-called General assessment criteria and guidelines of the School of Educational Sciences.

Bibliography

Relevant bibliography

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National Research Council (2012) *A Framework for K-12 Science Education: Practices, Crosscutting Concepts, and Core Ideas*. Es pot descarregar gratuïtament des de nap.edu/13165

*Skamp, K. (2014). *Teaching primary science constructively*. 5th Edition. Cengage Learning.

Basic Bibliography

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*Driver, R. I. alt (1989) *Ideas científicas de la infancia y la adolescencia*. Madrid. Morata.

Giordan, A. (1988). *Los orígenes del saber: de las concepciones personales a los conceptos científicos*. Sevilla: Díada Editores.

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*Izquierdo, M (coord) (2011). *Química a Infantil i Primària*. Ed Graó*

Jorba, J.; Sanmartí, N. (1994) *Enseñar, aprender y evaluar: un proceso de regulación continua*. Madrid: Centro de Investigación y Documentación Educativa

*Márquez, C, Prat, A (coord.) (2010). *Competencia científica i lectora a Secundària. L'ús de textos a les classes de ciències*. Barcelona: Dossiers Rosa Sensat, 70

Martí, J. (2012). *Aprender ciències a l'educació primària*. Barcelona: Graó

NGSS Lead States (2013). *Next Generation Science Standards: For states, by states*. Washington, DC: The National Academy Press.

*Pujol, R.M. (2001). Les ciències, més que mai, poden ser una eina per formar ciutadans i ciutadanes. *Perspectiva escolar*, 257, 2-8.

Ramiro, E. (2010). *La Maleta de la ciència: 60 experiments d'aire i aigua i centenars de recursos per a tothom*. Barcelona: Graó.

*Pujol, R.M. (2003). *Didáctica de las Ciencias en la educación primaria*. Madrid: Síntesis

*Sanmartí, N. (2007). *10 ideas clave. Evaluar para aprender*. Barcelona: Graó

*Skamp, K. (2012). *Teaching primary science constructively*. 4th Edition. Cengage Learning.

Oficial documents

Al web següent i trobareu el currículum vigent així com d'altres documents d'orientació curricular

<https://xtec.gencat.cat/ca/curriculum/primaria/>

Innovation and research journals (open acces or UAB acces)

Alambique. <http://alambique.grao.com>

Enseñanza de las ciencias. Revista de Investigación y Experiencias Didácticas. <https://ensciencias.uab.es/> (en obert)

Ciències: Revista del Professorat de Ciències d'Infantil, Primària i Secundària. <https://revistes.uab.cat/ciencies> (en obert)

Aula de Innovación Educativa

Perspectiva Escolar

Infancia y Aprendizaje

Webs of interest

CDEC (Centre de Documentació i Experimentació en Ciències) <https://serveiseducatiu.xtec.cat/cesire/>

Projecte Primary Science (1995). Nuffield Foundation.
<http://www.nationalstemcentre.org.uk/elibrary/collection/448/nuffield-primary-science>

Projecte Seeds of Science, Roots of Reading. University of California Berkeley
<http://www.scienceandliteracy.org/>

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

Guies Habitat per a l'educació ambiental

<https://www.sostenible.cat/article/guia-habitat-activitats-per-a-leducacio-ambiental>

Grup Kimeia, grupkimeia.blogspot.com.es

Other

Harlen, W. (2010). Principios y grandes ideas de la educación en Ciencias.

http://www.gpdmatematica.org.ar/publicaciones/Grandes_Ideas_de_la_Ciencia_Espanol.pdf*

Mapes conceptuais de continguts en progressió d'aprenentatge (del Science Continuum P10, Victoria, Australia)

<https://www.education.vic.gov.au/school/teachers/teachingresources/discipline/science/continuum/pages/concep>

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<https://www.fundacionlilly.com/es/actividades/citas-con-la-ciencia/index.aspx>*

* Written by women

Software

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Language list

Name	Group	Language	Semester	Turn
(PLAB) Practical laboratories	211	Catalan	first semester	morning-mixed
(PLAB) Practical laboratories	212	Catalan	first semester	morning-mixed
(PLAB) Practical laboratories	311	Catalan	first semester	morning-mixed
(PLAB) Practical laboratories	312	Catalan	first semester	morning-mixed
(PLAB) Practical laboratories	411	Catalan	first semester	afternoon
(PLAB) Practical laboratories	412	Catalan	first semester	afternoon
(PLAB) Practical laboratories	711	English	first semester	afternoon
(PLAB) Practical laboratories	712	English	first semester	afternoon
(TE) Theory	21	Catalan	first semester	morning-mixed
(TE) Theory	31	Catalan	first semester	morning-mixed

(TE) Theory	41	Catalan	first semester	afternoon
(TE) Theory	71	English	first semester	afternoon

PROVISIONAL