

Degree	Type	Year
Teacher Training for Secondary Schools, Vocational Training and Language Centres (Spec. Mathematics)	OB	1

## Contact

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## Teaching groups languages

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

## Prerequisites

Nor considered.

## Objectives and Contextualisation

Reflection on the teaching and learning processes is a key element to be able to introduce innovations that improve them in future implementations. It is therefore necessary to have tools for planning, management and improvement of the instructional processes, in particular it is important to know the role of different resources (manipulative, audiovisual, technological, etc.) and evaluation techniques in the improvement of the processes of teaching and learning.

The subject has the following objectives:

- 1) Know and critically analyze teaching manipulative resources and materials, in order to develop the contents of the curriculum through suitable teaching resources that allow to attend to the diversity of the students and to overcome the difficulties of mathematical learning.
- 2) Know and critically analyze TAC resources to improve teaching methodologies and, consequently, learning processes.
- 3) Know assessment techniques (formative, diagnostic,...) in order to plan, apply and analyze assessment strategies and instruments adapted to the characteristics of the mathematical skills to be developed.
- 4) Know criteria for analyzing and assessing the quality of teaching and learning processes in order to formulate didactic questions and problems and make justified improvement proposals in the knowledge developed by research in Mathematical Education.

## Learning Outcomes

1. CA12 (Competence) To create mathematics learning situations that are suitable for all students, through the justified use of a range of strategies and methodologies that promote the competency-based and inclusive learning of mathematics.
2. CA13 (Competence) To implement activities in the mathematics classroom in the manner in which they were designed and planned, assimilating any unexpected situations to achieve the expected learning outcomes.
3. CA14 (Competence) To provide inclusive education, taking into account the various measures and aids for promoting the personalised learning of mathematics.
4. KA07 (Knowledge) To identify situations with potential for improvement through the on-site or video-recorded self-observation or co-observation of classroom situations, in both real and simulated classrooms.
5. SA08 (Skill) To analyse strategies that promote the students' capacity to learn by themselves and with others and develop critical thinking and decision making skills that facilitate autonomy, self-confidence and initiative.
6. SA09 (Skill) To develop pedagogical strategies for dealing with unexpected classroom situations and critical incidents that occur while teaching.
7. SA10 (Skill) To integrate the various types of assessment into lesson plans for the mathematics classroom, particularly diagnostic assessment, formative assessment and self-assessment, as a tool for checking, regulating and enhancing the learning process.
8. SA11 (Skill) To analyse real evidence and data taken from the mathematics classroom as part of the process of conducting educational research in the field of mathematics education, with a view to improving professional teaching skills.

## Content

The subject is made up of the following blocks of content:

Block 1. Manipulative resources and learning.

- The role of materials for teaching mathematics. Selection and preparation criteria. Methodological aspects associated with the use of materials.
- The mathematics laboratory.- Specific resources for the areas of the curriculum.

Block 2. TACs and mathematical learning.

- Tools associated with information and communication technologies (ICT) that are particularly useful for teaching Mathematics. GeoGebra, Wiris, etc.

- Programming: Scratch. The resources provided by the network itself.
- Platforms for cooperative work.

Block 3. Competence assessment and regulation of learning.

- Competency formative assessment in mathematics. Curriculum, KOM Program, etc. Evaluation of communication, reasoning and testing, problem solving and modeling.
- Planning and analysis of internal and institutional proposals: PISA, Basic Competences, etc.
- Organization of diagnostic and synthesis tests. Bacalaureate and PPAU tests.
- Evaluation of transversal skills. Citizenship and mathematics, learning to learn, etc.
- Regulation of the different types of mathematical activity. Exercises, problems, projects, etc.
- Elements for management analysis. Evaluation of interactions. conversation communication

Block 4. Tools to analyze the quality of didactic proposals.

- Typology of tasks. Planning and organization of sequences.
- Indicators of mathematical and didactic quality of learning sequences
- Analysis of connections. Intramathematics and extramathematics,
- Analysis and assessment of the quality of classroom episodes and task sequences.
- The formulation and investigation of problems in the teaching and learning of mathematics. The dissemination of research results

## Activities and Methodology

Title	Hours	ECTS	Learning Outcomes
Type: Directed			
Presentations	33	1.32	
Solving professional problems	33	1.32	
Type: Supervised			
Development of professional practices	20	0.8	
Type: Autonomous			
Personal Study	64	2.56	

In accordance with the training activities, the classes will be based on the presentation of professional problems and exemplification based on case studies. Likewise, practicals will be carried out in the classes, both individually and in small groups, focused on learning activities.

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

### Continous Assessment Activities

Title	Weighting	Hours	ECTS	Learning Outcomes
Exposition	30%	0	0	CA12, CA13, CA14, KA07, SA08, SA09, SA10, SA11
Individual work	40%	0	0	CA12, CA13, CA14, KA07, SA08, SA09, SA10, SA11
Practice assessment	30%	0	0	CA12, CA13, CA14, KA07, SA08, SA09, SA10, SA11

Requirements to be entitled to the final assessment: Attendance at a minimum of 80% of the class sessions. The delivery of all practices and evaluation exercises within the indicated deadlines, and their positive evaluation (minimum grade: 5)

Specific validations can be made to ensure authorship and competence acquisition in case of suspected academic fraud.

#### UNIQUE ASSESSMENT

Students who take the single assessment must follow the development of the subject, attending class regularly and with the same conditions of attendance as continuous assessment students.

They will present all assessment activities individually on a single date at the end of the session period and will need to pass a validation test for each of the activities.

## Bibliography

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Alsina, C., Burgués, C., Fortuny, J.M. (1991). *Materiales para construir la geometria. Col·lecció Matemàtiques: cultura y aprendizaje, número 11. Síntesis*.

Badillo, E.; García, L.; Marbà, A. y Briceño, M. (2012). *El desarrollo de competencias en las clases de ciencias y matemáticas*. Universidad de los Andes.

CREAMAT Centre de Recursos per Ensenyar i Aprendre Matemàtiques (Departament d'Educació): <http://phobos.xtec.cat/creamat/joomla/>.

Font, V. (2005). Reflexión en la clase de Didáctica de las Matemáticas sobre una "situación rica", en Badillo, E. Couso, D., Perafrán, G., Adúriz-Bravo, A. (eds) *Unidades didácticas en Ciencias y Matemáticas* (pp. 59-91). Magisterio: Bogotá.

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Goñi, J. M. (Ed.), *Didáctica de las matemáticas. Formación del profesorado de secundaria en matemáticas*. Barcelona: Editorial Graó/Ministerio de Educación

Hernán, F., Carrillo, E. Recursos en el aula de Matemáticas. Colección Matemáticas: cultura y aprendizaje, número 34. Ed. Síntesis, Madrid, 1991.

Vanegas, Y. y Giménez, J. (2011) Aprender a evaluar como regulación y análisis de la actividad matemática. UNO. Revista de Didáctica de las Matemáticas, 57, 84 - 92.

## Software

No specific software is required.

## Groups and Languages

Please note that this information is provisional until 30 November 2025. You can check it through this [link](#). To consult the language you will need to enter the CODE of the subject.

Name	Group	Language	Semester	Turn
(TEmRD) Teoria (màster RD)	1	Catalan	annual	morning-mixed
(TEmRD) Teoria (màster RD)	2	Catalan	annual	afternoon
(TEmRD) Teoria (màster RD)	3	Catalan	annual	afternoon
(TEmRD) Teoria (màster RD)	4	Catalan	annual	afternoon