



## Information about the subject

**Degree:** Official Master's Degree in Teacher Training for Secondary Education, Bachelor, Vocational Training and Language Teaching

**Faculty:** Faculty of Teaching and Educational Sciences

**Code:** 1020034      **Name:** Educational research and innovation in Mathematics Didactics

**Credits:** 6 ECTS      **Year:** 1      **Semester:** 2

**Module:** Specific module Mathematics

**Subject Matter:** Complements for the disciplinary training      **Type:** Basic formation

**Department:** Mathematics, Natural Sciences and Social Sciences applied to Education

**Type of learning:** Classroom-based learning

**Language in which it is taught:** spanish

### Lecturers

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### Module organization

#### BASIC THEORETICAL TRAINING

Subject Matter	ECTS	Subject	ECTS	Year/semester
Complements for the disciplinary training	6	Mathematics in the Secondary Education	6	1/1
Learning and teaching of the related subjects	12	Mathematics Didactics	6	1/1
		Resources for the teaching of Mathematics	6	1/2
Teaching innovation and introduction to educational research	6	Innovation and Research in Mathematics Didactics	6	1/2



### Recommended Knowledge

Not required

### Learning outcomes

At the end of the course, the student must be able to prove that he/she has acquired the following learning outcomes:

Code	Learning outcomes
R1	The student defines and applies the concept of quality to critically analyze teaching practices.
R2	The student identifies the most frequent situations related to the teaching and learning process.
R3	The student transforms a simple educational proposal into a sequence of activities by selecting the most appropriate educational material.
R4	The student explains the concept of innovation and evaluation in relation to the classroom.
R5	The student designs a short research project and evaluate the result.
R6	The student obtains relevant information on topics related to specific didactics.
R7	The student relates theory and practice to build teaching knowledge.
R8	The student communicates a brief teaching or research proposal in a formal situation.



## Competences

Depending on the learning outcomes, the competencies to which the subject contributes are (please score from 1 to 4, being 4 the highest score):

Code	General	Weighting			
		1	2	3	4
G1	Ability to apply knowledge and ability to solve problems in new or unfamiliar environments within broader (or multidisciplinary) contexts related to their field of study.			X	
G2	Being able to integrate knowledge and handle complexity, and formulate judgments based on information that was incomplete or limited, include reflecting on social and ethical responsibilities linked to the application of their knowledge and judgments.				X
G3	Ability to communicate their findings (and the knowledge and rationale underpinning these,) to specialists and non-specialists in a clear and unambiguous.				X
G4	Possessing learning skills to enable them to continue studying in a way that will be largely self-directed or autonomous.				X
G5	Know the curriculum of the matters relating to the corresponding teaching specialization, and the body of didactic knowledge around teaching and learning processes concerned. For vocational training will include knowledge of the respective professions.		X		
G6	Plan, develop and evaluate the teaching and learning process enhancing educational processes that facilitate the acquisition of the competences of the respective teachings, based on the level and previous training of the students and guiding them, both individually and in collaboration with other teachers and school professionals.			X	
G7	Search for, obtain, process and communicate information (oral, print, visual, digital or multimedia), transform it into knowledge and apply it in the teaching and learning materials Studied own specialization.			X	
G8	Fleshing out the curriculum that will be implemented in a school participating in collective planning of the same, develop and implement teaching methodologies both groups and individually adapted to the diversity of students.	X			
G9	Design and develop learning with a focus on equity, emotional and values education, equal rights and opportunities for men and women, civic education and respect for human rights that make life easier in society, decision making and building a sustainable future.	X			



## Educational research and innovation in Mathematics Didactics

G10	Acquire strategies to encourage student effort and promote their ability to learn for yourself and others, and develop thinking skills and decision-making to facilitate autonomy, confidence and personal initiative.			X	
G11	Know the processes of interaction and communication in the classroom, mastering skills and social skills necessary to promote learning and living together in the classroom and addressing problems of discipline and conflict resolution.			X	
G12	Design and conduct formal and informal activities that help make the school a place of participation and culture in the environment where it is located, perform the functions of mentoring and guiding students in a collaborative and coordinated participation in evaluation, research and innovation in teaching and learning processes.	X			
G13	Knowing the rules and institutional organization of the education system and models of quality improvement with application to the schools.	X			
G14	Understand and analyze the historical characteristics of the teaching profession, current situation, perspectives and interaction with the social reality of the time.	X			
G15	Inform and advise families about the process of teaching and learning and on the personal, academic and professional of their children.	X			

Code	Specific	Weighting			
		1	2	3	4
E1	Knowing the cultural and educational value of the relevant areas of specialization and contents that are taught in the respective teachings.	X			
E2	Knowing the history and recent developments and prospects materials to convey a dynamic view of the same.		X		
E3	Knowing contexts and situations in which use or apply the various curricula.	X			
E4	Knowing the theoretical and practical aspects of teaching and learning relevant material.		X		
E5	Transform the educational program to activities programs and work activities.			X	
E6	Acquire selection criteria and preparing educational materials.			X	
E7	Foster a climate that facilitates learning and put in value the contributions of students.		X		
E8	Integrating training of media studies in the teaching-learning process.				X
E9	Learn strategies and techniques for assessing and understanding the assessment as a tool to regulate and stimulate the effort.			X	



## Educational research and innovation in Mathematics Didactics

E10	Know and apply innovative teaching proposals in the field of specialization Studied.				X
E11	Analyze critically the process of teaching, of good practice and orientation using quality indicators.				X
E12	Identify issues related to teaching and learning matters and to propose alternatives and solutions.				X
E13	Understand and apply methods and techniques of research and evaluation and to be able to design and develop research, innovation and evaluation.				X



### Assessment system for the acquisition of competencies and grading system

Assessed learning outcomes	Granted percentage	Assessment method
R1, R2, R3, R4, R5, R6, R7, R8	10%	Exhibition of individual and group works
R1, R2, R3, R4, R5, R6, R7, R8	40%	Performing and realization individual and group works
R1, R2, R3, R4, R5, R6, R7, R8	20%	Assistance and participation in face-to-face and virtual activities
R1, R2, R3, R4, R5, R6, R7, R8	30%	Written test

**Mention of Distinction:** In accordance with the regulations governing the assessment and grading of subjects in force at UCV, the distinction of "Matrícula de Honor" (Honours with Distinction) may be awarded to students who have achieved a grade of 9.0 or higher. The number of "Matrículas de Honor" (Honours with Distinction) may not exceed five percent of the students enrolled in the group for the corresponding academic year, unless the number of enrolled students is fewer than 20, in which case a single "Matrícula de Honor" (Honours with 9 Distinction) may be awarded.

Exceptionally, these distinctions may be assigned globally across different groups of the same subject.

Nevertheless, the total number of distinctions awarded will be the same as if they were assigned by group, but they may be distributed among all students based on a common criterion, regardless of the group to which they belong.

**Single evaluation:** Exceptionally, those students who, in a justified and accredited manner, cannot undergo the continuous evaluation system and request it within the first month of each semester from their teacher, may opt for this evaluation system.

In this case, it will be evaluated through the individualized completion of the indicated tasks through the subject Platform and the final written test.



## Learning activities

The following methodologies will be used so that the students can achieve the learning outcomes of the subject:

M1	Teacher presentation of contents, analysis of competences, explanation and in-class display of skills, abilities and knowledge.
M2	Group work sessions supervised by the professor. Case studies, diagnostic tests, problems, field work, computer room, visits, data search, libraries, on-line, Internet, etc. Meaningful construction of knowledge through interaction and student activity.
M3	Application of multidisciplinary knowledge
M4	Personalized and small group attention. Period of instruction and/or orientation carried out by a tutor to review and discuss materials and topics presented in classes, seminars, readings, papers, etc.
M5	Set of oral and/or written tests used in initial, formative or additive assessment of the student.
M6	Group preparation of readings, essays, problem solving, seminars, papers, reports, etc. to be presented or submitted in theoretical lectures, practical and/or small-group tutoring sessions. Work done on the university e-learning platform ( <a href="http://www.plataforma.ucv.es">www.plataforma.ucv.es</a> )
M7	Student study: Group Individual preparation of readings, essays, problem solving, seminars, papers, reports, etc. to be presented or submitted in theoretical lectures, practical and/or small-group tutoring sessions. Work done on the university e-learning platform ( <a href="http://www.plataforma.ucv.es">www.plataforma.ucv.es</a> )

IN-CLASS LEARNING ACTIVITIES		
Activity	Learning Outcomes	ECTS
ON-CAMPUS CLASS	R1, R2, R3, R4, R5	0,82
PRACTICAL CLASSES	R1, R2, R3, R4, R5, R6, R7, R8	0,83
GROUP PRESENTATION OF PAPERS	R1, R2, R3, R5, R6, R7, R8	0,48
ASSESSMENT	R1, R3, R4, R5, R6, R7, R8	0,12
<b>Total</b>		<b>2,4</b>





LEARNING ACTIVITIES OF AUTONOMOUS WORK			
Activity	Learning Outcomes	ECTS	
GROUP WORK	R3, R4, R5, R6, R7, R8	1,44	
INDEPENDENT WORK	R3, R4, R5, R6, R7, R8	2,16	
		<b>Total</b>	3,6

## Description of the contents

Description of the necessary contents to acquire the learning outcomes:

CONTENT BLOCK	Contents
<b>Action-research processes: quality and improvement processes as the engine of classroom work.</b>	Research as a process of educational improvement. Classroom situations in teaching different subjects. Collaborative work: the educational team. Quality in education.
<b>Research methodologies and techniques in education.</b>	Main lines of research and evaluation in specific didactics. Methodological approaches: formulating objectives and hypotheses, selecting strategies, obtaining and interpreting data, and drawing conclusions. Information and knowledge: the transmission of knowledge.
<b>Real or simulated experiential activities.</b>	Self-training for teachers. Didactic programming and educational materials.
<b>Innovative teaching proposals in the field of specific didactics.</b>	Innovation in specific didactics. Innovation as motivation: strategies and self-learning. The classroom as a creative space.
<b>Teaching behavior through an observation laboratory.</b>	Critical analysis of behaviors in the classroom. Training in audiovisual and multimedia communication. Effectiveness and efficiency in specific didactics. The construction of knowledge of the teaching profession.



## Temporary organization of learning

BLOCK OF CONTENT/DICACTIC UNIT	Number of sessions	Hours
<b>Action-research processes: quality and improvement processes as the engine of classroom work.</b>	2	5
<b>Research methodologies and techniques in education.</b>	4	10
<b>Real or simulated experiential activities.</b>	3	7,5
<b>Innovative teaching proposals in the field of specific didactics.</b>	3	7,5
<b>Teaching behavior through an observation laboratory.</b>	3	7,5

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