



Information about the subject

Degree: Master's Degree in Secondary Teacher Training, Baccalaureate, Vocational Training and Language Teaching

Faculty: Faculty of Teaching and Educational Sciences

Code: **Name:** Mathematics Didactics

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

Module: Specific of Mathematics Education

Subject Matter: Complements for 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 disciplinary training	6	The Mathematics curriculum	6	1/1
Learning and teaching of the corresponding subjects	12	Mathematics Didactics	6	1/1
		Didactic Resources for Teaching in Mathematics	6	1/2
Innovation in teaching and introduction to educational research	6	Innovation and Research in Didactics of Mathematics	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 distinguishes and explains the characteristics of the main theories of teaching and learning of mathematics.
R2	The student points out the characteristics of each learning style and designs appropriate activities for each one.
R3	The student identifies different methodologies suitable for learning mathematics.
R4	The student designs and describes in detail classroom activities and sessions using different methodologies appropriate for learning mathematics and coherently justifies the convenience of using these methodologies.
R5	The student argues the relevance of working on mathematical content based on its historical development and its applications.
R6	The student distinguishes the different types of evaluation and develops evaluation and qualification instruments appropriate to the different basic knowledge and competencies.
R7	The student makes decisions based on hypothetical formative assessment results.
R8	The student collaboratively develops a learning situation for the Mathematics subject, applying the content worked on in the subject.

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
CG1	Know how to apply the knowledge acquired and your problem-solving ability in new or little-known environments within broader (or multidisciplinary) contexts related to your area of study.			X	
CG5	To Know the curriculum related to the specialization and the didactics of teaching and learning. A knowledge of the different professions will be included for vocational training.				X
CG6	To plan, develop and evaluate the teaching and learning process enhancing educational activities to facilitate the acquisition of the different competences, taking into account the level and previous training of students to guide them, both individually and in collaboration, with other teachers and school professionals.				X
CG7	To look for, obtain, process and communicate information (oral, printed, audiovisual, digital, or multimedia), transforming it into knowledge that will be applied in the teaching and learning process.			X	
CG8	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	
CG10	To acquire strategies to encourage student effort and enhance their capacity to learn by themselves and with others, and develop thinking skills and decision-making abilities to facilitate autonomy, confidence and personal initiative			X	

Code	Specific	Weighting			
		1	2	3	4
CE14	Know the history and recent developments of the subjects and their perspectives in order to transmit a dynamic vision of them				X
CE15	To know contexts and situations in which the various course content is used or applied.				X
CE16	To know the theoretical and practical processes in teaching and learning different classroom subjects				X
CE17	To transform the educational plan in work activities.				X



CE21	To learn strategies and evaluation techniques and to understand the evaluation as a tool to regulate and encourage the effort..				X
CE23	To analyze critically the process of teaching, the practicum and the direction using quality indicators			X	
CE24	To identify the problems of teaching and learning and to propose alternatives and solutions.				X
CE26	To gain experience in planning, teaching and evaluating Mathematics.			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	40%	Process evaluation: presentation of group work.
R1, R5	10%	Oral presentation of individual and group works.
R1, R2, R3, R4, R5, R6, R7	20%	Individual monitoring of attendance at face-to-face sessions and active participation in theoretical-practical classes.
R1, R2, R3, R4, R5, R6, R7	30%	Summative and final theoretical-practical test with open and closed questions.

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.

Observations: To pass the subject it is essential to attend classes in person. To obtain 100% of the grade for Individual Monitoring of attendance at face-to-face sessions and active participation in theoretical-practical classes, it is necessary to attend all sessions punctually.

Single evaluation: Exceptionally, those students who, for unforeseen, justified and accredited reasons, cannot undergo the continuous evaluation system and request it from the Coordination of the specialty, within the first month of teaching, may opt for this evaluation system. In this case, the percentage corresponding to the individual monitoring of attendance at face-to-face sessions and active participation in theoretical-practical classes will be distributed equally between the oral presentation, which will thus represent 20% of the final grade, and the test. final summative, which will have a weight of 40% in the final grade of the subject.



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 interdisciplinary knowledge
M4	Personalized and small group attention. Period of instruction and/or orientation carried out by a tutor for the purpose of reviewing and discussing the materials and topics presented in lectures, semiseminars, readings, writing papers, etc.
M5	Group of oral and/or written tests used during initial, formative or additive assessment.
M6	Groupal preparation of readings, problem solving, seminars, papers, reports, ect. to be presented or submitted in theoretical lectures, practical and/or small-group tutoring. Work done on the university e-learning platform (www.plataforma.ucv.es)
M7	Student study: 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 (www.plataforma.ucv.es)



IN-CLASS LEARNING ACTIVITIES		
Activity	Learning Outcomes	ECTS
TEORICAL CLASS	R1,R2,R3,R4,R5,R6,R7	0,52
PRACTICAL CLASS	R1,R2,R3,R4,R5,R6,R7,R8	0,52
SEMINAR	R1,R2,R3,R4,R5,R6,R7,R8	0,04
TUTORING	R1,R2,R3,R4,R5,R6,R7,R8	0,04
INDEPENDENT WORK	R1,R2,R3,R4,R5,R6,R7	0,6
GROUP WORK	R1,R2,R3,R4,R5,R6,R7,R8	0,6
GROUP WORK EXHIBITION	R1, R5	0,04
ASSESSMENT	R1,R2,R3,R4,R5,R6,R7	0,04
Total		2,4



LEARNING ACTIVITIES OF AUTONOMOUS WORK		
Activity	Learning Outcomes	ECTS
GROUP WORK	R1, R2, R3, R4, R5, R6, R, R8	1,44
INDEPENDENT WORK	R1, R2, R3, R4, R5, R6, R7.	2,16
Total		3,6

Description of the contents

Description of the necessary contents to acquire the learning outcomes:

CONTENT BLOCK	Contents
Unit I: Teaching-learning of Mathematics	<ol style="list-style-type: none">1. Main didactic theories of Mathematics.2. Outstanding authors in Mathematics Didactics.3. Principles of NCTM.4. Learning styles and Mathematics.5. The history of Mathematics in Didactics.6. Main difficulties in the teaching-learning of mathematics.1
Unit II: Mathematics teaching methodologies	<ol style="list-style-type: none">1. Expository method.2. Discovery learning.3. Laboratory.4. Games.5. Simulations.6. Service learning.7. Thinking routines.8. Mind maps.
Unit III: Evaluation: bases, tools and application	<ol style="list-style-type: none">1. Initial, formative and summative evaluation.2. Evaluation of concepts, procedures and attitudes.



Temporary organization of learning

BLOCK OF CONTENT/DICACTIC UNIT	Number of sessions	Hours
Unit I: Teaching-learning of Mathematics	10	25
Unit II: Mathematics teaching methodologies	3	7,5
Unit III: Evaluation: bases, tools and application	3	7,5

References

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