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COURSE GUIDE

Master Oficial de Formación de Profesorado de Secundaria,
Bachillerato, Formación Profesional y Enseñanzas de Idiomas

Didactics of Mathematics

Specific Module: Mathematics

Universidad Católica de Valencia



Academic Year 2023/24



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DIDACTICS OF MATHEMATICS

	ECTS
FIELD: MPS	6
Subject: Didactics of Mathematics	6
Module: Specific Module: Didactics of Mathematics	24
Educational Model¹: Compulsory	Academic Year: 2023/24 Semester: 1 st
Teacher: Elena Moreno Gálvez Ana Isabel Cárcelés Medina	Departament: Mathematics E-mail: elena.moreno@ucv.es anaisabel.carceles@ucv.es

MODULE ORGANIZATION

Specific Module: Didactics of Mathematics	Nº ECTS 24			
Duration and temporal location within the curriculum: 1 st semester				
Materias y Asignaturas				
Subject	ECTS	Courses	ECTS	Year/ semester
Subject 1	12	Mathematics in the Secondary Education	6	1/1
		Didactics of Mathematics	6	1/1
Subject 2	12	Innovation and Research in Didactis of Mathematics	6	1/2

¹ Formación básica (materia común), Obligatorias, Optativas, Prácticas externas, Trabajo Fin de Grado.



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		Resources for the teaching of Mathematics	6	1/2
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TEACHING GUIDE FOR FIELD/SUBJECT: Didactics of Mathematics				
Prerequisites: There are not prerequisites				
GENERAL GOALS				
<ul style="list-style-type: none"> a. To know the theoretical-practical developments of the education and the learning of the corresponding matters. b. To transform the curriculum into program of activities and of work, by using different methodologies and taking into account the teaching and learning difficulties in Mathematics. c. To know strategies and technologies of evaluation and to understand the evaluation as an instrument of regulation and stimulus to the effort. 				
GENERAL COMPETENCES				Competence measuring scale
Instrumental				1 2 3 4
G 6 To plan, develop and evaluate the process of teaching and learning promoting educational processes that facilitate the acquisition of the own competitions of the respective educations, attending to the level and previous formation of the students as well as the orientation of the same ones, so much individually like in collaboration with other teachers and professionals of the center.				X
G 8 To make concrete the curriculum that is going to be implanted in a teaching institution taking part in the collective planning of the same one; so many grupales develops and to apply didactic methodologies as personalized, adapted to the diversity of the students.				X
G 10. To acquire strategies to stimulate the effort of the student and to promote his aptitude to learn for yes same and with others, and to develop skills of thought and of decision that facilitate the autonomy, the confidence and initiative personnels.				X
G 11. To know the processes of interaction and communication in the classroom, to dominate skills and social necessary skills to foment the learning and the living together in the classroom, and to approach problems of discipline and resolution of conflicts□				X
Interpersonal				1 2 3 4



G 9. To design and to develop spaces of learning with special attention to the equity, the emotional education and in values, the equality of rights and opportunities between men and women, the civil formation and the respect of the human rights that facilitate the life in society, the capture of decisions and the construction of a sustainable future			X	
Systemic	1	2	3	4
G13 Know the regulation and institutional organization of the educational system and models of improvement of the quality with application to the centers of education				X

SPECIFIC COMPETENCES				
Conceptual	1	2	3	4
E1. To know the formative and cultural value of the matters corresponding to the specialization and the contents that are dealied in the respective educations.				X
E4. Know the theoretical - practical developments of the education and the learning of the corresponding matters			X	
E9. To know strategies and technologies of evaluation and to understand the evaluation as an instrument of regulation and stimulus to the effort			X	
Habilities	1	2	3	4
E5. To transform the curricula into programs of activities and of work.				X
E6. To acquire criteria of selection and production of educational materials.			X	
E7. To foment a climate that facilitates the learning and puts in value the contributions of the students.		X		
Profesional	1	2	3	4
E12. To identify the problems relative to the education and learning of the subjects of the specialization and to raise alternatives and solutions.		X		
E13. To know and apply methodologies and basic techniques on educational research and assesment and be able to design and develop research, innovation and assesment projects.			X	



LEARNING OUTCOMES	COMPETENCES
R-1 The student knows the main theories on teaching and learning of Mathematics.	G1, G2, G3, G4, G6, G9
R-2 The student knows the main methodologies in the teaching of Mathematics.	G1, G2, G3, G4, G5, G6, G8, G9 E1, E2, E3, E4, E7, E8
R-3 The student knows the difficulties in the teaching and learning of Mathematics.	G1, G2, G3, G4, G6, G8 E1, E2, E3, E4, E5, E6, E7, E8, E9
R-4 The student designs assessment tools for Mathematics teaching.	G1, G2, G3, G4, G5, G7, G8, G9 E1, E2, E3, E4, E7, E8

ON-CAMPUS EDUCATIONAL ACTIVITIES

ACTIVITY	Teaching-Learning Methodology	Relationship With Learning Outcomes for the subject	ECTS
ON-CAMPUS CLASS	Teacher presentation of contents, analysis of competences, explanation and in-class display of skills, abilities and knowledge..	R-3, R-4	30% 0,72
PRACTICAL CLASSES	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.	R-3, R-4	20% 0,48
SEMINAR AND OFFICE ASSISTANCE	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.	R-1, R-2, R-3, R-4	15% 0,36



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ASSESSMENT	Set of oral and/or written tests used in initial, formative or additive assessment of the student.	R-1, R-2, R-3, R-4	5% 0,12
Total	2,4*		

INDEPENDENT WORK ACTIVITIES			
ACTIVITY	Teaching-Learning Methodology	Relationship With Learning Outcomes for the subject	ECTS
GROUP WORK	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 (www.plataforma.ucv.es)	R-2, R-3, R-4	40% 1,44
INDEPENDENT WORK	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 (www.plataforma.ucv.es)	R-1, R-2, R-4	60% 2,16
		Total	3,6*
SYSTEM FOR ASSESSING THE ACQUISITION OF THE COMPETENCES AND ASSESSMENT SYSTEM			
Assessment Tool	LEARNING OUTCOMES ASSESSED		Allocated Percentage



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Independent and group written activities	R-1, R-2, R-3, R-4	40%		
Oral presentations	R-1, R-2, R-3, R-4	10%		
Attendance and class Participation	R-1, R-2, R-3, R-4	20%		
Written tests	R-1, R-2, R-3, R-4	30%		
DESCRIPTION OF CONTENTS		COMPETENCES		
Teaching and learning of Mathematics	E1, E2, E4			
Main didactic theories in Mathematics	E4			
Teaching methodologies in Mathematics	E10			
Teaching and learning difficulties in Mathematics	E4, E6			
Assesment: basis, tools and applications	E9, E11, E13			
REFERENCES				
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Addendum to the Course Guide of the Subject Didactics of Mathematics

Due to the exceptional situation caused by the health crisis of the COVID-19 and taking into account the security measures related to the development of the educational activity in the Higher Education Institution teaching area, the following changes have been made in the guide of the subject to ensure that Students achieve their learning outcomes of the Subject:

Situation 1: Teaching without limited capacity (when the number of enrolled students is lower than the allowed capacity in classroom, according to the security measures taken).

In this case, no changes are made in the guide of the subject.

Situation 2: Teaching with limited capacity (when the number of enrolled students is higher than the allowed capacity in classroom, according to the security measures taken).

In this case, the following changes are made:

1. Educational Activities of Onsite Work:



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All the foreseen activities to be developed in the classroom as indicated in this field of the guide of the subject will be made through a simultaneous teaching method combining onsite teaching in the classroom and synchronous online teaching.

Students will be able to attend classes onsite or to attend them online through the telematic tools provided by the university (videoconferences). In any case, students who attend classes onsite and who attend them by videoconference will rotate periodically.

In the particular case of this subject, these videoconferences will be made through:

- | | |
|---|---|
| <input checked="" type="checkbox"/> X Microsoft Teams | <input type="checkbox"/> Blackboard Collaborate Ultra |
| <input type="checkbox"/> Kaltura | |

Situation 3: Confinement due to a new State of Alarm.

In this case, the following changes are made:

1. Educational Activities of Onsite Work:

All the foreseen onsite activities described in this section of the Course Guide, as well as the group and personalized tutoring, will be done with the telematic tools provided by the University, through:



Microsoft Teams



Blackboard Collaborate Ultra



Kaltura



UCVNet

Explanation about the practical sessions:

2. System for Assessing the Acquisition of the competences and Assessment System

ONSITE WORK

Regarding the Assessment Tools:

- The Assessment Tools will not be modified. If onsite assessment is not possible, it will be done online through the UCVnet Campus.
- The following changes will be made to adapt the subject's assessment to the online teaching.

Course guide		Adaptation	
Assessment tool	Allocated Percentage	Description of the suggested changes	Platform to be used



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The other Assessment Tools will not be modified with regards to what is indicated in the Course Guide.

Comments to the Assessment System:

ONLINE WORK

Regarding the Assessment Tools:

- The Assessment Tools will not be modified. If onsite assessment is not possible, it will be done online through the UCVnet Campus.
- The following changes will be made to adapt the subject's assessment to the online teaching.

Course guide		Adaptation	
Assessment tool	Allocated Percentage	Description of the suggested changes	Platform to be used

The other Assessment Tools will not be modified with regards to what is indicated in the Course Guide.



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