



COURSE GUIDE

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

The Mathematics curriculum

Module Specific of Mathematics Education

Universidad Católica de Valencia

Curso 2023/24



TEACHING GUIDE TO THE SUBJECT

		ECTS
SUBJECT: The Mathematics curriculum		6
Field: Complements for disciplinary training		6
Module: Specific of Mathematics Education		24
Type of learning: Obligatory	YEAR: 1º Semester: 1º	
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MODULE ORGANIZATION

Module Specific of Mathematics Education				Nº ECTS 24
Duration and temporal location within the curriculum: This module aims to provide teaching competencies related to the teaching-learning process of Mathematics. It consists of four subjects, two of which take place in the first semester and the other two in the second. This course, in the specific module aims to introduce future teachers mathematics curriculum within the law				
Subjects and Courses				
Field	ECTS	SUBJECT	ECTS	Course/ semester
Complements for disciplinary training	6	The Mathematics curriculum	6	1/1
Learning and teaching of the corresponding subjects	12	Didactics of Mathematics	6	1/1
		Didactic Resources for Teaching in Mathematics	6	1/2
Innovation in teaching and	6	Innovation and Research in Didactics of	6	1/2



introduction to educational research		Mathematics				
COURSE GUIDE TO THE SUBJECT: The Mathematics curriculum						
Prerequisites: No prerequisites, except from access to the specialty and knowledge of the languages of the Spanish educational system.						
GENERAL GOALS						
<div>a. Know the objectives, competences, contents and evaluation criteria that constitute the minimum teachings established in the Organic Law of Education</div> <div>b. Know the objectives, content and evaluation criteria, as well as the didactic guidelines proposed by the Consellería of Education for the subject of Mathematics in each of the Compulsory Secondary Education and Baccalaureate courses in the Valencian Community</div> <div>c. Assess the contribution of mathematics to the acquisition of key competences</div> <div>d. Be able to plan and develop the teaching-learning process of Mathematics in the different courses of Secondary Education and Bachelor of according to the official curriculum</div>						
GENERAL COMPETENCES			Competence measuring scale			
			1	2	3	4
G 1 Capability to integrate knowledge and determine complex judgment calls based on information which incorporates, but is not limited to reflections on social and ethical responsibilities associated with pertinent knowledge and judgments;					X	
G 2 Knowledge of effectively communicating summations (and sustaining relative rational or arguments) to specialized and unspecialized audiences, in a clear and unambiguous manner.					X	
G 3 Having learned skills that enable them to continue studying in a self-directed or autonomous manner within the majority of circumstances						X
G 4 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


Modelo de Guía Docente


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G 5 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	
G 6 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	
G 7 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	
G 8 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
G 9 Knowing the rules and institutional organization of the education system and models of quality improvement with application to the schools				X
SPECIFIC COMPETENCES				
E1.To know the cultural and educational value of the specific subjects and the content that is taught				X



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E2. To know contexts and situations in which the various course content is used or applied.			X	
E3. To know the theoretical and practical processes in teaching and learning different classroom subjects.			X	
E4. To transform the educational plan in work activities.				X
E5. To foster a climate that facilitates learning and evaluates the contributions of the students			X	
E6. To integrate in the teaching-learning process a training for the use of media studies.		X		
E7. To learn strategies and evaluation techniques and to understand the evaluation as a tool to regulate and encourage the effort..		X		
E8. To analyze critically the process of teaching, the practicum and the direction using quality indicators.		X		
E9. To identify the problems of teaching and learning and to propose alternatives and solutions.		X		

LEARNING OUTCOMES	COMPETENCIAS
R-1 The student associates activities given and proposes new activities within the current curricular framework.	G1, G2, G3, G4, G5, G6, G8, G9 E1, E2, E3, E4, E5, E6, E7, E8, E9
R-2 The student elaborates a Mathematics educational programme for ESO and Bachillerato in accordance with current legislation.	G1, G2, G3, G4, G5, G6, G8, G9 E1, E2, E3, E4, E5, E6, E7, E8, E9
R-3 The student presents his knowledge of the Mathematics curriculum and his conclusions drawn from the required analysis and observation work in a clear and orderly manner	G1, G2, G3, G4, G6, G8 E1, E2, E3, E4, E5, E6, E7, E8, E9



R-4 The student analyses rigorously the curriculums developed by the publishers in the text book.		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 2,4
ON-CAMPUS CLASS	Teacher presentation of contents, analysis of competences, explanation and in-class display of skills, abilities and knowledge.	R-1, R-2, 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-1, R-2, R-3, R-4	30% 0,72
GROUP WORK PRESENTATION	Use of interdisciplinary knowledge	R-3	20% 0,48
TUTORING	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.	R-1, R-2, R-3, R-4	15% 0,36



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ASSESSMENT	Group of oral and/or written tests used during initial, formative or additive assessment..	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 3,6
GROUP WORK	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)	R-1, R-2	40% 1,44
INDEPENDENT WORK	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_)	R-1, R-2, R-4,	60% 2,16
Total			3,6
SYSTEM FOR ASSESSING THE ACQUISITION OF THE COMPETENCES AND ASSESSMENT SYSTEM			



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Assessment Tool	LEARNING OUTCOMES ASSESSED	Allocate Percentage
Individual presentations of paper works	R-1, R-2, R-3, R-4	30%
Group presentations of paper works	R-1, R-2, R-3, R-4	40%
Participation in practical classes and class work	R-1, R-2, R-3, R-4	10%
Written test	R-1, R-2, R-4	20%

MENTION OF DISTINCTION:

The mention of Distinction will be awarded to students who have achieved a score equal to or greater than 9.0. and He has stood out for the excellence of his work and the interest shown by the subject

General regulations: You can only give one distinction for every 20 students (not for a fraction of 20), with the exception of the case of groups of less than 20 students in total, in which a enrollment.

DESCRIPTION OF CONTENTS	COMPETENCES
UNIT 1. The Curriculum	G1, G2, G3, G4, G8, G9 E1, E2, E8
UNIT 2. Mathematics in Education System	G1, G2, G3, G4, G5, G6, G7, G8, G9 E1, E2, E3, E4, E5, E6, E7, E8, E9
UNIT 3. Curriculum development and adaptation	G1, G2, G3, G4, G5, G6, G7, G8, G9 E1, E2, E3, E4, E5, E6, E7, E8, E9
UNIT 4. Textbooks as curricular references	G1, G2, G3, G4, G5, G8, G9 E1, E2, E3, E4, E5, E6, E7,



TEMPORAL ORGANIZATION OF LEARNING	
	BLOCK CONTENT/ TEACHING UNIT
1	UNIT 1. Curriculum I. Definition II. Levels of curricular concretion III. Curricular elements IV. Organization of the Secondary Education, Bachelor and training cycles
2	UNIT 2. Mathematics in Education system I. Secondary Education and Bachelor math subjects II. Organization of curricular elements in Mathematics III. Principles for a quality mathematical education. IV. Standards for Mathematics in Education Secondary and Bachelor
3	UNIT 3. Curriculum development and adaptation I. School curricular concretion II. Pedagogical proposal
4.	UNIT 4. Textbooks as curricular references

REFERENCES
<p>Calvo, C., Deulofeu, J., Jareño, J. y Morera, L. (2016) <i>Aprender a enseñar matemática en la educación secundaria obligatoria</i>. SÍNTESIS</p> <p>DECRETO 136/2015, de 4 de septiembre, del Consell, por el que se modifican el Decreto 108/2014, de 4 de julio, del Consell, por el que se establece el currículo y desarrolla la ordenación general de la Educación Primaria en la Comunitat Valenciana, y el Decreto 87/2015, de 5 de junio, del Consell, por el que se establece el currículo y se desarrolla la ordenación general de la Educación Secundaria Obligatoria y del Bachillerato en la Comunitat Valenciana. [2015/7393]. DOGV Num.7611 de 9.09.2015, pp.24716-24722</p> <p>DECRETO 87/2015, de 5 de junio, del Consell, por el que se establece el currículo y se desarrolla la ordenación general de la Educación Secundaria Obligatoria y el Bachillerato en la Comunitat Valenciana. [2015/5410]. DOGV Num.7544 de 10.06.2015, pp.17437-18552</p>



DECRETO 107/2022, de 5 de agosto, del Consell, por el que se establece la ordenación y el currículo de Educación Secundaria Obligatoria

DECRETO 108/2022, de 5 de agosto, del Consell, por el que se establece la ordenación y el currículo de Bachillerato

Goñi, J.M (2011) MATEMÁTICAS Complementos de formación disciplinar. Colección Formación del profesorado Educación Secundaria. Núm.12 Vol.I . Ministerio de Educación. Editorial GRAÓ, de IRIF, S.L

Gómez, P., Cañadas, M.C., Bracho, R., Restrepo, A.M. y Aristizábal, G. (2011). Análisis temático de la investigación en Educación Matemática en España a través de los Simposios de la SEIEM. En M. Marín, G. Fernández, L.J. Blanco y M. Palarea (Eds.), *Investigación en Educación Matemática XV* (pp. 371- 382). Ciudad Real: SEIEM.

LEY ORGÁNICA 2/2006, de 3 de mayo, de Educación. Boletín Oficial del Estado (4 mayo 2006), Núm. 106

LEY ORGÁNICA 8/2013, de 9 de diciembre, para la mejora de la calidad educativa. Boletín Oficial del Estado (10 diciembre 2013), Núm. 295

LEY ORGÁNICA 3/2020, de 29 de diciembre, por la que se modifica la Ley Orgánica 2/2006, de 3 de mayo, de Educación. Boletín Oficial del Estado (30 diciembre 2020), Num.340

NCTM (2003) Principios y estándares para la educación matemática. Granada: SAEM Thales

ORDEN ECD/65/2015, de 21 de enero, por la que se describen las relaciones entre las competencias, los contenidos y los criterios de evaluación de la educación primaria, la educación secundaria obligatoria y el bachillerato. Boletín Oficial del Estado (29 enero 2015) Num. 25, pp.6986-7003

REAL DECRETO 1105/2014, de 26 de diciembre, por el que se establece el currículo básico de la Educación Secundaria Obligatoria y del Bachillerato. Boletín Oficial del Estado (3 enero 2015), Núm. 3, pp. 169-546

REAL DECRETO 1467/2007, de 2 de Noviembre, del Ministerio de Educación, por el que se establece la estructura del Bachillerato y se fijan las enseñanzas mínimas. Boletín Oficial del Estado (6 noviembre 2007), Núm. 266, pp. 45381-773

REAL DECRETO 1631/2006, de 29 de diciembre, por el que se establecen las enseñanzas mínimas correspondientes a la Educación Secundaria Obligatoria. Boletín Oficial del Estado (5 enero 2007), Núm. 5, pp. 677-773

REAL DECRETO 217/2022, de 29 de marzo, por el que se establece la ordenación y las enseñanzas mínimas de la Educación Secundaria Obligatoria. Boletín Oficial del Estado (30 marzo 2022), Núm. 76

REAL DECRETO 243/2022, de 5 de abril, por el que se establecen la ordenación y las enseñanzas mínimas del Bachillerato. Boletín Oficial del Estado (6 abril 2022), Núm. 82



Rico, L. Fernández-Cano (2013). Análisis didáctico y metodología de investigación. En L. Rico, J.L. Lupiáñez y M. Molina (Eds.) *Análisis Didáctico en Educación Matemática. Metodología de Investigación, Innovación Curricular y Formación de Profesores*. Granada. España.

Rico, L. y Moreno, A. (2016). *Elementos de didáctica de la matemática para el profesor de Secundarias*. Ediciones Pirámide.



Addendum to the Course Guide of the Subject

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

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:

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:**

☒ Microsoft Teams

☒ Blackboard Collaborate Ultra

☐ Kaltura

☒ UCV Net

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

☒ UCV Net

Explanation about the practical sessions:

Telematic attendance at practical sessions is compulsory. In case of not being able to attend the online sessions for a justified reason, it will be compulsory to present that justification and hold tutorials with the teacher to follow up on 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

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.