

SUBJECT TEACHING GUIDE

933 - Learning and Teaching of Mathematics

Master's Degree in Secondary Education Teacher Training

Academic year 2024-2025

1. IDENTIFYING DATA					
Degree	Master's Degree in Secondary Education Teacher Training			Type and Year	Optional. Year 1
Faculty	School of Teacher Training				
Discipline	Subject Area: Learning and Teaching of Mathematics Specific Module in the Speciality of Mathematics				
Course unit title and code	933 - Learning and Teaching of Mathematics				
Number of ECTS credits allocated	9	Term	Semester based (2)		
Web					
Language of instruction	Spanish	English Friendly	No	Mode of delivery	Face-to-face

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3.1 LEARNING OUTCOMES

- Using problem solving methodology for developing student mathematical competence
- Using materials and resources for developing didactic activities
- Analysing, designing and communicating didactic mathematical units
- Analysing, designing and communicating annual mathematical programs
- Using main mathematics education resources
- Designing assessments for evaluating mathematical knowledge

4. OBJECTIVES

- Knowing and employing problem solving as a tool for the teaching of mathematics
- Knowing and using didactic materials and resources for teaching mathematics in secondary education
- Developing abilities for designing mathematical content, especially annual units and classroom activities
- Knowing and using diagnostic assessments for understanding and improving mathematics learning in secondary education
- Analysing and designing assessment models in mathematics.
- Developing a critical and reflective attitude as mathematics pre-service teacher.

6. SUBJECT PROGRAM

CONTENTS	
1	Learning difficulties in mathematics through problem solving
2	Didactic materials, resources and instruments for the teaching of mathematics
3	Selection and demonstration of teaching activities. Analysis and design of annual mathematics units.
4	Methodological approaches and evaluation for the teaching of mathematics: analysis and design of didactic units

7. ASSESSMENT METHODS AND CRITERIA				
Description	Type	Final Eval.	Reassessn	%
Design and oral presentation of a mathematics didactic unit including novel methodologies (30%)	Work	No	Yes	30,00
Written exam: Analysis and design of mathematics activities using different resources (20%)	Written exam	No	Yes	20,00
Design and oral presentation of an annual mathematical program (30%)	Work	No	Yes	30,00
Written exam: Classification and resolution of mathematical task according to problem solving strategies (20%)	Written exam	No	Yes	20,00
TOTAL				100,00
Observations				
<p>Classroom attendance is compulsory. The designs and presentations of an annual program and a didactic unit are compulsory for passing the subject.</p> <p>Other aspects to consider: SPELLING: It is understood that university students have assumed linguistic abilities in relation to oral and written expression. Therefore, spelling correction, grammar and lexical in the essays and exams carried out to overcome the subject is essential.</p> <p>PLAGIARISM: Regarding the fraudulent performance (plagiarism) of the evaluation tests, the qualification will be adjusted to the established in the article 54.1 of the Regulation of the evaluation processes in the University of Cantabria: 'The fraudulent realization of the tests or activities evaluation will directly involve the grade of '0' in the subject '.</p> <p>CITATION RULES: Finally, the School Board approved that the Faculty assumes the APA RULES for all academic work as citation criteria . Although these standards have different editions , as an initial reference we attach the BUC link, hoping that this will be helpful and a reference for its development: http://web.unican.es/buc/recursos/guias-y-tutoriales/guia ? g = 28</p>				
Observations for part-time students				
Part time students will undertake an exam concerning materials and resources (40%) as well as designing and presenting the annual program (30%) and the didactic unit (30%).				

8. BIBLIOGRAPHY AND TEACHING MATERIALS

BASIC

Arce, M.; Conejo, L. y Muñoz, J. M. (2019). Aprendizaje y enseñanza de las matemáticas. Ed. Síntesis.

Castro-Zubizarreta, A. (coordinadora) (2023). Situaciones de aprendizaje: concepto, diseño y desarrollo. Marco curricular LOMLOE. Facultad de Educación, Universidad de Cantabria.

Hitt F. (1998). Difficulties in the articulation of different representations linked to the concept of function . Journal of Mathematical Behavior, Vol. 17(1), 123–134.

López Beltrán, M. (2014). GEOMETRÍA + ÁLGEBRA = GEOGEBRA. Gaceta de la RSME, Vol. 17(2), 349–359.

Losada, R. (2007). Geogebra: la eficiencia de la intuición. Gaceta de la RSME, Vol. 10(1), 223–239.

Rico, L. (1995). "Errores en el aprendizaje de las Matemáticas". En Kilpatrick, J.; Rico, L. y Gómez, P.. Educación Matemática. G.E.I. Bogotá. 69–108.