



## Teaching Guide

Identifying Data					2016/17
Subject (*)	Dificultades na aprendizaxe das matemáticas. Enfoque práctico			Code	652513222
Study programme	Mestrado Universitario en Didácticas Específicas				
Descriptors					
Cycle	Period	Year	Type	Credits	
Official Master's Degree	2nd four-month period	First	Obligatoria	3	
Language	Galician				
Teaching method	Face-to-face				
Prerequisites					
Department	Pedagogía e Didáctica				
Coordinador	Soneira Calvo, Carlos	E-mail	carlos.soneira@udc.es		
Lecturers	Soneira Calvo, Carlos Torre Fernandez, Enrique de la	E-mail	carlos.soneira@udc.es enrique.torref@udc.es		
Web					
General description					

## Study programme competences / results

Code	Study programme competences / results
A1	To know the theoretical basis of interdisciplinary work and identify its centre of interest in school and non-school contexts.
A2	To identify and critically analyse interdisciplinary proposals in the educational world.
A3	To design, justify and evaluate in a systematic manner interdisciplinary proposals in different educational contexts.
A8	To be able to defend and argue in oral and written ways the completed investigation and/or innovation work, using audio-visual aids.
A9	To test and evaluate disciplinary and interdisciplinary teaching projects in real educational contexts and to promote suggestions for improvement related to the obtained results.
A11	To know and understand scientific language and use it correctly in different ways of expression and communication.
A15	To identify quality and control criteria both in research and in the teaching practice, encouraging a critical, reflective and innovative spirit.
A16	To design, justify and evaluate research and innovation projects in the field of Specific Didactics.
A17	To select, adapt and apply materials, resources and ICTs to improve the teaching and learning in different disciplinary fields.
B1	To have and understand general knowledge to establish foundations and /or opportunities to stand out in the development and implementation of ideas, mainly in an action- research context.
B2	To be able to apply the acquired foundations and their problem-solving capabilities in new multidisciplinary contexts related to the specific research areas.
B3	To be able to join contents and accept the challenge to formulate complex statements out of a limited or incomplete information, including reflections about social and ethic responsibilities related to the application of their own knowledge and opinions.
B4	To be able to transfer and communicate their conclusions and opinions in a clear and straight manner both in a specialized and a non-specialized audience.
B5	To have the required learning abilities to continue in a life-long-learning and autonomous process.
B6	To be able to analyse and synthesize.
B7	To be able to adapt to new situations.
B8	To work with initiative and in an autonomous way.
B9	To work in a collaborative way.
B10	To be able to organize and plan in curricular and cross-curricular subjects.
B11	To be able to innovate (creativity) within educational and non-educational contexts.
B12	to behave with ethics and with social and environmental responsibility as a teacher and/or researcher.
B13	To be able to communicate with their peers, educational community and with society in general in the field of their areas of knowledge.
B14	To incorporate ICTs for the research process, information management, data analysis and for transferability.
B15	To be able to update knowledge, methodologies and strategies in their teaching practices
C1	To express correctly, both orally and in written texts, in the two co-official languages of the Autonomous Community.



C3	To use the main ICT?s basic tools for their professional development and for their life-long-learning process.
C4	To be able to self-develop for an open, critical, committed, democratic and solidary citizenship.
C6	To critically value available knowledge, technology and information to solve problems which students must face.
C7	To assume as a professional and as a citizen the importance of life-long-learning.
C8	To value the importance that research, innovation and technical developments have on society?s socio-economical and cultural progress.

Learning outcomes			
Learning outcomes	Study programme competences / results		
Coñecer e analizar as dificultades asociadas aos distintos tipos de linguaxe e a súa interrelación na educación matemática.	AJ1 AJ2 AJ8 AJ11 AJ16 AJ17	BJ6 BJ7 BJ8 BJ10 BJ13 BJ14 BJ15	CJ1 CJ3 CJ4 CJ6 CJ7 CJ8
Coñecer os principios, técnicas e recursos didácticos para dar resposta ás dificultades asociadas ao uso das distintas linguaxes en matemáticas.	AJ3 AJ9	BJ1 BJ2 BJ3 BJ4 BJ5 BJ11 BJ12	CJ1 CJ8
Coñecer a influencia das compoñentes afectivas no proceso de ensino-aprendizaxe da matemática.	AJ2 AJ3 AJ8 AJ11 AJ15	BJ6 BJ7 BJ9 BJ12 BJ13	CJ1 CJ3 CJ4 CJ6 CJ7 CJ8
Adquirir a capacidade de resolver situacións prácticas relativas ás dificultades da aprendizaxe da matemática.	AJ1 AJ2 AJ3 AJ8 AJ9 AJ16 AJ17	BJ6 BJ7 BJ9 BJ10 BJ11 BJ12 BJ13 BJ15	CJ1 CJ4 CJ6 CJ7 CJ8

Contents	
Topic	Sub-topic
Los lenguajes de la matemática.	
Componentes afectivas.	
Análisis y estudio de casos prácticos.	
Metacognición en matemáticas	

Planning				
Methodologies / tests	Competencies / Results	Teaching hours (in-person & virtual)	Student?s personal work hours	Total hours



Document analysis	A11 A15 A17 B3 B5 B8 B15 C3 C6	0	15	15
Collaborative learning	A3 A8 A16 A17 B1 B2 B3 B5 B6 B7 B9 B10 B11 B12 B13 B14 B15 C1	8	8	16
Directed discussion	A8 A11 A15 A17 B4 B6 B9 B12 B13	3	5	8
Research (Research project)	A1 A2 A3 A8 A9 A11 A15 A16 A17 B1 B6 B7 B9 B10 B11 B12 B13 B14 B15 C1 C3 C4 C6 C7 C8	5	20	25
Oral presentation	A8 A11 B6 B10 B13 C1	1	3	4
Introductory activities	A1 A2 B2 B6	4	2	6
Personalized attention		1	0	1

(\*)The information in the planning table is for guidance only and does not take into account the heterogeneity of the students.

Methodologies	
Methodologies	Description
Document analysis	Utilización de documentos de toda tipoloxía, aplicables e relacionados coas didácticas específicas (primarias, secundarias e terciarias: arquivísticos, bibliográficos, audiovisuais, hemerográficos, arqueolóxicos, orais, textuais, literarias, etc.) relevantes para a temática da materia con actividades especificamente deseñadas para o traballo coas mesmas.
Collaborative learning	Realización de traballos en grupos.
Directed discussion	Posta en común dos contidos analizados nas fontes documentáis. Discusión sobre a súa aplicabilidade.
Research (Research project)	Proceso orientado á aprendizaxe do alumnado mediante a realización de actividades de carácter práctico a través das que se propoñen situacións que requiren ao estudante identificar un problema obxecto de estudo, formulalo con precisión, desenvolver os procedementos pertinentes, interpretar os resultados e sacar as conclusións oportunas do traballo realizado.
Oral presentation	Exposición verbal, coa utilización dos recursos expositivos adecuados, que debe reflectir todas as fases do proceso de creación e desenvolvemento dos traballos titulados.
Introductory activities	Presentación das liñas xerais da materia e toma de contacto cos estudantes, os seus intereses e expectativas.

Personalized attention	
Methodologies	Description
Research (Research project)	Orientación dos grupos de estudantes na realización do traballo.

Assessment			
Methodologies	Competencies / Results	Description	Qualification
Research (Research project)	A1 A2 A3 A8 A9 A11 A15 A16 A17 B1 B6 B7 B9 B10 B11 B12 B13 B14 B15 C1 C3 C4 C6 C7 C8	Traballo en equipo ou individual sobre un tema de interese. Terase en conta a dificultade do tema elixido, a metodoloxía seguida na súa realización, a exposición dos resultados atopados e a argumentación das conclusións, entre outras cousas.	60



Oral presentation	A8 A11 B6 B10 B13 C1	O alumnado terá que facer a presentación oral e defensa dun traballo. Terase en conta a corrección na expresión oral, capacidade de síntese, capacidades comunicativas, así como a corrección e argumentación das respostas e a súa adecuación ás posibles cuestións que se formulen.	10
Collaborative learning	A3 A8 A16 A17 B1 B2 B3 B5 B6 B7 B9 B10 B11 B12 B13 B14 B15 C1	Terase en conta a participación razoada, a realización razoada das tarefas e a aportación ás dinámicas de grupo.	30

#### Assessment comments

Non se admite a dispensa académica de exención de docencia.

Se o

estudante non chega a unha asistencia do 80% das clases presenciales

deberá ser evaluado por unha proba

individual.

#### Sources of information



<p><b>Basic</b></p>	<p>- van Velzen, Joke H. (2016). Evaluating the suitability of mathematical thinking problems for senior high-school students by including mathematical sense making and global planning. THE CURRICULUM JOURNAL</p> <p>Bayetto, Anne Free Tips and Resources for Phonics Teaching. What does the research tell us?  <a href="http://www.speld-sa.org.au/links/free-tips-and-resources-for-phonics-teaching.html?task=view&amp;id=84">http://www.speld-sa.org.au/links/free-tips-and-resources-for-phonics-teaching.html?task=view&amp;id=84</a>Effective Strategies for Teaching Students with Difficulties in Mathematics. The National Council of Teachers of Mathematics. 2007.</p> <p><a href="http://www.nctm.org/uploadedFiles/Research_and_Advocacy/research_brief_and_clips/Research_brief_02_-_Effective_Strategies.pdf">http://www.nctm.org/uploadedFiles/Research_and_Advocacy/research_brief_and_clips/Research_brief_02_-_Effective_Strategies.pdf</a>Kramarski, Bracha; Mevarech, Zemira R.; Arami, Marsel (2002) The effects of metacognitive instruction on solving Mathematical authentic tasks. Educational Studies in Mathematics 49: 225-250</p> <p>Munro, J. (1995). SUCCESS in learning mathematics : A learning strategies approach. Hawthorn, VIC : EdAssist.  <a href="https://students.education.unimelb.edu.au/selage/pub/readings/mathsls/LD-N%20%20teaching%20framework.pdf">https://students.education.unimelb.edu.au/selage/pub/readings/mathsls/LD-N%20%20teaching%20framework.pdf</a></p> <p>Munro, John (2003) Dyscalculia : A unifying concept in understanding mathematics learning disabilities. Australian Journal of Learning Disabilities, 2003 8, (4).  <a href="https://students.education.unimelb.edu.au/selage/pub/readings/mathsls/Types_of_dyscalcula.pdf">https://students.education.unimelb.edu.au/selage/pub/readings/mathsls/Types_of_dyscalcula.pdf</a></p> <p>Munro, John. Mathematics underachievers learning spatial knowledge.  <a href="https://students.education.unimelb.edu.au/selage/pub/readings/mathsls/Spatial%20article.pdf">https://students.education.unimelb.edu.au/selage/pub/readings/mathsls/Spatial%20article.pdf</a></p> <p>Naya, M<sup>a</sup> Cristina; Soneira, Carlos; Mato, M<sup>a</sup> Dorinda; de la Torre, Enrique (2014) Cuestionario sobre actitudes hacia las matemáticas en futuros maestros de Educación Primaria. Revista de Estudios e Investigación en Psicología y Educación. Vol.1, No. 2, 141-149</p> <p>Naya-Riveiro, M.C., Soneira, C., Mato, D. y de la Torre, E. (2015). Actitudes hacia las Matemáticas y rendimiento académico en función de los estudios de acceso y curso en futuros maestros. En C. Fernández, M. Molina y N. Planas (eds.), Investigación en Educación Matemática XIX (pp. 423-430). Alicante: SEIEM.</p> <p>Orrantia, Josetxu; Tarín, Julio &amp; Vicente, Santiago (2011) El uso de la información situacional en la resolución de problemas aritméticos, Infancia y Aprendizaje, 34:1, 81-94. <a href="http://dx.doi.org/10.1174/021037011794390094">http://dx.doi.org/10.1174/021037011794390094</a></p> <p>Orrantia, Josetxu; González, Lourdes B.; Vicente, Santiago (2005) Un análisis de los problemas aritméticos en los libros de texto de Educación Primaria. Infancia y Aprendizaje, 28 (4), 429-451</p> <p>Phonapichat, Prathana; Wongwanich, Suwimon; Sujiva, (2014) An analysis of elementary school students' difficulties in mathematical problem solving Siridej Procedia - Social and Behavioral Sciences, 116, pp. 3169-3174  <a href="http://www.sciencedirect.com/science/article/pii/S1877042814007459">http://www.sciencedirect.com/science/article/pii/S1877042814007459</a></p> <p>Soneira, Carlos; Naya, M<sup>a</sup> Cristina; Mato, M<sup>a</sup> Dorinda; de la Torre, Enrique (2015) Autoconcepto matemático de los estudiantes de grado de Educación Primaria. En Ramiro-Sánchez, T. y Ramiro, M.T. (2015) Avances en Ciencias de la Educación y del Desarrollo 2015. San Sebastián: Univ. de Granada. Pp. 521-526.</p> <p>Turner, R. (2016). Lessons from PISA 2012 about mathematical literacy: An illustrated essay. PNA, 10(2), 77-94</p> <p>Verschaffel, L.; DeCorte, E.; Lasure, S (1994) Realistic considerations in mathematical modeling of school arithmetic word problems. Learning and Instruction 4(4):273-294.  <a href="https://www.researchgate.net/publication/223690245_Realistic_considerations_in_mathematical_modeling_of_school_arithmetic_word_problems">https://www.researchgate.net/publication/223690245_Realistic_considerations_in_mathematical_modeling_of_school_arithmetic_word_problems</a></p>
<p><b>Complementary</b></p>	

**Recommendations**

Subjects that it is recommended to have taken before

Subjects that are recommended to be taken simultaneously

Subjects that continue the syllabus

Other comments



(\*)The teaching guide is the document in which the URV publishes the information about all its courses. It is a public document and cannot be modified. Only in exceptional cases can it be revised by the competent agent or duly revised so that it is in line with current legislation.