



Teaching Guide

Teaching Guide				
Identifying Data				2015/16
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	Torre Fernandez, Enrique de la	E-mail	enrique.torref@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

Code	Study programme competences
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	
Conocer y analizar las dificultades asociadas a los distintos tipos de lenguaje y su interrelación en la educación matemática.		AJ1	BJ6 CJ1
		AJ2	BJ7 CJ3
		AJ8	BJ8 CJ4
		AJ11	BJ10 CJ6
		AJ16	BJ13 CJ7
		AJ17	BJ14 CJ8
		BJ15	
Conocer los principios, técnicas y recursos didácticos para dar respuesta a las dificultades asociadas al uso de los distintos lenguajes en matemáticas		AJ3	BJ1 CJ1
		AJ9	BJ2 CJ8
		BJ3	
		BJ4	
		BJ5	
		BJ11	
		BJ12	
Conocer la influencia de las componentes afectivas en el proceso de enseñanza-aprendizaje de la matemática		AJ2	BJ6 CJ1
		AJ3	BJ7 CJ3
		AJ8	BJ9 CJ4
		AJ11	BJ12 CJ6
		AJ15	BJ13 CJ7
			CJ8
Adquirir la capacidad de resolver situaciones prácticas relativas a las dificultades del aprendizaje de la matemática		AJ1	BJ6 CJ1
		AJ2	BJ7 CJ4
		AJ3	BJ9 CJ6
		AJ8	BJ10 CJ7
		AJ9	BJ11 CJ8
		AJ16	BJ12
		AJ17	BJ13
		BJ15	

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

Planning				
Methodologies / tests	Competencies	Ordinary class hours	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 B15 B14 B13 B12 B11 B10 B9 B7 B6 B5 B3 B2 B1 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 coasmesmas.
Collaborative learning	Realización de traballos en grupos.
Directed discussion	Posta en común dos contidos analizados nas fontes documentais. 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

Assessment			
Methodologies	Competencies	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 B15 B14 B13 B12 B11 B10 B9 B7 B6 B5 B3 B2 B1 C1	Terase en conta a participación razoada, a realización razoada das tarefas e a aportación ás dinámicas de grupo.	30
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Assessment comments

Si

el estudiante no llega a una asistencia del 80% de las clases presenciales deberá ser evaluado además de por el trabajo, por una prueba individual. En este caso los dos ítems de la evaluación (trabajo y prueba individual) tendrán una ponderación del 50% exigiéndose en cada una de ellas la nota igual o superior a 5 sobre 10.

Sources of information

Basic	Desoete, A. (2007) Evaluating and improving the mathematics teaching-learning process throught metacognition. Journal of Research in Education Psychology, N 13, vol 5(3), pp. 705-730.Garofalo, Joe & Lester, Frank K. (1985) Metacognition, Cognitive Monitoring, and Mathematical Performance. Journal for Research in Mathematics Education, Vol. 16, No. 3 pp. 163-176.KRAMARSKI, BRACHA; MEVARECH, ZEMIRA R. and MARSEL ARAMI (2002) The effects of metacognitive instruction on solving mathematical authentic tasks. Educational Studies in Mathematics 49: 225?250.MATURANO, CARLA INÉS, SOLIVERES, MARÍA AMALIA y MACÍAS, ASCENSIÓN (2002) Estrategias cognitivas y metacognitivas en la comprensión de un texto de ciencias. Enseñanza de las Ciencias, 20 (3), 415-425PIFARRÉ, MANOLI y SANUY, JAUME (2001) La enseñanza de estrategias de resolución de problemas matemáticos en la ESO: un ejemplo concreto. Enseñanza de las Ciencias, 19 (2), 297-308.Ribeiro, María Filomena1 y Neto, António José (2008) La enseñanza de las ciencias y el desarrollo de destrezas de pensamiento: un estudio metacognitivo con alumnos de 7º de primaria. Enseñanza de las Ciencias, 26(2), 211?226.Rigo Lemini, Mirela1, Páez, David Alfonso y Gómez, Bernardo (2010) Prácticas metacognitivas que el profesor de nivel básico promueve en sus clases ordinarias de matemáticas. Un marco interpretativo. Enseñanza de las Ciencias, 28(3), 405?416.Zemira Mevarech & Shimon Fridkin (2006) The effects of IMPROVE on mathematical knowledge, mathematical reasoning and meta-cognition. Metacognition Learning 1: 85?97
Complementary	

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.