Teaching Guide				
Identifying Data				2015/16
Subject (*)	Educación matemática I		Code	652G02008
Study programme	Grao en Educación Primaria			
Descriptors				
Cycle	Period	Year	Type	Credits
Graduate	2nd four-month period	First	Obligatoria	6
Language	SpanishGalician			
Teaching method	Face-to-face			
Prerequisites				
Department	Pedagoxía 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	In this matter pretends describe and analyse the processes that take part in the learning of the mathematics in the Primary Education, as well as know methods, technical and resources for his work in the classroom. Also it wants to show the paper that represents the mathematics in the current society, his paper along the history and the paper that plays on the way to a critical education.			

Study programme competences	
Code	Study programme competences
A38	Adquirir competencias matemáticas básicas (numéricas, cálculo, xeométricas, representacións espaciais, estimación e medida, organización e interpretación da información, etc.).
A39	Coñecer o currículo escolar de matemáticas. Analizar, razoar e comunicar propostas matemáticas.
A40	Formular e resolver problemas vinculados coa vida cotiá.
A41	Valorar a relación entre matemáticas e ciencias como un dos pilares do pensamento científico.
A42	Desenvolver e avaliar contidos do currículo mediante recursos didácticos apropiados e promover as competencias correspondentes nos estudantes.
B1	Aprender a aprender.
B2	Resolver problemas de forma efectiva.
B3	Aplicar un pensamento crítico, lóxico e creativo.
B4	Traballar de forma autónoma con iniciativa.
B5	Traballar de forma colaborativa.
B8	Capacidade para elaborar discursos coherentes e organizados loxicamente.
B9	Capacidade para expoñer as ideas elaboradas, de forma oral e na escrita.
B10	Capacidade de expresión oral e escrita en varias linguas (a lo menos nunha lingua estranxeira).
B11	Capacidade de comprensión dos distintos códigos audiovisuais e multimedia e manexo das ferramentas informáticas.
B12	Capacidade de selección, de análise, de avaliación e de utilización de distintos recursos na rede e multimedia.
B15	Capacidade para utilizar diversas fontes de información, seleccionar, analizar, sintetizar e extraer ideas importantes e xestionar a información.
B18	Compromiso ético para o exercicio das tarefas docentes.
B19	Capacidade de adaptarse a novas situacións nunha sociedade cambiante e plural.
B21	CB1 - Que os estudantes demostrasen posuír e comprender coñecementos nunha área de estudo que parte da base da educación secundaria xeneral, e se adoita encontrar a un nivel que, se ben se apoia en libros de texto avanzados, inclúe tamén algúns aspectos que implican coñecementos procedentes da vangarda do seu campo de estudo
B22	CB2 - Que os estudantes saiban aplicar os seus coñecementos ao seu traballo ou vocación dunha forma profesional e posúan as competencias que adoitan demostrarse por medio da elaboración e defensa de argumentos e a resolución de problemas dentro da súa área de estudo

B23	CB3 - Que os estudantes teñan a capacidade de reunir e interpretar datos relevantes (normalmente dentro da súa área de estudo) para emitir xuízos que inclúan unha reflexión sobre temas relevantes de índole social, científica ou ética
B24	CB4 - Que os estudantes poidan transmitir información, ideas, problemas e solucións a un público tanto especializado como non especializado
B25	CB5 - Que os estudantes desenvolvesen aquelas habilidades de aprendizaxe necesarias para emprender estudos posteriores cun alto grao de autonomía
C1	Expresarse correctamente, tanto de forma oral coma escrita, nas linguas oficiais da comunidade autónoma.
C3	Utilizar as ferramentas básicas das tecnoloxías da información e as comunicacións (TIC) necesarias para o exercicio da súa profesión e para a aprendizaxe ao longo da súa vida.
C4	Desenvolverse para o exercicio dunha cidadanía aberta, culta, crítica, comprometida, democrática e solidaria, capaz de analizar a realidade, diagnosticar problemas, formular e implantar solucións baseadas no coñecemento e orientadas ao ben común.
C6	Valorar criticamente o coñecemento, a tecnoloxía e a información dispoñible para resolver os problemas cos que deben enfrontarse.
C7	Asumir como profesional e cidadán a importancia da aprendizaxe ao longo da vida.
C8	Valorar a importancia que ten a investigación, a innovación e o desenvolvemento tecnolóxico no avance socioeconómico e cultural da sociedade.

Learning outcomes			
Learning outcomes	Study programme competences		
Boost and develop the knowledge of basic mathematical concepts.	A38	B1 B2 B3 B4 B5 B8 B9 B10 B11 B12 B15 B18 B19 B21	C1 C3 C4 C6 C7 C8
The mathematicians in the school curriculum of the Primary Education.	A39	B1 B2 B3 B4 B8 B9 B10 B11 B12 B15 B18 B19	C1 C3 C4 C6 C7 C8

With the aim that the students experience the utility of the mathematicians in the world that surrounds them day to day, will resolve mathematical problems and no propiamente mathematicians.	A40	B1 B2 B3 B4 B5 B8 B9 B10 B11 B12 B15 B18 B19	C1 C3 C4 C6 C7 C8
Evaluate and analyze the teaching and the learning of the mathematicians in the stage of Primary Education using didactic resources.	A42	B1 B2 B3 B4 B5 B8 B9 B10 B11 B12 B15 B18 B19	C1 C3 C4 C6 C7 C8
O progreso científico, en todas as súas ramas, require unha estreita e forte interacción coa matemática; de aquí a necesidade de valorar a forte e longa relación entre a matemática e a ciencia.	A41	B1 B2 B3 B4 B5 B8 B9 B10 B11 B12 B15 B18 B19 B22 B23 B24 B25	C1 C3 C4 C6 C7 C8

Contents	
Topic	**Sub-topic**
The mathematics and his relation with the culture and the society.	The mathematics in the culture. The mathematics in the society. The mathematics like tool for the sustainability.

The mathematics through the history.	The mathematics in the Prehistory, in the Ancient Age, in the Half Age, in the Modern Age and in the Contemporary Age.
The education and the learning of the mathematics in the stage of Primary Education.	School curriculum. Models of learning and education. Development of school mathematical competitions.
Resources and materials for the education of the mathematics.	Mathematical tasks. Didactic material.
The natural numbers. The systems of numbering.	Development of the concept of number. Systems of numbering.
The addition and the subtraction.	Initiation to the problems of calculation. Additive and substractive problems . The algorithms.
The multiplication and the division.	Multiplicative and division problems. Algorithms. The calculator in the classroom.

Planning				
Methodologies / tests	Competencies	Ordinary class hours	Student?s personal work hours	Total hours
Research (Research project)	A38 A39 A40 A41 A42 B1 B2 B3 B5 B9 B10 B11 B12 B15 B18 B19 B21 B22 B23 B24 B25 C1 C3 C4 C6 C7 C8	0	20	20
Guest lecture / keynote speech	A38	21	31.5	52.5
Laboratory practice	A38 A39 A40 A41 A42 B1 B2 B3 B4 B5 B8 B9 B11 B12 B15 B18 B19 C1 C3 C6 C7 C8	21	21	42
Mixed objective/subjective test	B2 B3 B4 B8 B9 C1	3	10.5	13.5
Workbook	A39 A41 A42 B1 B15 C7 C8	0	6	6
Oral presentation	B3 B8 B9 B10 B11 B12 C1 C3	0.5	2	2.5
Multiple-choice questions	A39 A42 B2 B4	0.5	7	7.5
Critical bibliographical	A39 A42 B1 B3 B4 B9 B15 B18 C1 C4	0	2	2
Online forum	A41 B3 B4 B5 B8 B9 B12 B15 B18 B19 B22 C1 C3 C4 C6 C7	0	2	2
Personalized attention		2	0	2
(*)The information in the planning table is for guidance only and does not take into account the heterogeneity of the students.				

Methodologies	
Methodologies	Description

Research (Research project)	Extensive work, realised in group, on a subject of interest and actuality. The subject will be defined to way of question and in the development of the work will try answer and discover knowledges. It will present in way of report written and later will be exposed to all the class in 'oral Presentation'.
Guest lecture / keynote speech	Exhibition of the distinct subjects by part of the professors, looking for present the information and motivate the study and the work.
Laboratory practice	Work in the classroom, in groups reduced, on concrete appearances of the different subjects, following scripts more or less open, and with the help of materials.
Mixed objective/subjective test	Proof written (examination) where combine open and enclosed questions. In principle it refers to the final examination of the matter, although it can have other lower proofs along the course.
Workbook	Material writing that proposes to the students to know different questions of the temario.
Oral presentation	Exhibition in the classroom of the Project of investigation realised by each one of the groups.
Multiple-choice questions	Compulsory test for each one of the subjects, that will do when finalising the work in class of each one of the subjects of the course. The dates for his realisation will communicate to the start of the course and will realise through the virtual platform.
Critical bibliographical	Analysis of the mathematical contents and proposal of activities, on a book of appropriate reading for students of Primary Education.
Online forum	Participation in a social network of the matter, where each student will propose subjects and will comment the proposed by other students.

Personalized attention	
Methodologies	**Description**
Research (Research project) Laboratory practice Mixed objective/subjective test Oral presentation	The personalised attention describes around these methodologies like moments of face-to-face work with the professor by what asks a compulsory participation of the student. The form and the moment in that they develop will indicate in relation to each activity along the course according to the plan of work of the matter.

Assessment			
Methodologies	**Competencies**	**Description**	**Qualification**
Research (Research project)	A38 A39 A40 A41 A42 B1 B2 B3 B5 B9 B10 B11 B12 B15 B18 B19 B21 B22 B23 B24 B25 C1 C3 C4 C6 C7 C8	Work in team on a subject of interest, in that it will stand out the paper of the mathematics. Will take into account the difficulty of the subject chosen, the methodology been still in his realisation, the exhibition of the results found and the argumentation of the conclusions, between other things.	15
Laboratory practice	A38 A39 A40 A41 A42 B1 B2 B3 B4 B5 B8 B9 B11 B12 B15 B18 B19 C1 C3 C6 C7 C8	Will take into account the participation, the interest showed, the realisation reasoned of the tasks,...	10
Mixed objective/subjective test	B2 B3 B4 B8 B9 C1	It will value the exhibition and argumentation realised in each one of the proofs.	40
Oral presentation	B3 B8 B9 B10 B11 B12 C1 C3	It will value the clarity, skill to present the information and the communication of results and conclusions.	5

Online forum	A41 B3 B4 B5 B8 B9 B12 B15 B18 B19 B22 C1 C3 C4 C6 C7	Each student will propose a forum of debate, around a news or event and will participate in forums proposed by other students.	3
Multiple-choice questions	A39 A42 B2 B4	When finalising each subject will establish a short space of time (some 2 hours) in which each student will connect to the virtual platform to realise the test. Once initiated the test will have of 2 minutes to realise it, without possibility to repeat it. The calendar of realisation of this test will be available to the start of the course. The test of each one of the subjects will consist of 5 questions each one with three options of answer. Each correct answer will cost two points and each wrong answer will subtract a point.	20
Critical bibliographical	A39 A42 B1 B3 B4 B9 B15 B18 C1 C4	Each student has to choose a book of appropriate reading for a student of Primary Education and analyse his mathematical content and also propose activities dobre this book, to realise in the classroom.	7

Assessment comments

Sources of information	
Basic	- (). . ALSINA, C. ? FORTUNY, J.M.(1994) "La matemática del consumidor" (Institut Català delConsum:Barcelona) ÁLVAREZ, A. (1995) "Uso de la calculadora en el aula"(carpeta E.S.O.) (Narcea:Madrid)ÁLVAREZ, A. (1996) "Actividades matemáticascon materiales didácticos" (carpeta para la E.S.O.) (Narcea:Madrid)ANTÓN, J.L. y otros (1994) "Taller deMatemáticas" (carpeta E.S.O.) (Narcea:Madrid)BAROODY, A.J. (1988) "El pensamientomatemático de los niños" (Vi-sor?MEC:Ma-drid)CALLEJO, M.L. (1994) "Un club matemáticopara la diversidad" (Narcea:Madrid)CASTELNUOVO, E. (1990) "Didáctica de lamatemática moderna" (Trillas:Mexico) CASTRO, E. (ed.)(2001) "Didáctica de la Matemática en la Educación Primaria".(Síntesis: Madrid) CHAMORRO, Mª del CARMEN (coord.) (2003) Didáctica de las Matemáticas para Primaria .(Pearson: Madrid) CHAMOSO, JOSÉ; RAWSON, WILLIAM (2003) Matemáticas en una tarde de paseo (Nivola: Madrid)CHEVALLARD, Yves - BOSCH, Marianna - GASCÖN, Josep(1997) "Estudiar Matemáticas. El eslabón perdido entre enseñanza yaprendizaje" (Horsori: Barcelona)COCKCROFT,W.H. (1985) "Las matemáticas sí cuentan" (M.E.C.: Madrid) COMAP (1999) Las matemáticas en la vida cotidiana (Addison-Wesley:Madrid)CORBALÁN, F. (2002) "La matemática aplicada a la vidacotidiana" (Graó:Barcelona)DICKSON, L. ? BROWN, M. ? GIBSON, O. (1991) "Elaprendizaje de las matemáticas" (Labor / M.E.C.:Madrid)FISHER, R. -VINCE, A. (1990) "Investigando las Matemáticas" 4 vol. (Akal:Madrid) GALLEGO LÁZARO, CARLOS... [et al.] (2005) Repensar el aprendizaje de las matemáticasMatemáticas para convivir comprendiendo el mundo (Graó:Barcelona) GIMÉNEZ, JOAQUIM; SANTOS, LEONOR; DA PONTE,JOAO PEDRO (coords.) (2004) La actividad matemática en elaula Homenaje a Pablo Abrantes (Graó: Barcelona)GODINO, JUAN D. (2003) ?ProyectoEdumat-Maestros. Matemáticas y su Didáctica para Maestros? URL: http://www.ugr.es/~jgodino/edumat-maestros/welcome.html GÓMEZ CHACÓN, INÉS Mª; FIGUERAS OCAÑA, LOURDES; MARÍN RODRÍGUEZ, MARGARITA (2001) Matemáticasen la red: Internet en el aula de Secundaria (Ministerio deEducación y Ciencia ? nancea: Madrid) GORGORIÓ, N.; DEOULOFEU, J.; BISHOP, A. (coords.) (2000) Matemáticas y educaciónRetos y cambios desde una perspectiva internacional / (Graó:ICE de la Universitat de Barcelona; Barcelona)LLINARES, S. - SÁNCHEZ, M.V. (1990) "Teoríay Práctica en Educación Matemática" (Alfar:Sevilla)MAZA, C. (1989) "Sumar y restar" (Visor:Madrid)MAZA, C. (1991) "Multiplicar ydividir" (Visor:Madrid)N.C.T.M. (2003) "Principios yEstándares para la educación matemática" (S.A.E.M. ?Thales?:Sevilla)ORTON, A.(1990) "Didáctica de las matemáticas" (Morata/M.E.C.: Madrid)UDINA IABELLÓ, F. (1989) "Aritmética y calculadoras" (Síntesis:Madrid) VELÁSQUEZ, FIDELA (coord.) (2004) Matemáticase Internet (Graó: Barcelona) Os libros da colección "Matemáticas:cultura y aprendizaje" de la editorial Síntesis.
Complementary	

Recommendations
Subjects that it is recommended to have taken before
Subjects that are recommended to be taken simultaneously
Subjects that continue the syllabus
Educación matemática II/652G02018 Educación matemática III/652G02024 Resolución de problemas en matemática/652G02030
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.