UNIVERSIDAD DE CASTILLA - LA MANCHA
GUÍA DOCENTE

1. General information

Course: DIDACTICS OF GEOMETRY AND MEASUREMENT
Type: CORE COURSE
Degree: 392 - BACHELOR'S DEGREE IN PRIMARY EDUCATION (AB)
Center: 101 - FACULTY OF EDUCATION IN ALBACETE
Year: 2
Main language: Spanish
Use of additional languages:
Web site:

Code: 46315
ECTS credits: 9
Academic year: 2023-24
Group(s): 17 18 19 15
Duration: AN
Second language: English
English Friendly: N
Bilingual: Y

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2. Pre-Requisites

Students must master the concepts, skills, algorithms and the basic strategies of the mathematics of primary and secondary education.

3. Justification in the curriculum, relation to other subjects and to the profession

This course contributes to the initial formation of the mathematical educator integrated in the training of the teacher of primary education. In this context, a profile of the teacher who is able to respond in multiple subjects, to what, how and when to teach and evaluate is conceived. Therefore, the future teacher of primary education must be prepared to evaluate and choose among various educational options and should acquire skills in the field of curriculum design.

The subject is located within the module 1,2,2 "Teaching and Learning of Mathematics", 1.2 "Educational discipline", and the 1 "General Training".

4. Degree competences achieved in this course

Course competences

Code	Description
1.2.2.II.01	Acquire basic mathematical competences (numeric, calculation, geometric, spatial representation, estimation and measurement, data organization and interpretation, etc.).
1.2.2.II.02	Know the Mathematics curriculum in Primary schools.
1.2.2.II.03	Analyse, figure out and communicate mathematical proposals.
1.2.2.II.04	Pose and solve problems related to daily life.
1.2.2.II.05	Value the relationship between mathematics and science as one of the foundations of scientific reasoning.
1.2.2.II.06	Develop and assess contents from the curriculum by using appropriate teaching resources and promote the corresponding competences in the students.

CB02	Apply their knowledge to their job or vocation in a professional manner and show that they have the competences to construct and justify arguments and solve problems within their subject area.
CG10	Reflect on classroom practice to allow innovation and improvement of the teaching practice. Acquire habits and skills for autonomous and cooperative learning and promote it among pupils.
CG11	Know and apply information and communication technology in the classroom. Select audiovisual information which contributes to learning, civic training and cultural richness.
CT03	Correct oral and written communication.
CT04	Moral obligation and professional ethics.

5. Objectives or Learning Outcomes

Course learning outcomes

Description

Know how to use the basic elements of the history of mathematics to promote learning on specific occasions.

Know how to use teaching materials and other resources to encourage learning.

Understand research about Primary school pupils' difficulties, misconceptions, concept images, etc. and be able to reflect on how these results may have influence on teaching.

Acquire evaluation skills both about mathematical knowledge and Primary school pupils' learning processes.

Have knowledge of the new learning theories and the mathematical reasoning models and be able to design and assess activities according to those models.

Acquire mathematical knowledge broad enough to allow students to work confidently as teachers.

Have knowledge of the curricular aspects related both to mathematics and to the implementation of teaching sequences in the (real or simulated) Primary classroom.

Cope with diversity in the classroom.

Show the ability to use software in school mathematics that promotes learning.

6. Units / Contents

Unit 1: The curriculum of the geometry and measurement in the elementary school

Unit 2: Geometry and spatial thinking

Unit 3: Basics of geometry in the space

Unit 4: Geometry of transformations in the plane

Unit 5:

Unit 6:

7. Activities, Units/Modules and Methodology

Training Activity	Methodology	Related Competences (only degrees before RD 822/2021)	ECTS	Hours	As	Com	Description
Study and Exam Preparation [OFF-SITE]	Self-study	1.2.2.II.01 1.2.2.II.02 1.2.2.II.03 1.2.2.II.04 1.2.2.II.05 1.2.2.II.06	2	50	N	-	Student autonomous study to prepare different evaluation tools.
Writing of reports or projects [OFF-SITE]	Self-study	1.2.2.II.01 1.2.2.II.02 1.2.2.II.04 1.2.2.II.06 CG10 CG11	2.4	60	N	-	Student autonomous development of the proposed activities in class.
Class Attendance (theory) [ON-SITE]	Lectures	1.2.2.II.01 1.2.2.II.02 1.2.2.II.03 1.2.2.II.04 1.2.2.II.05 1.2.2.II.06 CB02 CG10 CG11 CT03 CT04	1.56	39	N	-	Theoretical and interactive classes using different methodologies.
Class Attendance (practical) [ON-SITE]	Problem solving and exercises	1.2.2.II.04 1.2.2.II.05 CB02 CG10 CG11 CT03 CT04	1.4	35	Y	N	Practical and interactive classes using different methodologies.
Writing of reports or projects [OFF-SITE]	Cooperative / Collaborative Learning	1.2.2.II.01 1.2.2.II.02 1.2.2.II.04 CG10 CG11 CT03 CT04	1	25	Y	N	Preparation of a research or didactic proposal in group.
Workshops or seminars [ON-SITE]	Cooperative / Collaborative Learning	1.2.2.II.03 1.2.2.II.04 1.2.2.II.05 1.2.2.II.06	0.24	6	Y	N	Development of different activities in class in group.
Project or Topic Presentations [ON-SITE]	Cooperative / Collaborative Learning	1.2.2.II.02 1.2.2.II.03 CB02 CT03 CT04	0.24	6	Y	Y	Oral presentation of a research or didactic proposal in group.
Progress test [ON-SITE]	Assessment tests	1.2.2.II.02 1.2.2.II.04 CG10 CG11 CT03 CT04	0.08	2	Y	N	Progress or midterm test to remove content.
Final test [ON-SITE]	Assessment tests	1.2.2.II.02 1.2.2.II.04 CG10 CG11 CT03 CT04	0.08	2	Y	Y	Ending test on the contents of the subject, including both mathematical and teaching contents.
Total:			**9**	**225**			
Total credits of in-class work: 3.6				**Total class time hours: 90**			
Total credits of out of class work: 5.4				**Total hours of out of class work: 135**			

As: Assessable training activity

Com: Training activity of compulsory overcoming (It will be essential to overcome both continuous and non-continuous assessment).

8. Evaluation criteria and Grading System

Evaluation System	Continuous assessment	Non-continuous evaluation*	Description
Assessment of active participation	10.00%	10.00%	Realization of several activities and work in class. Participation

Final test	70.00%	70.00%	in classes and seminars. There are two options to overcome the written tests for evaluation: (1) Passing the 2 tests of progress or partials that will be along the course. (2) Performing the written test in the official dates, whether ordinary or extraordinary call. I.e., those students who do not or will not pass the progress tests, shall submit to the final test in the official dates.
Projects	20.00%	20.00%	On this criterion will be assessed: -the development of activities, seminars, projects, and/or proposed workshops. -an oral presentation of a research or didactic proposal in group work. This approach is COMPULSORY to overcome the course. This criterion may be average with the rest from a mark of 4.
Total:	**100.00%**	**100.00%**	

According to art. 4 of the UCLM Student Evaluation Regulations, it must be provided to students who cannot regularly attend face-to-face training activities the passing of the subject, having the right (art. 12.2) to be globally graded, in 2 annual calls per subject , an ordinary and an extraordinary one (evaluating 100% of the competences).

Evaluation criteria for the final exam:

    Continuous assessment:

The final mark will be calculated by using the weighted arithmetic mean of the different evaluation instruments:
a) Progress tests or Final test (70%). Students who do not pass the progress tests can be presented to the final test in the regular call in the official date set by the Center.
b) Realization of projects, activities, seminars, workshops and oral exposition (20%).
c) Participation on seminars and workshops (10%).

It is essential to obtain a minimum of 40% (4 out of 10) in the compulsory evaluable training activities, that is, progress test (10%) and oral exposition (10%), to make the average between training activities applicable. To pass the subject the student must obtain a minimum mark of 5 out of 10. This compulsory evaluation activities can be RECOVERABLE in the extraordinary call, with the realization of similar tests.

*For every mistake of those included in the List of mistakes to avoid (see Moodle), the student will miss 0.2 marks in the corresponding activity/test/presentation/exam up to a maximum of 1.6 marks (8 mistakes). If the mistake is repeated, the repetition(s) will be also penalized.

" If a fraudulent practice is detected in the evaluation test carried out by a student, the exam will result into failure, with a final grade of zero (0) in the corresponding subject. The detection by the teacher that an assignment, essay or similar test has not been prepared by the student will result in a numerical grade of zero (0) both in the tests and in the subject in which it has been detected, regardless of the rest of the grades obtained by the student (see Article 8 of the UCLM Student Assessment Regulations).

    Non-continuous evaluation:

The non.continuous assessment, similar as continuous assessment, the final mark will be calculated by using the weighted arithmetic mean of the different evaluation instruments:
a) Final test (70%), in the official date set by the Center, in the regular and /or extraordinary call.
b) Realization of projects, activities, seminars, workshops and oral exposition (20%).
c) Follow-up of the subject (10%): activities and work proposed in the different meetings and interviews, for the proper follow-up of the subject.

It is essential to obtain a minimum of 40% (4 out of 10) in the compulsory evaluable training activities, that is, progress test (10%) and oral exposition (10%), to make the average between training activities applicable. To pass the subject the student must obtain a minimum mark of 5 out of 10. This compulsory evaluation activities can be RECOVERABLE in the extraordinary call, with the realization of similar tests.

* Either continuous and non-continuous assesement, in the different evaluation system, for every mistake of those included in the List of mistakes to avoid (see Moodle), the student will miss 0.2 points in the corresponding activity/test/presentation/exam up to a maximum of 1.6 points (8 mistakes). If the mistake is repeated, the repetition(s) will be also penalized.

* If a fraudulent practice is detected in the evaluation test carried out by a student, the exam will result into failure, with a final grade of zero (0) in the corresponding subject. The detection by the teacher that an assignment, essay or similar test has not been prepared by the student will result in a numerical grade of zero (0) both in the tests and in the subject in which it has been detected, regardless of the rest of the grades obtained by the student (see Article 8 of the UCLM Student Assessment Regulations).

Specifications for the resit/retake exam:
The retake exam will apply the same criteria as in the final exam.
Specifications for the second resit / retake exam:
The special retake exam will apply the same criteria as in the final exam.

9. Assignments, course calendar and important dates	
Not related to the syllabus/contents	
Hours	**hours**
Project or Topic Presentations [PRESENCIAL][Cooperative / Collaborative Learning]	6
Progress test [PRESENCIAL][Assessment tests]	2
Final test [PRESENCIAL][Assessment tests]	2
Unit 1 (de 6): The curriculum of the geometry and measurement in the elementary school	
Activities	**Hours**
Study and Exam Preparation [AUTÓNOMA][Self-study]	2
Class Attendance (theory) [PRESENCIAL][Lectures]	3
Class Attendance (practical) [PRESENCIAL][Problem solving and exercises]	2
Writing of reports or projects [AUTÓNOMA][Cooperative / Collaborative Learning]	2

Teaching period: Two weeks

Unit 2 (de 6): Geometry and spatial thinking	
Activities	**Hours**
Study and Exam Preparation [AUTÓNOMA][Self-study]	5
Writing of reports or projects [AUTÓNOMA][Self-study]	10
Class Attendance (theory) [PRESENCIAL][Lectures]	5
Class Attendance (practical) [PRESENCIAL][Problem solving and exercises]	6
Writing of reports or projects [AUTÓNOMA][Cooperative / Collaborative Learning]	4

Teaching period: Four weeks

Unit 3 (de 6): Basics of geometry in the space	
Activities	**Hours**
Study and Exam Preparation [AUTÓNOMA][Self-study]	10
Writing of reports or projects [AUTÓNOMA][Self-study]	12
Class Attendance (theory) [PRESENCIAL][Lectures]	8
Class Attendance (practical) [PRESENCIAL][Problem solving and exercises]	7
Writing of reports or projects [AUTÓNOMA][Cooperative / Collaborative Learning]	10
Workshops or seminars [PRESENCIAL][Cooperative / Collaborative Learning]	2

Teaching period: Seven weeks

Unit 4 (de 6): Geometry of transformations in the plane	
Activities	**Hours**
Study and Exam Preparation [AUTÓNOMA][Self-study]	10
Writing of reports or projects [AUTÓNOMA][Self-study]	10
Class Attendance (theory) [PRESENCIAL][Lectures]	8
Class Attendance (practical) [PRESENCIAL][Problem solving and exercises]	8
Writing of reports or projects [AUTÓNOMA][Cooperative / Collaborative Learning]	3

Teaching period: Five weeks

Unit 5 (de 6):	
Activities	**Hours**
Study and Exam Preparation [AUTÓNOMA][Self-study]	14
Writing of reports or projects [AUTÓNOMA][Self-study]	16
Class Attendance (theory) [PRESENCIAL][Lectures]	9
Class Attendance (practical) [PRESENCIAL][Problem solving and exercises]	10
Writing of reports or projects [AUTÓNOMA][Cooperative / Collaborative Learning]	4
Workshops or seminars [PRESENCIAL][Cooperative / Collaborative Learning]	4

Teaching period: Seven weeks

Unit 6 (de 6):	
Activities	**Hours**
Study and Exam Preparation [AUTÓNOMA][Self-study]	9
Writing of reports or projects [AUTÓNOMA][Self-study]	12
Class Attendance (theory) [PRESENCIAL][Lectures]	6
Class Attendance (practical) [PRESENCIAL][Problem solving and exercises]	2
Writing of reports or projects [AUTÓNOMA][Cooperative / Collaborative Learning]	2

Teaching period: Three weeks

Global activity	
Activities	**hours**
Class Attendance (theory) [PRESENCIAL][Lectures]	39
Writing of reports or projects [AUTÓNOMA][Self-study]	60
Class Attendance (practical) [PRESENCIAL][Problem solving and exercises]	35
Writing of reports or projects [AUTÓNOMA][Cooperative / Collaborative Learning]	25
Workshops or seminars [PRESENCIAL][Cooperative / Collaborative Learning]	6
Project or Topic Presentations [PRESENCIAL][Cooperative / Collaborative Learning]	6
Progress test [PRESENCIAL][Assessment tests]	2
Final test [PRESENCIAL][Assessment tests]	2
Study and Exam Preparation [AUTÓNOMA][Self-study]	50
Total horas:	225

10. Bibliography and Sources

Author(s)	Title/Link	Publishing house	City	ISBN	Year	Description
Alsina, Claudi	Geometría para turistas: una guía para disfrutar de 125 mrav	Ariel		978-84-344-8806-9	2009	
Alsina, Claudi	Invitación a la didáctica de la geometría	Sintesis		84-7738-020-1	1997	
Castro, Enrique	Didáctica de la Matemática en la Educación Primaria	Sintesis		84-7738-919-5		
Chamorro Plaza, Carmen	El problema de la medida: didáctica de las magnitudes lineal	Síntesis		84-7738-013-0	2000	
Chamorro Plaza, Carmen y otros	Didáctica de las Matemáticas	Pearson			2003	
Godino, J. D.	Didactica de las Matemáticas para Maestros http://www.ugr.es/				2004	

Alsina, Claudi	El club de la hipotenusa: un paseo por la historia de las ma	Ariel		978-84-344-5385-2	2008
Carrillo, L., Contreras, L.C., Climent, N., Monte, M.A., Escudero, D.I. y Flores, E. (Coord.)	Didáctica de las Matemáticas para maestros de Educación Primaria	Paraninfo	Madrid	978-84-283-3754-0	2016