



## Information about the subject

**Degree:** Bachelor of Arts Degree in Primary School Education

**Faculty:** Faculty of Teacher Training and Education Sciences

**Code:** 1160308 **Name:** Fundamentals of Geometry and Information Processing

**Credits:** 4,50 **ECTS Year:** 3 **Semester:** 1

**Module:** Teaching and learning of Mathematics

**Subject Matter:** Mathematics and its Didactics **Type:** Compulsory

**Field of knowledge:** Social and Legal Science

**Department:** -

**Type of learning:** Classroom-based learning / Online

**Languages in which it is taught:** Spanish

### Lecturer/-s:

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## Module organization

### Teaching and learning of Mathematics

Subject Matter	ECTS	Subject	ECTS	Year/semester
Mathematics and its Didactics	15,00	Fundamentals of Arithmetic and Measurement	4,50	1/2
		Fundamentals of Geometry and Information Processing	4,50	3/1
		Teaching of Mathematics	6,00	3/2



## Learning outcomes

At the end of the course, the student must be able to prove that he/she has acquired the following learning outcomes:

- R1 The student actively participates in the proposed tasks in class.
- R2 The student uses correct terminology and symbols specific to mathematics.
- R3 The student maintains a high degree of grammatical and spelling accuracy.
- R4 The student poses and solves geometric problems and data handling related to everyday life.
- R5 The student applies and demonstrates basic properties of geometric figures.
- R6 The student uses statistical techniques for data analysis.
- R7 The student values mathematics as a cultural fact.
- R8 The student provides clear and detailed oral and written descriptions and presentations, developing concrete ideas and concluding with appropriate conclusions, while maintaining a high degree of grammatical and spelling accuracy.



## Competencies

Depending on the learning outcomes, the competencies to which the subject contributes are (please score from 1 to 4, being 4 the highest score):

BASIC		Weighting			
		1	2	3	4
CB4	That students will be able to convey information, ideas, problems and solutions to both specialized and non-specialized audiences.				X
GENERAL		Weighting			
		1	2	3	4
CG1	Understand the curricular areas of Primary Education, the interdisciplinary relationship between them, the evaluation criteria, and the body of didactic knowledge around the respective teaching and learning procedures.			X	
CG2	Design, plan, and evaluate teaching and learning processes, both individually and in collaboration with other teachers and professionals from the school.			X	
CG6	Know the organization of primary education schools and the diversity of actions involved in their functioning. Perform tutoring and orientation with students and their families, addressing the singular educational needs of the students. Recognize that the exercise of the teaching function must go on improving and adapting to the scientific, pedagogical, and social changes throughout life.		X		
CG10	Reflect on classroom practices to innovate and improve teaching work. Acquire habits and skills for autonomous and cooperative learning and promote it among students.			X	
CG11	Know and apply information and communication technologies in the classrooms. Selectively discern audiovisual information that contributes to learning, civic education, and cultural enrichment.				X
SPECIFIC		Weighting			
		1	2	3	4



## Year 2023/2024

## 1160308 - Fundamentals of Geometry and Information Processing



## Assessment system for the acquisition of competencies and grading system

### In-class teaching

Assessed learning outcomes	Granted percentage	Assessment method
R2, R3, R4, R5, R6, R8	15,00%	Oral presentation of group and individual works: Self-assessment systems (oral, written, individual, in groups). Oral tests (individual, in groups, presentation of topics or works).
	0,00%	Monitoring of student work in non-face-to-face/distance sessions: Observation techniques, rubrics, checklists. Portfolios.
	0,00%	Active participation in theoretical-practical sessions, seminars, and tutorials: Attitude scale (to gather opinions, values, social and managerial skills, interaction behaviors).
R2, R3, R4, R5, R6, R8	60,00%	Written tests: Objective tests with short and extended responses.
R1, R2, R3, R4, R5, R6, R7, R8	25,00%	Projects. Development and/or design works.

### Observations

The exam will consist of a written test of between 5 and 8 questions with subsections, among which there will be exercises, problems and theoretical questions. In all cases, the answers must be duly justified.

The section "Projects. Development and/or design work" will be evaluated by carrying out practices or questionnaires, both group and individual.

It is an essential requirement to pass the subject to pass each section of it.

It is an essential requirement to pass the subject that the student does not make more than 3 spelling mistakes in each written test (both assignments and practices as well as theoretical-practical exam).

Notes of the approved parts of one course will not be saved for another.

The delivery of the works and practices must be done in a timely manner within the periods established by the teacher of the subject.

### Online teaching

Assessed learning outcomes	Granted percentage	Assessment method
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R2, R3, R4, R5, R6, R8	60,00%	Written tests: short-answer objective tests, developmental tests. Projects. Reports/Practical reports. Design work, development
R2, R3, R4, R5, R6, R8	15,00%	Exposición oral de trabajos grupales e individuales: sistemas de autoevaluación (oral, escrita, individual, en grupo). Pruebas orales (individual, en grupo, presentación de temas-trabajos)
	0,00%	Monitoring of student work in non-face-to-face/distance sessions: Observation techniques, rubrics, checklists. Portfolios.
	0,00%	Active participation in theoretical-practical sessions, seminars, and tutorials: Attitude scale (to gather opinions, values, social and managerial skills, interaction behaviors).
R1, R2, R3, R4, R5, R6, R7, R8	25,00%	Projects. Development and/or design works.

## Observations

The exam will consist of a written test of between 5 and 8 questions with subsections, among which there will be exercises, problems and theoretical questions. In all cases, the answers must be duly justified.

The section "Projects. Development and/or design work" will be evaluated by carrying out practices or questionnaires, both group and individual.

It is an essential requirement to pass the subject to pass each section of it.

It is an essential requirement to pass the subject that the student does not make more than 3 spelling mistakes in each written test (both assignments and practices as well as theoretical-practical exam).

Notes of the approved parts of one course will not be saved for another.

The delivery of the works and practices must be done in a timely manner within the periods established by the teacher of the subject.

## CRITERIA FOR THE AWARDING OF HONOURS:

As a sign of academic exceptionality, the Honour's Degree will be awarded to the student who, in addition to obtaining a maximum mark in the above criteria, is considered by the teacher to be worthy of such a distinction. And, in accordance with the general regulations which indicate that only one matriculation of honour can be awarded for every 20 students, not per fraction of 20, with the exception of the case of groups of less than 20 students in total, in which one matriculation can be awarded.





## Learning activities

The following methodologies will be used so that the students can achieve the learning outcomes of the subject:

M1	Participatory Master Class
M2	Case Study
M5	Seminar Work
M6	Problem-based Learning
M7	Cooperative/Collaborative Work
M9	Group and Individual Tutoring
M10	Individual Tutoring
M11	Participatory Master Class
M12	Case Study
M13	Seminar Work
M17	Problem-based Learning
M18	Cooperative/Collaborative Work
M19	Individual Tutoring
M20	Group and Individual Tutoring



## IN-CLASS LEARNING

### IN-CLASS LEARNING ACTIVITIES

	LEARNING OUTCOMES	HOURS	ECTS
Group Work Presentation M7	R1, R2, R3, R4, R5, R6, R8	3,00	0,12
Theoretical Class M1	R1, R2, R3, R4, R5, R6, R7	22,50	0,90
Practical Class M6, M7, M9	R1, R2, R3, R4, R5, R6, R7	12,00	0,48
Tutoring M10	R2, R3, R5, R6, R8	4,75	0,19
Evaluation M2, M6	R2, R3, R4, R5, R6, R8	2,75	0,11
<b>TOTAL</b>		<b>45,00</b>	<b>1,80</b>

### LEARNING ACTIVITIES OF AUTONOMOUS WORK

	LEARNING OUTCOMES	HOURS	ECTS
Group work M7	R2, R3, R4, R5, R6, R7, R8	17,00	0,68
Individual work M2, M6	R2, R3, R4, R5, R6, R7	50,50	2,02
<b>TOTAL</b>		<b>67,50</b>	<b>2,70</b>



## ON-LINE LEARNING

### SYNCHRONOUS LEARNING ACTIVITIES

	LEARNING OUTCOMES	HOURS	ECTS
Theoretical class (e-learning mode) M11	R1, R2, R3, R4, R5, R6, R7	22,00	0,88
Practical class (e-learning mode) M17, M18, M20	R1, R2, R3, R4, R5, R6, R7, R8	12,00	0,48
Individual tutoring (e-learning mode) M19	R2, R3, R5, R6, R8	3,00	0,12
Evaluation (e-learning mode) M12, M17	R2, R3, R4, R5, R6, R8	4,00	0,16
<b>TOTAL</b>		<b>41,00</b>	<b>1,64</b>

### ASYNCHRONOUS LEARNING ACTIVITIES

	LEARNING OUTCOMES	HOURS	ECTS
Individual work Activities (e-learning mode) M12, M17	R2, R3, R4, R5, R6, R7	56,50	2,26
Group Work (e-learning mode) M18	R2, R3, R4, R5, R6, R7, R8	9,75	0,39
Discussion Forums (e-learning mode) M18	R2, R3, R4, R5, R6, R7, R8	0,25	0,01
Asynchronous Tutoring (e-learning mode) M19	R2, R3, R4, R5, R6, R8	1,00	0,04
Theoretical-Practical Class (distance mode) M11, M12, M17	R1, R2, R3, R4, R5, R6, R7, R8	4,00	0,16
<b>TOTAL</b>		<b>71,50</b>	<b>2,86</b>



## Description of the contents

Description of the necessary contents to acquire the learning outcomes.

### Theoretical contents:

Content block	Contents
Plane geometry	<ul style="list-style-type: none"><li>·Basic concepts.</li><li>·Classification of plane figures.</li><li>·Likeness. Metric relations of the triangle.</li><li>·Movements in the plane.</li><li>·Lengths and areas.</li></ul>
Spatial geometry	<ul style="list-style-type: none"><li>·Polyhedra. Basic concepts. Classification.</li><li>·Solids of revolution.</li><li>·Surface development. Volume.</li></ul>
Statistics	<ul style="list-style-type: none"><li>·Basic concepts.</li><li>·Statistical measures.</li><li>·Graphic representation.</li></ul>
Probability	<ul style="list-style-type: none"><li>·Basic concepts.</li><li>·Laplace's rule.</li></ul>



## Temporary organization of learning:

Block of content	Number of sessions	Hours
Plane geometry	11,00	22,00
Spatial geometry	5,50	11,00
Statistics	4,00	8,00
Probability	2,00	4,00



## References

- Alsina i Pastells, A. (2004). *Desarrollo de competencias matemáticas con recursos lúdicos-manipulativos*. Para niños y niñas de 6 a 12 años. Narcea.
- Callejo, M<sup>a</sup> L. (1994). *Un club matemático para la diversidad*. Narcea.
- Cascallana, M. T. (1988). *Iniciación a la matemática*. Materiales y recursos didácticos. Ed. Aula XXI / Santillana.
- Castro, E. (2001). *Didáctica de la matemática en la Educación Primaria*. Madrid: Síntesis.
- Chamorro, M. C. (2003). *Didáctica de las Matemáticas para Primaria*. Prentice Hall.
- Chauvel, D., Michel, V. (1989). *Juegos de reglas para desarrollar la inteligencia*. Nancea. Colección (1991). *Matemáticas: Cultura y aprendizaje*. Madrid: Síntesis.
- Corbalán, F. (1996). *Números, cultura y juegos. Tu mundo y las matemáticas*. Videocinco, Madrid.
- De Guzmán, M. (2004). *Para pensar mejor*. Ediciones Pirámide (Grupo Anaya S.A.). Ferrero, L. (1991). *El juego y la matemática*. La Muralla. Madrid.
- Godino, J. D. (2004) *Matemáticas para maestros*. Dpto. Didáctica de las Matemáticas, Univ. Granada.
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- Hidalgo-Alonso, S. (1997). *Las matemáticas en el título de maestro*. Consideraciones teóricas, didácticas y prácticas. L. Diagonal.
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- Nortes-Checa, A. (2014). *Actividades prácticas de Matemáticas y su didáctica 2*. EDITORIAL CCS.
- Nortes-Checa, A., Nortes-Martínez-Artero, R. (2012). *La resolución de problemas de Geometría*. EDITORIAL CCS.



## Addendum to the Course Guide of the Subject

Due to the exceptional situation caused by the health crisis of the COVID-19 and taking into account the security measures related to the development of the educational activity in the Higher Education Institution teaching area, the following changes have been made in the guide of the subject to ensure that Students achieve their learning outcomes of the Subject.

**Situation 1: Teaching without limited capacity** (when the number of enrolled students is lower than the allowed capacity in classroom, according to the security measures taken).

In this case, no changes are made in the guide of the subject.

**Situation 2: Teaching with limited capacity** (when the number of enrolled students is higher than the allowed capacity in classroom, according to the security measures taken).

In this case, the following changes are made:

### 1. Educational Activities of Onsite Work:

All the foreseen activities to be developed in the classroom as indicated in this field of the guide of the subject will be made through a simultaneous teaching method combining onsite teaching in the classroom and synchronous online teaching. Students will be able to attend classes onsite or to attend them online through the telematic tools provided by the university (videoconferences). In any case, students who attend classes onsite and who attend them by videoconference will rotate periodically.

In the particular case of this subject, these videoconferences will be made through:

☒ Microsoft Teams

☒ Kaltura



## **Situation 3: Confinement due to a new State of Alarm.**

In this case, the following changes are made:

### **1. Educational Activities of Onsite Work:**

All the foreseen activities to be developed in the classroom as indicated in this field of the guide of the subject, as well as the group and personalized tutoring, will be done with the telematic tools provided by the University, through:

☒ Microsoft Teams

☒ Kaltura

Explanation about the practical sessions:

1. They will be carried out individually or in groups through Teams and the UCVNet Platform.
2. Online attendance at practical sessions is mandatory. In case of not being able to attend the online sessions for a justified reason, it will be mandatory to present this justification and carry out tutorials with the teacher to follow up on the practical sessions.





## 2. System for Assessing the Acquisition of the competences and Assessment System

### ONSITE WORK

#### Regarding the Assessment Tools:

☒

The Assessment Tools will not be modified. If onsite assessment is not possible, it will be done online through the UCVnet Campus.

☐

The following changes will be made to adapt the subject's assessment to the online teaching.

Course guide		Adaptation	
Assessment tool	Allocated percentage	Description of the suggested changes	Platform to be used

The other Assessment Tools will not be modified with regards to what is indicated in the Course Guide.

#### Comments to the Assessment System:



## ONLINE WORK

### Regarding the Assessment Tools:

☐

The Assessment Tools will not be modified. If onsite assessment is not possible, it will be done online through the UCVnet Campus.

☒

The following changes will be made to adapt the subject's assessment to the online teaching.

Course guide		Adaptation	
Assessment tool	Allocated percentage	Description of the suggested changes	Platform to be used
Exam	60	35-40%	UCVNet /Teams
Practices	25	45%	UCVNet /Teams
Oral presentation	15	15-20%	UCVNet /Teams

The other Assessment Tools will not be modified with regards to what is indicated in the Course Guide.

### Comments to the Assessment System:



1. The exam will consist of two parts: a questionnaire with closed questions that will account for 50-60% of the Exam mark and a problem-solving part with a weight of 40-50% of the Exam mark.
2. It is still an essential requirement to pass all the sections to pass the subject.
3. The criteria referring to grammatical expression and spelling are maintained.