



Universidad
de Alcalá

COURSE GUIDE

MATHEMATICS II

**Bachelor's Degree in Primary School
Education**

University of Alcalá

Academic Year 2021/22

3rd Year – 1st term

COURSE GUIDE

Subject name:	MATHEMATICS II
Course code:	430015
Degree subject:	BACHELOR'S DEGREE IN PRIMARY SCHOOL EDUCATION
Department and Field of Knowledge:	PHYSICS AND MATHEMATICS
Type of class:	BASIC
ECTS Credits:	6
Year and Term:	THIRD YEAR – FIRST TERM
Teaching staff:	- T.B.D
Class schedule:	to be confirmed on the subject's web page.
Language of instruction:	English

1. COURSE DESCRIPTION

The subject introduced here is included in the catalog of 'Basic Materials' in the Bachelor's Degree in Primary School Education, regulated by the RD 1393/2007, on 29 October.

The subject 'Mathematics II' is dedicated to developing basic concepts of geometry, measurements and the treatment of information and chance. In addition to revising the relevant concepts for the curriculum of Primary School Education, special emphasis will be placed on connecting the subject contents with physical and social reality.

Pre-requisites and Recommendations

Due to the fact that 'Mathematics II' is primarily an applied subject, the student must participate fully in the classes. Also, it would be beneficial to have already acquired a knowledge of basic mathematical contents taught in secondary school education.

2. COMPETENCIES

Key competencies:

1. Correctly demonstrating the acquired knowledge.
2. Organizing, planning and developing group work.
3. Developing critical reasoning.

Specific competencies:

1. Defining and classifying the different types of flat and spatial forms, according to different concepts.
2. Identifying properties of geometrical objects and how they change after various transformations.
3. Estimating and calculating measurements and establishing relations between measurements and geometrical transformations.
4. Identifying the different parts of a Theorem (hypothesis, theory), and developing simple, logical reasoning skills.
5. Interpreting data and graphs.
6. Identifying facts with a random component, and distinguishing between the possible, the probable, the impossible, the certain...
7. Choosing a convenient way of representing different sets of data.
8. Solving problems related to daily life.

3. CONTENTS

Content Units	Total classes, credits or hours
Geometry: <ul style="list-style-type: none">• Flat and spatial forms.• Geometrical transformations.	<ul style="list-style-type: none">• 25 class-contact hours
Measurements. Estimation and calculation of magnitudes. <ul style="list-style-type: none">• Length, area, volume.• Measurement of other magnitudes.	<ul style="list-style-type: none">• 10 class-contact hours
Treatment of information, chance and probability. <ul style="list-style-type: none">• Representation of information and interpretation of graphs.• Basic descriptive statistics.• Introduction to probability.	<ul style="list-style-type: none">• 10 class-contact hours

4. TEACHING AND LEARNING METHODOLOGIES. EDUCATIONAL ACTIVITIES

4.1. Distribution of credits

Number of class-contact hours:	50 hours - 45 hours of which will be dedicated to the syllabus, 2 hours of tutorials and 3 hours of exams and practical tests.
Number of hours of self-study:	100 hours.
Total hours	150 hours.

4.2. Methodological strategies, materials and didactic resources

1. Theory classes:
 - a. The student should watch in advance the video and take notes
 - b. Teacher explains fundamental content of each topic orally, with student participation, whilst providing practical examples.
 - c. Practice and check with student's notes.
2. Practical classes:
 - a. Students must complete exercises and solve proposed problems individually or in small groups.
 - b. Completing individual problem-solving tests.
3. Tutorials:
 - a. Individual classes or in small groups in which independent learning, knowledge of the subject content and student's research activities are all consolidated, whilst being supervised by the teacher.

Disclosure Note

The University of Alcalá guarantees to its students that, if due to health requirements the competent authorities do not allow the total or partial attendance of the teaching activities, the teaching plans will achieve their objectives through a teaching-learning and evaluation methodology in online format, which will return to the face-to-face mode as soon as these impediments cease.

5. ASSESSMENT: Procedures, assessment criteria and grading criteria

a) ASSESSMENT CRITERIA

The following aspects will be assessed:

1. Understanding concepts.
2. Acquiring knowledge.
3. Reasoned solution of problems and exercises.
4. Active class participation.

5. Accuracy and clarity in presentations (oral and written) will be especially valued, as well as presentation of work and spelling.

b) ASSESSMENT METHODS

- Monitoring student's active class participation.
- Individual problem solving tests.
- Examination on theoretical and practical knowledge acquired throughout both the theoretical and practical classes and individual student work.

c) GRADING CRITERIA

- The overall examination grade weighting within the grade for continuous assessment is 40 %.
- The rest of the grade will be obtained in the following way:
 - Partial assessment test: 25%.
 - Weekly problem solving tests: 20 %.
 - Monitoring student's active participation in classes: 15 %.

d) GENERAL GRADING CRITERIA

- Continuous assessment: according to what is specified in section c) Grading criteria.
- Final assessment (only for students who have been granted permission): will consist of an overall final exam.
- The overall final exam can be a re-sit, if the grade obtained is more than the grade in the partial assessment test.
- The re-sit examination period will consist of an overall final exam. The student will be able to request that they qualify for this exam taking into account the part of the grade obtained through continuous assessment, providing that it is during the same academic year.

6. BIBLIOGRAPHY

- T. H. Parker, S. J. Baldrige. Elementary geometry for teachers. Sefton-Ash Publishing, EE UU, 2008.
- G. L. Musser, B. E. Peterson, W. F. Burger. Mathematics for Elementary Teachers: a contemporary approach. Ed. Wiley. 2010.
- J. D. Sally, P. J. Sally: Geometry. A guide for teachers. American Mathematical Society, 2011.
- L. Blanco, J. Cárdenas, R. Gómez, A. Caballero. Learn to teach geometry in elementary school. Department of Didactics of Experimental Sciences and Mathematics. University of Extremadura.
- SMP – Interact. Cambridge University Press.