

**1. General information****Course:** MATHEMATICS FOR BUSINESS II**Type:** BASIC**Degree:** 317 - UNDERGRADUATE DEGREE IN BUSINESS MANAGEMENT AND ADMINISTRATION (AB)**Center:** 5 - FACULTY OF ECONOMICS AND BUSINESS**Year:** 1**Main language:** Spanish**Use of additional languages:****Web site:****Code:** 54305**ECTS credits:** 6**Academic year:** 2022-23**Group(s):** 12 13**Duration:** C2**Second language:****English Friendly:** Y**Bilingual:** N**Lecturer:** MARIA EMILIA GARCIA PEREZ - Group(s): 13

Building/Office	Department	Phone number	Email	Office hours
Melchor de Macanaz/1.01	ANÁLISIS ECONÓMICO Y FINANZAS	2390	emi.garcia@uclm.es	

Lecturer: GONZALO GARCIA-DONATO LAYRON - Group(s): 12 13

Building/Office	Department	Phone number	Email	Office hours
Melchor de Macanaz/3.11	ANÁLISIS ECONÓMICO Y FINANZAS	2332	gonzalo.garciadonato@uclm.es	

2. Pre-Requisites

In general, the knowledge that is required to successfully follow a course in maths relates with the basic algebraic properties of polynomials, logarithms and solving linear and non-linear equations. It is relevant a basic use of derivatives, including the standard techniques (sums, products and chain rule). Finally, it is also important to know the basic techniques for function representations and in particular the representation of the main functions.

It is recommendable having taken the previous course “Matemáticas I para la empresa” because several of the methods that are seen there will be used in this course.

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

The courses in maths in this degree, provide with formal methods to other courses in the degree, like Statistics, Economy and Finance.

In relation with professional skills, the main goal of the course is to introduce, from a mathematical perspective, the models and methods of quantitative analysis, including methods for decision making.

4. Degree competences achieved in this course**Course competences**

Code	Description
E07	Understand the economic environment as a result and application of theoretical or formal representations on how the economy works. To do so, it will be necessary to be able to understand and use common handbooks, as well as articles and, in general, leading edge bibliography in the core subjects of the curriculum.
E13	Ability to make logical representative models of the business reality
G01	Possession of the skills needed for continuous, self-led, independent learning, which will allow students to develop the learning abilities needed to undertake further study with a high degree of independence.
G04	Ability to use and develop information and communication technologies and to apply them to the corresponding business department by using specific programmes for these business areas.

5. Objectives or Learning Outcomes**Course learning outcomes****Description**

Know the tools and methods for the quantitative analysis of the company and its environment, including models for business decision making as well as economic forecast models.

Work out problems in creative and innovative ways.

Additional outcomes

6. Units / Contents

Unit 1: The indefinite integral

Unit 2: The definite integral

Unit 3: Calculus for several variables

Unit 4: Multivariate integration

Unit 5: Introduction to the theory of optimization

Unit 6: Classical programming

7. Activities, Units/Modules and Methodology

Training Activity	Methodology	Related Competences (only degrees before RD 822/2021)	ECTS	Hours	As	Com	Description
Class Attendance (theory) [ON-SITE]	Lectures	E07 E13 G01 G04	1.33	33.25	N	-	
Class Attendance (practical) [ON-SITE]	Problem solving and exercises	E07 E13 G01	0.67	16.75	N	-	
Other on-site activities [ON-SITE]	Assessment tests	E07 E13 G01 G04	0.1	2.5	Y	Y	
Progress test [ON-SITE]	Assessment tests	E07 E13 G01	0.1	2.5	Y	Y	
Final test [ON-SITE]	Assessment tests	E07 E13 G01	0.1	2.5	Y	Y	
Other off-site activity [OFF-SITE]	Problem solving and exercises	G01	0.2	5	N	-	
Study and Exam Preparation [OFF-SITE]	Self-study	G01	1.4	35	N	-	
Group tutoring sessions [ON-SITE]	Group tutoring sessions	E07 E13 G01	0.1	2.5	N	-	
Other off-site activity [OFF-SITE]	Self-study	E07 G01 G04	2	50	N	-	
Total:			6	150			
Total credits of in-class work: 2.4			Total class time hours: 60				
Total credits of out of class work: 3.6			Total hours of out of class work: 90				

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
Other methods of assessment	20.00%	0.00%	Based on self-evaluations or cooperative activities or resolution of group exercises, etc.
Test	80.00%	100.00%	Test/s of evaluation
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 subject follows an evaluation system based on the assessment of various training activities and an exam. The student is required to obtain at least a 4 in the final evaluation test to make an average with the grade obtained in the rest of the proposed training activities. Any student may change to the noncontinuous assessment mode as long as they have not participated during the class teaching period in assessable activities that together account for at least 50% of the total assessment of the subject and, in that case, they must communicate it before the end of the class period.

Regarding the evaluation in case of illness or other special circumstances (mitigating rules), see article 6 of the Student Evaluation Regulation of the University of Castilla-La Mancha.

Non-continuous evaluation:

The evaluation will be carried out with a final test that will include the specific tests that are considered necessary to evaluate all the competencies of the subject.

Regarding the evaluation in case of illness or other special circumstances (mitigating rules), see article 6 of the Student Evaluation Regulation of the University of Castilla-La Mancha.

Specifications for the resit/retake exam:

Final exam 100% of the subject.

Specifications for the second resit / retake exam:

The evaluation will be carried out on a single written exam, being necessary to pass the subject a minimum score of 5 out of 10.

9. Assignments, course calendar and important dates

Not related to the syllabus/contents	
Hours	hours
Class Attendance (theory) [PRESENCIAL][Lectures]	33.25
Class Attendance (practical) [PRESENCIAL][Problem solving and exercises]	16.75
Other on-site activities [PRESENCIAL][Assessment tests]	2.5
Progress test [PRESENCIAL][Assessment tests]	2.5
Final test [PRESENCIAL][Assessment tests]	2.5
Other off-site activity [AUTÓNOMA][Problem solving and exercises]	5

Study and Exam Preparation [AUTÓNOMA][Self-study]	35
Group tutoring sessions [PRESENCIAL][Group tutoring sessions]	2.5
Other off-site activity [AUTÓNOMA][Self-study]	50
Global activity	
Activities	hours
Class Attendance (theory) [PRESENCIAL][Lectures]	33.25
Class Attendance (practical) [PRESENCIAL][Problem solving and exercises]	16.75
Other on-site activities [PRESENCIAL][Assessment tests]	2.5
Progress test [PRESENCIAL][Assessment tests]	2.5
Final test [PRESENCIAL][Assessment tests]	2.5
Other off-site activity [AUTÓNOMA][Problem solving and exercises]	5
Study and Exam Preparation [AUTÓNOMA][Self-study]	35
Group tutoring sessions [PRESENCIAL][Group tutoring sessions]	2.5
Other off-site activity [AUTÓNOMA][Self-study]	50
Total horas: 150	

10. Bibliography and Sources						
Author(s)	Title/Link	Publishing house	Citv	ISBN	Year	Description
Alpha Chiang	Métodos fundamentales de economía matemática	McGraw Hill			2006	
Fernando Coquillat	Cálculo integral: metodología y problemas	Tebar Flores			1997	
J. Aira y R. Lardner	Matemáticas aplicadas a la administración y a la economía	Pearson-Prentice Hall			2002	
J.L. LLorens	Aplicaciones de Derive: Análisis matemático I	Universidad Politécnica, Servicio de publicaciones			1993	
M. Besada y otros	Cálculo en varias variables. Cuestiones y ejercicios resueltos	Pearson			2001	
Marvin Bittinger	Cálculo para ciencias económico-administrativas	Prentice Hall			2002	
P. Hammond y K. Sydsaeter	Matemáticas para el análisis económico	Prentice Hall			1996	
R. Barbolla, E. Cerdá y P. Sanz	Optimización: cuestiones, ejercicios y aplicaciones a la economía	Prentice Hall			2001	
Susana Blanco Garcia	Matemáticas empresariales II: enfoque teórico práctico	AC			2005	
Leon Simon	An introduction to multivariable mathematics			9781598298017		
VV.AA. Schaum	CALCULUS	McGraw Hills		9780071795531	2012	
D. Girela et al	Seminar of mathematical analysis	Universidad de Sevilla. Secretariado de Publicaciones		9788447208036	2003	
Robert A. Adams	Student solution manual for calculus: a complete course, 9/E	Prentice-Hall International Edition		9780134491073	2017	