UNIVERSIDAD DE CASTILLA - LA MANCHA

GUÍA DOCENTE

1. General information

Course: MATHEMATICS FOR ECONOMICS I
Code: 53304
Type: BASIC
ECTS credits: 9
Degree: 316 - UNDERGRADUATE DEGREE IN ECONOMICS
Academic year: 2019-20
Center: 5 - FACULTY OF ECONOMICS AND BUSINESS
Group(s): 10 17
Year: 1
Duration: AN
Main language: Spanish
Second language:
Use of additional languages:
English Friendly: Y
Web site:
Bilingual: N

Lecturer: **MARIA ELISA AMO SAUS** - Group(s): **10 17**

Building/Office	Department	Phone number	Email	Office hours
Melchor de Macanaz/3.05	ANÁLISIS ECONÓMICO Y FINANZAS	926053077	elisa.amo@uclm.es	Ver web de la Facultad o página Moodle de la asignatura.

Lecturer: **JUAN FRANCISCO ORTEGA DATO** - Group(s): **10 17**

Building/Office	Department	Phone number	Email	Office hours
Melchor de Macanaz	ANÁLISIS ECONÓMICO Y FINANZAS	926053328	juanfco.ortega@uclm.es	Ver web de la Facultad o página Moodle de la asignatura.

2. Pre-Requisites

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

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
E03	Ability to find economic data and select relevant facts.
E06	Application of profesional criteria to the analysis of problems, based on the use of technical tools.
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.
G03	Develop oral and written communication skills in order to prepare reports, research projects and business projects and defend them before any commission or group of professionals (specialised or non-specialised) in more than one language, by collecting relevant evidence and interpreting it appropriately so as to reach conclusions.
G04	Ability for the use and development of information and communication technology in the development of professional activity.
G05	Capacity for teamwork, to lead, direct, plan and supervise multidisciplinary and multicultural teams in both national and international environments.

5. Objectives or Learning Outcomes

Course learning outcomes

Description

Enable student for autonomous work and learning, as well as for personal initiative

Train the student to work out problems in creative and innovative ways.

To know the tools and methods for quantitative analysis of markets, sectors and companies, including models for decision-making and economic forecasting models.

Additional outcomes

6. Units / Contents

Unit 1: Basic Elements of Linear Algebra

- **Unit 1.1**
- **Unit 1.2**
- **Unit 1.3**
- **Unit 1.4**

Unit 2: Vector Space Rn
- **Unit 2.1**
- **Unit 2.2**
- **Unit 2.3**
- **Unit 2.4**

Unit 3: Linear applications and associated matrices
- **Unit 3.1**
- **Unit 3.2**
- **Unit 3.3**

Unit 4: Matrix diagonalization
- **Unit 4.1**
- **Unit 4.2**
- **Unit 4.3**
- **Unit 4.4**
- **Unit 4.5**

Unit 5: Quadratic forms
- **Unit 5.1**
- **Unit 5.2**

Unit 6: Real numbers. Sequences and Series
- **Unit 6.1**
- **Unit 6.2**
- **Unit 6.3**
- **Unit 6.4**

Unit 7: Real functions of a real variable
- **Unit 7.1**
- **Unit 7.2**

Unit 8: Real functions of a real variable
- **Unit 8.1**
- **Unit 8.2**

Unit 9: The definite integral
- **Unit 9.1**
- **Unit 9.2**
- **Unit 9.3**

ADDITIONAL COMMENTS, REMARKS

This subject, Matemáticas I para la Economía, consists of 9 units of Linear Algebra (units 1-5), 2 units of one-variable Calculus (units 6 and 7) and 2 units of Integration (units 8 and 9).

7. Activities, Units/Modules and Methodology

Training Activity	Methodology	Related Competences (only degrees before RD 822/2021)	ECTS	Hours	As	Com	R	Description
Class Attendance (theory) [ON-SITE]	Lectures	E03 E06 G01 G03 G04	2	50	N	-	-	
Class Attendance (practical) [ON-SITE]	Problem solving and exercises	E03 E06 G01 G03 G04	1	25	N	-	-	
Progress test [ON-SITE]	Assessment tests	E03 E06 G01 G03 G04 G05	0.08	2	Y	N	Y	
Progress test [ON-SITE]	Assessment tests	E03 E06 G01 G03 G04	0.08	2	Y	N	N	
Progress test [ON-SITE]	Assessment tests	E03 E06 G01 G03 G04	0.08	2	Y	N	Y	
Final test [ON-SITE]	Assessment tests	E03 E06 G01 G03 G04	0.12	3	Y	Y	Y	
Study and Exam Preparation [OFF-SITE]	Self-study	E03 E06 G01 G03 G04 G05	2.68	67	Y	N	Y	
Other off-site activity [OFF-SITE]	Problem solving and exercises	E03 E06 G01 G03 G04 G05	2.18	54.5	N	-	-	
Study and Exam Preparation [OFF-SITE]	Self-study	E03 E06 G01 G03 G04	0.78	19.5	N	-	-	
		Total:	**9**	**225**				
		Total credits of in-class work: 3.36						**Total class time hours: 84**
		Total credits of out of class work: 5.64						**Total hours of out of class work: 141**

As: Assessable training activity
Com: Training activity of compulsory overcoming
R: Rescheduling training activity

8. Evaluation criteria and Grading System

	Grading System		
Evaluation System	**Face-to-Face**	**Self-Study Student**	**Description**
Self Evaluation and Co-evaluation	10.00%	0.00%	
Progress Tests	20.00%	0.00%	
Progress Tests	35.00%	0.00%	
Final test	35.00%	0.00%	

Total:	**100.00%**	**0.00%**	

Evaluation criteria for the final exam:

Progress test: It will be compulsory the realization of the partial test of linear algebra. (35% of the final mark of the subject)
Final test: If the student eliminate the subject of linear algebra must pass the part of in this final ordinary test. (35% of the final mark of the subject)
In the case of not eliminating the part of linear algebra, this final ordinary test will content as linear algebra as Calculus and Integration and it will be the 70% of the final mark.
In both cases it realization will be compulsory.

Specifications for the resit/retake exam:

¿Other evaluation activities¿ during the regular teaching periodmanteins the mark in the extraordinary convocatory being non-recoberable.
Those students who have elimated the part of algebra are able to mantein their mark and take an exam only of Calculus and Integration . In this case, the test will be the 45% of the final mark.
Those students who had not eliminated the part of algebra they will take the complete contents of the subject. In this case, the valoration of the final test will be the 90% of the total of the evaluation.

Specifications for the second resit / retake exam:

Second Resit/retake exam (just at the end of the Degree): It will consist in a test evaluating all units in the course and will contribute with 100% of the weight.

9. Assignments, course calendar and important dates

Not related to the syllabus/contents

Hours	**hours**
Class Attendance (theory) [PRESENCIAL][Lectures]	50
Class Attendance (practical) [PRESENCIAL][Problem solving and exercises]	25
Progress test [PRESENCIAL][Assessment tests]	2
Progress test [PRESENCIAL][Assessment tests]	2
Progress test [PRESENCIAL][Assessment tests]	2
Final test [PRESENCIAL][Assessment tests]	3
Study and Exam Preparation [AUTÓNOMA][Self-study]	67
Other off-site activity [AUTÓNOMA][Problem solving and exercises]	54.5
Study and Exam Preparation [AUTÓNOMA][Self-study]	19.5

Global activity

Activities	**hours**
Class Attendance (theory) [PRESENCIAL][Lectures]	50
Class Attendance (practical) [PRESENCIAL][Problem solving and exercises]	25
Progress test [PRESENCIAL][Assessment tests]	2
Progress test [PRESENCIAL][Assessment tests]	2
Progress test [PRESENCIAL][Assessment tests]	2
Final test [PRESENCIAL][Assessment tests]	3
Study and Exam Preparation [AUTÓNOMA][Self-study]	67
Other off-site activity [AUTÓNOMA][Problem solving and exercises]	54.5
Study and Exam Preparation [AUTÓNOMA][Self-study]	19.5
Total horas:	225

10. Bibliography and Sources

Author(s)	Title/Link	Publishing house	Citv	ISBN	Year	Description
David C. Lay , Steven R. Lay and Judi J. McDonald	Linear Algebra and Its Applications	PEARSON			2016	
Gilbert Strang	Introduction to Linear Algebra	Wellesley - Cambridge Press		978-0-9802327-7-6	2016	
Arvesú, J.; Marcellán, F.; y Sánchez, J.	Problemas resueltos de álgebra lineal.	Thomson			2005	
Barbolla, R. Y Sanz, P.	Algebra lineal y teoría de matrices	Prentice Hall			1998	
Blanco García, S.; García Pineda, P. Y Pozo García, E. Del.	Matemáticas empresariales I. Enfoque teórico y práctico. Vol 2. Cálculo	AC	MADRID	84-9732-172-3	2002	
Blanco García, S.; García Pineda, P. Y Pozo García, E. Del.	Matemáticas empresariales I. Enfoque teórico y práctico. Vol I. Álgebra lineal.	AC	MADRID	84-9732-171-5	2002	
Bradley, G. L. y K. J. Smith	Cálculo en una variable. Volumen 1	Prentice Hall			1998	
Burgos Román, Juan de	Cálculo de una variable real : enunciados, respuestas y just	García-Maroto		978-84-937509-9-2	2010	
Burgos Román, Juan de	Cálculo diferencial : (una y varias variables) : 126 problem	García-Maroto		978-84-937509-0-9	2010	
Burgos Román, Juan de	Cálculo integral : test y problemas	García-Maroto		978-84-937509-5-4	2010	
Burgos Román, Juan de	Test de cálculo infinitesimal : (enunciados, respuestas y ju	García-Maroto		978-84-92976-93-5	2010	
Calvo, M.E. y Otros	Problemas resueltos de matemáticas aplicadas a la economía y la empresa	AC			2003	
Cancelo, J. R., López Ortega, J. Y Otros	Problemas de álgebra lineal para economistas. Tomo II	Tebar Flores			1995	

Chiang, Alpha C.	Métodos fundamentales de economía matemática	McGraw-Hill Interamericana		970-10-5614-0	2006
Coquillat, F. (Fernando Coquillat Durán)	Cálculo integral : metodología y problemas	Tébar Flores		84-7360-168-8	1997
García, A., García, F. y A. Gutiérrez	Cálculo I. Teoría y Problemas de Análisis Matemático en una Variable	CLAGSA			1998
Granero, F.	Cálculo Integral y Aplicaciones	Prentice Hall			2001
Jarne, G. , Perez-Grasa, J.	Matemáticas para la economía	Mc Graw Hill.			1997
Larson, R. E.; Hostetler, R. P.; Edwards, B. H.	Cálculo	Mc Graw Hill.			1999
Lay, David, C.	Álgebra lineal y sus aplicaciones	Pearson Educacion	México	978-607-32-1398-1	2012
López, M. y Vegas, A.	Curso básico de matemáticas para la economía y la dirección de empresas I.	Pirámide			2001
Stewart, J.	Cálculo en una variable	Thomson			2001