Matemáticas para la Empresa / Business Mathematics

Grado en Creación, Administración y Dirección de Empresas

UNIVERSIDAD NEBRIJA

SYLLABUS

Course: Matemáticas para la Empresa / Business Mathematics

Degree: Grado en Creación, Administración y Dirección de Empresas

Type: Core

Languages: Español / English

Modality: In-Person and Online

Credits: 6

Year: 1st

Semester: Fall Semester / Sem1

Professors: Soffritti Mirco, Martín Rodríguez, Álvaro Antonio; Aguirre Arrabal, María Cristina

1. COMPETENCES AND LEARNING OUTCOMES

1.1. General and Specific Competencies

- Competencias básicas: CB1, CB2, CB3, CB4, CB5
- Competencias generales: CG1, CG2, CG4, CG6, CG7, CG8, CG9, CG10, CG11, CG12, CG13, CG14, CG15, CG16, CG17, CG21, CG22
- Competencias específicas: CE1, CE2, CE3, CE8, CE9, CE11, CE12, CE13, CE17, CE20, CE22, CE25, CE38

1.2. Learning outcomes

- Know, associate and apply the basic elements of business analysis
- Express themselves correctly orally and in writing in Spanish
- Express themselves correctly orally and in writing in English
- Each subject in this module links its specific learning outcomes with the rest of the subjects in this report (i.e.: fundamentals of economics – economic analysis)

2. CONTENTS

2.1. Prerequisites

None.

2.2. Description

En esta asignatura se estudia el álgebra lineal: Matrices y determinantes; sistemas de ecuaciones lineales;
Teoría de funciones: límites, continuidad y derivabilidad de funciones de una y dos variables; optimización e integración de funciones de una variable; aplicaciones a modelos económicos. Ecuaciones diferenciales.

In this subject we study linear algebra: Matrices and determinants; Systems of linear equations;
Function theory: Limits, continuity and derivability of functions of one and two variables; optimization and integration of functions of a variable; Applications to economic models. Differential equations.

2.3. Covered Topics

1. **Real functions of one variable**.
   Domain, limits and continuity.
   Resolution of indeterminacies.
   Graphical representation of functions.

2. **Function optimization.**
   Calculation of derivatives and their application to study the monotony of a function as well as the calculation of maxima and minima.

3. **Integration of one variable.**
   Introduction of the concept of primitive function and study of the various methods of calculation. Calculation of areas.

4. **Linear algebra.**
   Elementary properties of matrices.
   Determinants.
   Systems of equations.

5. **Real functions of two variables.**
   Representation of contour lines.
   Optimization of two variables.

2.4. Individual / Group Assignments

Periodic realization of worksheets individually and in groups related to each of the most relevant aspects of the content.

2.5. Learning Activities

LEARNING ACTIVITIES

In-Person Learning	Hours	Attendance %
A1 Lectures	**45**	**100%**
A2 Discussion Sections	**9**	**100%**
A3 Mentoring	**9**	**100%**
A4 Individual / Group Assignments	**18**	**0%**
A5 Online Assignments	**6**	**50%**
A6 Extracurricular Materials	**6**	**0%**
A7 Self Study	**51**	**0%**
A13 Exam	**6**	**100%**

Online Learning	Hours	Attendance %
A9 Asynchronous Classes	**12**	**0%**
A10 Discussion Sections, Synchronous or Asynchronous	**12**	**0%**
A3 Mentoring	**24**	**0%**
A4 Individual / Group Assignments	**18**	**0%**
A5 Online Assignments	**12**	**0%**
A6 Extracurricular Materials	**12**	**0%**
A7 Self Study	**54**	**0%**
A13 Exam	**6**	**100%**

Methodologies:
In-Person: MD1, MD2, MD3, MD4, MD5

Online: MD1, MD2, MD3, MD4, MD5

GRADING RUBRICS

2.5. Grades

Grades are calculated as follows:

0 - 4.9 Fail (SS)
5.0 - 6.9 Pass (AP)
7.0 - 8.9 Notable (NT)
9.0 - 10 Outstanding (SB)

The mention of "Matrícula de Honor" may be awarded to students who have obtained a grade equal to or greater than 9.0.

2.6. Evaluation criteria

Ordinary Session

Modality: In-Person

Evaluation Criteria	Percentage
S1 Attendance and Participation	10%
S2 Individual / Group Assignments	30%
S3 Midterm Exam (On-Site)	10%
S4 Final Exam (On-Site)	50%

Modality: Online

Evaluation Criteria	Percentage
S10 Participation (Forums and Supervised Activities)	10%
S2 Individual / Group Assignments	30%
S4 Final Exam (On-Site)	60%

Extraordinary Session

Modality: In-Person

Evaluation Criteria	Percentage
S2 Individual / Group Assignments	30%
S4 Final Exam (On-Site)	70%

Modality: Online

Evaluation Criteria	Percentage
S2 Individual / Group Assignments	30%
S4 Final Exam (On-Site)	70%

Restricciones y explicación de la ponderación: para poder hacer media con las ponderaciones

anteriores será necesario obtener al menos una calificación de 5 en la prueba final.

Asimismo, será potestad del profesor solicitar y evaluar de nuevo las prácticas o trabajos escritos, si estos no han sido entregados en fecha, no han sido aprobados o se desea mejorar la nota obtenida en ambas convocatorias.

En todo caso, la superación de la materia está supeditada a aprobar las pruebas finales presenciales e individuales correspondientes.

2.7. Restrictions

Minimum Grade
To be able to qualify for inclusion of the above evaluation criteria percentages in the calcularion of the final grade, it is necessary to obtain at least a grade of 5.0 in the final test.

Attendance
Student who have missed more than 25% class meetings (unexcused) may be denied the right to take the final exam in the ordinary session.

Writing Standards
Special attention will be given to written assignments, as well as to exams, regarding both presentation and content in terms of grammatical and spelling aspects. Failure to meet the minimum acceptable standards may result in point deduction.

2.8. Plagiarism Warning

Nebrija University will not tolerate plagiarism under any circumstances. Reproducing content from sources other than a student's own work (the internet, books, articles, and peers' work, among others) without proper citation will be considered plagiarism.

If these practices are detected, they will be considered a serious offense, and the sanctions provided for in the Student Regulations may be applied.

3. BIBLIOGRAPHY

Required Reading

De Frutos, Mª. (2006) Las matemáticas y sus aplicaciones en el mundo social y económico. José Luis Fernández Pérez ; coordinación, Juana A. Calderón Blázquez ; autores, Mª Ángeles de Frutos. Editorial: Madrid : Subdirección General de Información y Publicaciones, D. L.
Muñoz, Alamillos, A. (2002) Matemáticas para economía, administración y dirección de empresas Editorial: Madrid.
Prieto Sáez, E. (1992) Ejercicios resueltos de matemáticas 1. Editorial: Madrid: Centro de Estudios Ramón Areces, DL.

Recommended Reading

CHIANG y WAINWRIGHT (2006), Métodos fundamentales de economía matemática. Ed. McGraw-Hill.
GALÁN y otros (2004), Matemáticas para la economía y la empresa. Ejercicios resueltos. Ed. Thomson.
GALINDO, SANZ y TRISTÁN (2003), Guía práctica de Cálculo infinitesimal de una (y de dos) variable, Ed. Thomson.
LARSON y HOSTETLER (1999), Cálculo. Ed. McGraw-Hill.
NIETO, PERAL, ESCRIBANO, et. (2022). Problemas resueltos de matemáticas aplicadas a la economía y a la empresa. Ediciones Paraninfo.S.A.
PALENCIA GONZALEZ y GARCÍA LLAMAS (2019) Cálculo para economistas.Ed.McGraw Hill.

PALENCIA GONZALEZ y GARCÍA LLAMAS (2022) Cálculo para economistas. Ejercicios Resueltos. Ed.McGraw Hill.
SANZ, VÁZQUEZ y ORTEGA (1999), Problemas de Álgebra Lineal. Ed. Prentice Hall.
SYDSAETER, HAMMOND y CARVAJAL (2012), Matemáticas para el Análisis Económico. 2ª Edición. Ed. Pearson.
TOMEO, UÑA y SAN MARTÍN (2005), Problemas Resueltos de Cálculo en una Variable. Ed. Thomson.