

Business Mathematics

Bachelor's Degree in Business Administration and Management

UNIVERSIDAD NEBRIJA

SYLLABUS

Course: Business Mathematics

Degree: Bachelor's Degree in Business Administration and Management

Business

Type: Core

Languages: This course will be taught in English

Modality: In-Person and Online

Credits: 6

Year: 1

Semester: First

1. COMPETENCIES AND LEARNING OUTCOMES

1.1. Competencies

Basic competencies
CB1, CB2, CB3, CB4, CB5

General competencies
CG1, CG2, CG4, CG6, CG7, CG8, CG9, CG10, CG11, CG12, CG13, CG14, CG15, CG16, CG17, CG21, CG22

Specific competencies
CE1, CE2, CE3, CE8, CE9, CE11, CE12, CE13, CE17, CE20, CE22, CE25, CE38

1.2. Learning outcomes.

1. Know, associate, and apply the basic elements of Business Mathematics
2. Express themselves correctly orally and in writing in Spanish
3. Express themselves correctly orally and in writing in English

2. CONTENTS

2.1. Prerequisites

None.

2.2. Description

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 a variable**. Domain, limits and continuity. Resolution of indeterminacies. Graphical representation of functions.

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

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

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

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

2.4. Individual / Group Assignments

Periodic completion of individual and group worksheets related to each of the most relevant aspects of the content.

2.5. Learning Activities

In-Person Learning	Hours	Attendance %
AF1 Lecture / Theoretical Foundations	**45**	**100%**
AF2 Case Studies	**9**	**100%**
AF3 Tutorial	**9**	**100%**
AF4 Individual / Group Assignments	**18**	**0%**
AF5 Online Assignments	**6**	**50%**
AF6 Extracurricular Materials	**6**	**0%**
AF7 Self Study	**51**	**0%**
A13 Evaluation	**6**	**100%**

Online Learning	Hours	Attendance %
A9 Asynchronous Classes	**12**	**0%**
A10 Practical classes.	**12**	**0%**
A3 Tutorial	**24**	**0%**
A4 Individual / Group Assignments	**18**	**0%**
A5 Online Assignments	**12**	**0%**
A6 Extracurricular Materials	**12**	**0%**
A7 Self Study	**54**	**0%**
A13 Evaluation	**6**	**100%**

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

3. GRADING RUBRICS

3.1. 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.

3.2. 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%

3.3. Restrictions

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

Likewise, it will be the professor's power to request and evaluate again the practices or written work, if these have not been delivered on time, have not been approved or wish to improve the grade obtained in both calls.

In any case, the passing of any subject/subject is subject to passing the corresponding face-to-face and individual final tests.

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.

3.4. 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.

4. BIBLIOGRAPHY

Basic bibliography

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 bibliography

CHIANG y WAINWRIGHT (2006), Métodos fundamentales de economía matemática. Ed. McGraw-Hill.
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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.
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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.