VNIVERSITAT Ö ID VALÈNCIA

COURSE DATA

Data Subject

Code	35816
Name	Mathematics I
Cycle	Grade
ECTS Credits	6.0
Academic year	2022 - 2023

Study (s)

Degree	Center	Acad. year	Period
1313 - Degree in Business Management and Administration	Faculty of Economics	1	First term
1330 - Degree in Business Management and Administration (Ontinyent)	Faculty of Economics	1	First term
1921 - D.D. in Business Management Administration-Law	Doubles Studies Faculty of Law - Faculty of Economics	1	First term
1926 - D.D. in Tourism-Business Management Administration	Faculty of Economics	1	First term

Subject-matter

Degree	Subject-matter	Character
1313 - Degree in Business Management and Administration	15 - Mathematics	Basic Training
1330 - Degree in Business Management and Administration (Ontinyent)	15 - Mathematics	Basic Training
1921 - D.D. in Business Management Administration-Law	1 - Year 1 compulsory subjects	Basic Training
1926 - D.D. in Tourism-Business Management Administration	1 - Asignaturas de formación básica de primer curso	Basic Training

Coordination

Name	Department
DOMINGO JUAN, MARIA CARMEN	257 - Business Mathematics
LINO SORLI, MARIA DEL PILAR	257 - Business Mathematics
QUINTANILLA ALFARO, MARIA SACRAMENTO	257 - Business Mathematics

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SUMMARY

Mathematics I is a one semester foundation course in basic mathematics for business placed in the first term of the first year of the Degree in Business Administration and Management and has a total of 6 credits.

This course is concerned with the essential mathematics for the quantitative description, analysis and comprehension of economic environment and for making business decisions. Moreover, it provides the basic concepts, techniques and mathematical tools for dealing with the other courses of this Degree.

Contents include matrix algebra, functions of one and several variables: tendency, continuity and marginal analysis, and an introduction to integral calculus and differential equations.

PREVIOUS KNOWLEDGE

Relationship to other subjects of the same degree

There are no specified enrollment restrictions with other subjects of the curriculum.

Other requirements

Prior knowledge assumed is that corresponding to first and second year in high school in the field of humanities and social sciences

OUTCOMES

1313 - Degree in Business Management and Administration

- Demonstrate capacity for analysis and synthesis.

- Have organisation and planning skills.

- Demonstrate oral and written communication skills in the native language.

- Be able to use English in a professional environment.

- Be able to analyse and search for information from different sources.

- Be able to solve problems.

- Be able to negotiate and reconcile interests effectively.

- Be able to transmit and communicate complex ideas and approaches to both specialised and lay audiences.

- Be able to work in a team.

- Have critical and self-critical capacity.

- Manage time effectively.

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- Be able to learn autonomously.

- Be able to adapt to new situations.

- Show creativity.

- Show leadership and skills for mobilising the capacities of others.

- Have initiative and entrepreneurial spirit.

- Show motivation for quality.

- Be able to understand and use the different quantitative and qualitative methods to reason analytically, evaluate results and predict economic and financial parameters.

- Be able to apply analytical and mathematical methods for the analysis of economic and business problems.

- Be able to define, solve and present complex problems systemically.

- Be able to express oneself in formal, graphic and symbolic languages.

- Be able to plan, organise, control and evaluate the implementation of business strategies.

1330 - Degree in Business Management and Administration (Ontinyent)

- Demonstrate capacity for analysis and synthesis.

- Have organisation and planning skills.

- Demonstrate oral and written communication skills in the native language.

- Be able to use English in a professional environment.

- Be able to analyse and search for information from different sources.

- Be able to solve problems.

- Be able to negotiate and reconcile interests effectively.

- Be able to transmit and communicate complex ideas and approaches to both specialised and lay audiences.

- Be able to work in a team.

- Have critical and self-critical capacity.

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LEARNING OUTCOMES

To pass the course the student must demonstrate the acquisition of the following skills:
• Ability to recognize an economic problem from the observation of economic reality.
• Increased ability to use logical reasoning / strategy to deal with real situations in the business world.
• Management of basic quantitative tools and their application to economic environment.
• Ability to select a theoretical framework for the development of analysis.

DESCRIPTION OF CONTENTS

1. Basics of algebra

Linear and non-linear equations systems. Matrices, determinants, range and inverse matrix.

2. Limits and continuity of functions

Topology concepts in R^n. Functions of one and several variables: homogeneous function, composite function and implicit function. Graphs of functions. Level curves. Concepts of limit and continuity.

3. Derivability of functions

Definition and economic interpretation of the derivative of a real function. Calculation of derivatives. Definition and economic interpretation of partial derivatives of scalar and vectorial functions. Higher-order derivatives of functions of one or several variables. Gradient, Jacobian and Hessian.

4. Differentiability of functions

Differentiability of functions. Relationship among the concepts of continuity, derivability and differentiability. Directions of increasing of a function. Derivative of the composite function. Derivative of the implicit function.

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5. Introduction to integral calculus and differential equations

Basic techniques of integration. Riemann Integral: Integratility conditions and Barrow's rule. Improper integrals. Introduction to differential equations.

WORKLOAD

ACTIVITY	Hours	% To be attended
Theory classes	30,00	100
Classroom practices	30,00	100
Attendance at events and external activities	0,00	0
Development of group work	0,00	0
Development of individual work	0,00	0
Study and independent work	40,00	0
Readings supplementary material	5,00	0
Preparation of evaluation activities	15,00	0
Preparing lectures	5,00	0
Preparation of practical classes and problem	25,00	0
Resolution of case studies	0,00	0
Resolution of online questionnaires	0,00	0
TOTAL	**150,00**	

TEACHING METHODOLOGY

The learning methodology consists of lectures and practice sessions, where the teacher encourages students in the use of mathematical and symbolic language and logic and systematic thinking and he/she promote the individual and team private study learning.

In the lectures the lecturer explains the major topics, illustrate and clarifies definitions and theorems using completely worked out examples, and assists students in their self-study learning and use of the bibliography. The lecturer's explanations will be combined with the students' participation in class through small questions and exercises designed for the discussion of frequents doubts. At the end of the class, the lecturer will give guidelines and homework to prepare next class at home. The aim is that the student develops his/her capacity for self-study and self-learning and for expressing formally using mathematical and symbolic language.

In the practice sessions the lecturer shows the main economic and business applications of the topics developed in the lectures and encourages students in the definition, solution and formal discussion of complex problems. The lecturer will solve worked out problems and he/she will propose de preparation of new ones for the next classes. Thus, each student will be able to formulate problems and propose and justify his/her method of resolution.

The study and/or posterior development of lectures and practice sessions will generate written assignments and class and homework tasks which can will be taken into consideration in the continuous assessment of student.

EVALUATION

The evaluation of the course consists on the following parts:

1. **Written exam** in the day officially announced. In this exam, the student will be evaluated on the specific competencies over the course content and application (maximum mark 7 points).

2. **Continuous evaluation** of the student which will assess the achievement of general competencies and the degree of participation of the student in the process of teaching and learning by doing exercises (maximum mark 3 points). These activities can be retaken.

To pass the course the written exam must be overcome. The final mark is the sum of the written exam mark plus the continuous evaluation mark. In case of not passing the written exam, the final mark will be a maximum of 4,5. Logically, to pass the course the student must obtain a final mark greater than or equal to 5 points.

REFERENCES

Basic

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- Barrios, J. A. et al. (2022). Análisis de funciones en economía y empresa: un enfoque interdisciplinar. Ediciones Díaz de Santos. Segunda edición.

Additional

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- Alegre, P. et al. (1991). Ejercicios Resueltos de Matemáticas Empresariales. Ed. AC. Vol. 1 y 2.

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- Muñoz, F., Guerra, C. et al. (1988). Manual de Álgebra Lineal. Ed. Ariel.

- Sydsaeter, K. y Hammond, P. J. (2002). Matemáticas Esenciales para el Análisis Económico. Ed. Prentice Hall.

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