VNIVERSITAT ĠƉ VALÈNCIA

COURSE DATA

Data Subject

Code	35932
Name	Mathematics I
Cycle	Grade
ECTS Credits	6.0
Academic year	2020 - 2021

Study (s)

Degree	Center	Acad. year	Period
1315 - Degree in Finance and Accounting	Faculty of Economics	1	First term

Subject-matter

Degree	Subject-matter	Character
1315 - Degree in Finance and Accounting	5 - Mathematics	Basic Training

Coordination

Name	Department
CASASUS ESTELLES, TRINIDAD	257 - Business Mathematics

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 Finance and Accounting 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

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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

1315 - Degree in Finance and Accounting

- Comprender y aplicar el método científico, consistente en formular hipótesis, deducir resultados comprobables y contrastarlos con la evidencia empírica y experimental.
- Conocer el lenguaje matemático y el razonamiento lógico-deductivo en la formulación de los fenómenos económico-empresariales.
- Conocer y comprender las herramientas matemáticas básicas para la descripción, análisis y toma de decisiones financieras y empresariales.
- Conocimiento de las técnicas de estudio y trabajo personal.

LEARNING OUTCOMES

To pass the course the / the student must exhibit the acquisition of the following skills:

- Knowing several sources of business information and being able to identify relevant information and apply it correctly.

- Knowledge of concepts, techniques and basic mathematical tools that the student will need in other subjects of the degree, including matrix calculus for solving systems of equations; analysis of continuity, derivability and differentiability of a function of several variables; calculus and economic interpretation of partial derivatives of a function of several variables; and Riemann and improper integrals.

- Ability to cope with a guarantee with other matters of the degree .

DESCRIPTION OF CONTENTS

1. Basics of algebra

Systems of linear and nonlinear equations. Matrices, determinants and inverse matrices.

2. Limits and continuity of functions

Notions of topology in R^n. Functions of one and several variables: homogeneous functions, composite and implicit functions. Graphs of functions: contour lines. 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 vector valued functions. Higher-order derivatives of functions of one or more variables. Gradient, Jacobian and Hessian.

4. Differentiability of functions

Differentiability of functions. Relationship between the concepts of continuity, differentiability and differentiability. Directions of maximum growth of a function. Derivative of composite function. Derivative of implicit function.

5. Introduction to integral calculus and differential equations

Techniques of integration. Riemann Integral: existence of the definite integral and Barrows rule. Improper integrals. First order differential equations of separable variables.

WORKLOAD

ACTIVITY	Hours	% To be attended
Theory classes	30,00	100
Classroom practices	30,00	100
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
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 promotes the individual and team private study learning.

In the lectures the lecturer explains the major topics, illustrates 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 the 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 the student.

EVALUATION

The evaluation of the course is based on a system consisting of the following parts:

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

2. **Continuous evaluation** of the student which will assess the achievement of general competences 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 grade will be a maximum of 4.5. Logically, to pass the course the student must obtain a final mark greater than or equal to five (5).

REFERENCES

Basic

- Calvo, C. e Ivorra, C. (2012). Las Matemáticas en la Economía a través de ejemplos en contextos económicos. Ed. Tirant lo Blanch. Valencia.

- Canós, M. J., Ivorra, C. y Liern, V. (2002). Matemáticas para la Economía y la Empresa. Ed. Tirant lo Blanch. Valencia.

- Ivorra, C. (2007). Matemáticas Económico-Empresariales. Laboratori de Materials, 2. PUV.
- Ivorra, C. y Juan, C. (2007). Matemáticas Empresariales. Laboratori de Materials, 7. PUV.

Additional

- Alegre, P. et al. (1995). Matemáticas Empresariales. Colección Plan Nuevo. Ed. AC.
- Alegre, P. et al. (1991). Ejercicios Resueltos de Matemáticas Empresariales. Ed. AC. Vol. 1 y 2.
- Casasús, T. et al. (1991). Matemáticas Empresariales. Ed. La Nau Llibres.
- 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.

ADDENDUM COVID-19

This addendum will only be activated if the health situation requires so and with the prior agreement of the Governing Council

In the case of attendance being suspended during classes (totally or partially) and/or in the case of the exams, the following will be done.

1. Contents

The contents included in the course guide are not going to change.

2. Workload and planning of teaching

The workload included in the course guide is not going to change.

3. Teaching methodology

In no presential classes, methods such as videoconferences, videos, activities in the virtual classroom, work with material provided by teacher or any other method that the teacher considers to be appropriated, will be used. Tutorships will be carried out by videoconference, e-mail, virtual classroom or any other method that the teacher considers appropriate.

4. Evaluation

The two parts of the evaluation system are not going to change.

If the written exam of the first announcement is presential, the system included in the course guide is not going to change.

If the written exam of the first announcement is not presential, the written exam will go from a maximum mark of 7 points to a maximum mark of 2'5 points and the continuous evaluation will go from a maximum mark of 3 points to a maximum mark of 7'5 points. The continuous evaluation could not be retaken. In addition, if the teacher calls an oral exam, it will be held as close as possible, according to availability, to the date of the official announcement.

If the written exam of the second announcement is presential, the system included in the course guide is not going to change.

If the written exam of the second announcement is not presential, the written exam will go from a maximum mark of 7 points to a maximum mark of 2'5 points and the continuous evaluation will go from a maximum mark of 3 points to a maximum mark of 7'5 points. The continuous evaluation could be retaken. In addition, if the teacher calls an oral exam, it will be held as close as possible, according to availability, to the date of the official announcement.

5. Bibliography

References in the course guide are not going to change. In addition, each teacher will be responsible for providing students with the material they think appropriate to follow the course.