Mathematics I (20833)

Degree/study: ECO/ADE
Course: first
Term: first
Number of ECTS credits: 5
Hours of student's dedication: 125
Language or languages of instruction: Catalan
Professor: Agustí Garrido, Riste Gjorgjiev. Seminars: Berta Barquero, Ruben Berenguel, Federico Cantero, Alberto Fernández, Angel Gil.

1. Presentation of the subject

Mathematics I is conceived as an introductory course on basic concepts, hence it is located in the first trimester of the first year.

It is the first of a sequence of three mathematics courses to be taken during the first year. The student begins to acquire competences to tackle situations that require a formal mathematical treatment.

During the course, the use of mathematical language and the acquisition of an adequate working method are enforced, which are especially useful for the modelling of economic situations. In particular, the fundamental aspects of mathematical calculus for functions of one real variable (with optimization) and of linear algebra commonly used in economics are developed. Thus, it is a course that provides the basic mathematical tools to be used in modelling problems in economics and business.

2. Competences to be attained

General Competences	Specific Competences
Instrumental 1. Ability to analyze and synthesise. 2. Ability to organize and plan. 3. General basic knowledge. 4. Problem solving. 5. Written and spoken capabilities. Interpersonal 6. Criticisms Systemic 7. Research abilities. 8. Learning capacities. 9. Autonomous work	1. Use of mathematical language. 2. Apply creatively the knowledge acquired. 3. Proactive attitude and willingness to learn. 4. Basic algebraic manipulation for calculus in one variable. 5. Knowledge of basic concepts about the real line and functions of one variable. 6. Basic properties of the usual families of real functions.

10. Ability to generate new ideas (creativity). Other 11. Written and oral communication abilities using specialized.	7. Analyse and interpret mathematical models applied to economics. Solutions of mathematical models.

3. Contents

Block 1. Functions of one real variable

Block 2. Differentiation

Block 3. Optimization

Block 4. Integration

Block 5. Simultaneous linear equations and matrices

4. Assessment

The grading is based in the following three aspects.

-Tests to be taken during the "problem resolution seminars" (PRS). Two tests will be delivered during the course, with a duration of 30 minutes. They will consist on two or three problems of the same kind as the ones studied during the previous SRP or the lectures. Each test will count 12% of the final grading.

- Grading associated to the PRS. Participation in the seminars and the quality of individual problem lists delivered during the PRS will be considered. It counts 16% of the final grade, according to the following distribution:

-Attendance and delivery of the problem set: 8%. In each session both assistance and the quality of the problem list are evaluated.

-Participation: 8%.

-Final Exam. It is a comprehensive examination on all theoretical and practical aspects seen along the course. It counts 60% of the final grade. In order to pass the course, a minimum of 4 / 10 in this exam is required. If this minimum is not attained, the grade will the one of the exam.

The recovery will consist in an examination similar to the final exam and the final grade will be obtained as 60% of the note of this recovery (if it is grater than 4) and 40% will correspond to the evaluation obtained during the course, with the same weights for controls, assistance, deliveries and participation as in the ordinary evaluation.

The recovery exam is only for students that have failed the course, that took the final exam and that do not have more than two non-justified absences to the seminars.

5. Bibliography and teaching resources

5.1. Basic bibliography

Textbook

SYDSAETER, K.; HAMMOND, P. J. **Mathematics for Economic Analysis.** Englewood Cliffs, N.J.: Prentice Hall, cop. 1995.

5.2. Additional bibliography

Other references

TAN, S. T. Matemáticas para Administración y Economía. International Thomson, 1998.

LARSON, R. E.; HOSTETLER, R. P.; EDWARDS, B. H. Cálculo y geometría analítica. Vol. 1. Madrid: McGraw-Hill, 1999. 6a. ed.

5.3. Teaching resources

Moodle questionnaires and other material published in Aula Global

6. Methodology

Students are supposed to do the following weekly assignments:

- Individual reading of the scripts before the theoretical sessions.
- Attending theoretical sessions
- Personal study, solved problems, careful reading of the textbook.
- Answer MOODLE questionnaires (internet)
- Attending PRS and delivering the assigned problems.

7. Activities Planning

PRS will be delivered the last 8 weeks of the course. Except for the weeks without PRS, activities will be as follows:

Week	In room activity	Out room activity
	Session 1: Theory (whole group)	- Individual reading of the scripts before the theoretical sessions

		- Attending theoretical sessions - Personal study, solving problems, careful reading of the textbook. - Before attending PRS, answer MOODLE questionnaires (internet)
	Session 2: Theory (whole group) Session 3: Problem Resolution Seminars (PRS) (subgroups)	-Attending PRS and delivering the assigned problems. -After PSR, students have to check their own solutions and compare them with the solution published in Aula Global

A more detailed description of the contents of each session can be found in Aula Global