Pla Docent

1. Course data

- **Name of course: Mathematics I**

- **Academic year: 2011-12** **Study year: 1st** **Trimester: 1st**

- **Degree: ECO / ADE** **Course code: 20883**

- **Number of ECTS credits: 5** **Hours of dedication: 125**

- **Language of instruction: Català / Castellà**

- **Professors:** Theory: Mireia Besalú, Angel Gil, Xavier Taixés. Seminars: Berta Barquero, Joana Cirici, Riste Gjorgjiev

2. Presentation of course

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

3. Competences to be acquired

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. Criticism. **Systemic** 7. Research abilities 8. Learning capacities 9. Autonomous work 10. Ability to generate new ideas (creativity) **Other** 11. Written and oral communication abilities using specialized G5b. Fluent use of the mathematical language. G3. Ability to communicate orally in Spanish and Catalan, in front of expert and non-expert audiences. G9. Good habits concerning self-discipline and rigour in academic work, organization and use of time. G10. Willingness to know and to discover new aspects of the disciplines. G11. Adapt acquired knowledge to different new situations. G17. Use appropriate information in formulation and problem solving. G21. Identify key factors in problems. G26. Ability to work autonomously and also to collaborate and cooperate with classmates.	1) Fluent use of the mathematical language. 2) Willingness to know and to discover new aspects of the disciplines. 3) Adapt acquired knowledge to different new situations. 4) Fluent use of notation and algebraic manipulation in the context of univariate calculus. 5) Acquisition of basic concepts concerning the real line, real functions and univariate calculus. 6) Knowledge of the properties of the basic families of real functions. 7) Ability to identify and interpret simple mathematical models when applied to economic situations.

4.Content

Block 1. Functions of one real variable
Block 2. Differentiation
Block 3. Optimization
Block 4. Integration
Block 5. Simultaneous linear equations and matrices

5. Evaluation

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 duration of 30 minutes. They will consist on two or three problems of the same kind as the ones studied during the SRP. 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.

-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.

For the extraordinary September examination, grading will be computed as 80% for the September examination and 20% for the PRS grading obtained during the course. Exceptionally, since this is the first course on Mathematics, the grades of the tests will not be considered for the September grading.

6. References

Textbook

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

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.

7. 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.
- Before attending PRS, answer MOODLE questionnaires (internet)
- Attending PRS and delivering the assigned problems.

8. Activities

Except for the two first weeks when there will not be 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) Attending PRS and delivering the assigned problems.
	Session 2: Theory (whole group) Session 3: Problem Resolution Seminars (PRS) (subgroups)	

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