Teaching plan

Descriptive data of the subject

Name of the course: Mathematics III

Academic: 2011-12

Course:1st

Term: 3rd

Programs: IBE

Code:21127

Number of credits: 5

Dedication:125hours

Language or languages of instruction: English

Instructors: Pelegrí Viader, Joana Cirici, Javier Vicente

2. Presentation of the course

The course "Mathematics III" is conceived as a basic training but focused on those techniques needed in mathematical economic analysis.

This is the last course of the sequence appearing in the first year. Students, who are already familiar with mathematical language, began to apply it to solve real and more complex problems.

The course reviews the contents on optimization that have already been introduced in the previous course "Mathematics II" in the case of dimension 2, but now applied in situations closer to economic reality, in which the dimension is usually a large number. Moreover, the course introduces the concepts of difference equation and differential equation, we study its basic types and their relation to the modeling of economic data.

3. Competencies to be achieved in the course

General	Specific
G4. Being able to use English in all areas of work (read, write and speak in a high register) G5bis. Mastering the mathematical language G10. Have a proactive attitude on the desire to know what is ignored, essential in any learning process in every activity and professional projection. G11. Ability to apply creativity and flexibility with the knowledge and to adapt to new situations and contexts.	1) Knowledge of the basics of notation and mathematical programming. 2) Ability to interpret symbolic and graphical optimization problems with constraints 3) Acquisition of basic concepts of differential and difference equations and their solution methods. 4) Ability to identify and interpret simple mathematical models applicable to the economy.

4.Contents

Blog content 1. Diagonalization

Content block 2. Optimization in several variables

Blog content 3. Tools prior to the study of difference equations and differential equations: trigonometric functions and integration by parts.

Blog content 4. Difference equations of order 1

Blog content 5. Difference equations of order 2

Blog content 6. Differential equations of order 1

Blog content 7. Differential equations of order 2

5. Evaluation

In summary, the various components of the final evaluation are:

Continuous Assessment:
Homeworks + attendance at seminars: 8%
Two midterms: (2 × 12%) 24%
Participation in seminars: 8%
Subtotal: 40%

Final:
Final Exam: 60%

Total 100%

Voluntary work (mandatory if you want to get MH): +0.5 points added to the final course grade (provided you have had at a least a Pass). These extra grade is kept for September.

Passing the course
The minimum grade to pass the course is a total of 5/10 (ie 50%) with the additional condition of obtaining at least a 4/10 in the final exam (ie 30 of the 60% devoted to the examination). For example, if you get a 3.4 out of 10 in the final examination (ie, 20.4 of 60) you do not pass the course even if your final grade exceeds the 5/10. In this sense, the final exam is

still the most important of the two components of the course. If you get a minimum of 4/10 in the final, you still need at least a 6.5 / 10 in the seminars / duties in order to pass: $0.4 \times 6.5 + 0.6 \times 4 = 5$.

Assessment: September

The September grade is calculated by giving a weight of 80% to the final exam and 20% to the midterms, homework and seminar participation conducted throughout the course. The minimum grade to pass the course is again a total of 5/10, on condition of obtaining at least a grade of 4/10 on the final exam (ie, 32 to 80% in this case). Thus the test in September has more than seminars / duties. Note that if you get a 4/10 on the exam in September need at least a 9/10 in the seminars / duties to be able to pass: $0.2 \times 9 + 0.8 \times 4 = 5$.

6. Bibliography and resources

Basic bibliography:

Textbooks:
SYDSAETER, K.; HAMMOND, P. J. Matemáticas para el análisis económico. Madrid: Prentice Hall, 1996 (English Edition)

Complementary bibliography

BORRELL, J. Métodos matemáticos para la economía. Programación matemática. Madrid:Pirámide,1992.
HERAS, A. i d'altres. Programación matemática y modelos económicos: un enfoque teórico-práctico. Madrid: AC, 1990.

Other Materials:

Class notes and Solved Problems list available from Aula Global.

6. Methodology
The student is expected to perform the following work each week:
- Before the class theory: reading the abstracts of theory (independent).
- Class attendance of theory (classroom).
- Personal study, study problems solved, review the notes, see the book (self).
- Before the "Session Problem Solving" (SRP): Making the list of (independent).
- Participation in SRP (in person).
- Comparison of the results list with the answers posted by teachers (independent).

7. Schedule

Except the first two weeks in which there are no SRP, the program will be:

Week	In the classroom	Outside the classroom
Week x	Session 1 Theory	- Study of the abstracts of theory (independent)(autonomous)
	Session 2 Theory	- Personal study, study problems solved, review the notes, see the book (self). - Completing the list of problems (self).
	Session 3 Problem solving session (seminar)	-Comparison of the results list with the answers posted by teachers (independent).

Calendar of seminar sessions:

Groups that have seminar on Monday:
16 and 30 April, 7, 14 and 21 May, 4.11 and 18 June

Groups that have seminar on Tuesday:
April 24, May 8,15,22 and 29, 5, 12 and 19 June

Groups that have seminar on Wednesday:
April 25, 2, 9, 16, 23 and 30 May, 6 and 13 June

The midterms will take place in seminars 4 and 7. The grading matter for each of these tests will be the contents of the three previous seminars.