Mathematics for Economics I

Academic Year: (2019 / 2020) **Review date: 07-05-2019**

Department assigned to the subject: Economics Department

Coordinating teacher: MARHUENDA HURTADO, FRANCISCO

Type: Compulsory ECTS Credits : 6.0

Year : 1 Semester : 1

OBJECTIVES

This subject provides the quantitative instruments that are needed to pose and analyze economic problems with the aid of a formal model.

In working toward the above goal the student will acquire the following competences and skills.

Regarding the contents of the course, the student will be able to:
- Extend the concepts of one variable functions to several variables.
- Understand the basic tools of calculus with several variables.
- Apply all the above concepts to economic problems.

We classify the competences in two groups: specific competences and generic competences or skills.

Regarding the specific competences, the student will be able to:
- Understand the fundamental concepts involved in the calculus of functions of several variables: differentiability, chain rule, implicit differentiation.
- Describe the qualitative properties of the functions of several variables, such as growth, concavity and convexity.
- Approximate a function of several variables using the Taylor polynomial.

Pertaining the general competences or skills, in the class the student will develop:
- The ability to address economic problems by means of abstract models.
- The ability to solve the above formal models.
- The ability to interpret and classify the different solutions and apply the appropriate conclusions to social contexts.
- The ability to use the basic tools that are need in the modern analysis of economic problems.

Through out the course, the student should maintain:
- An inquisitive attitude when developing logical reasoning, being able to tell apart a proof from an example.
- An entrepreneurial and imaginative attitude towards the cases studied.
- A critical attitude towards the formal results and their applicability in social contexts.

DESCRIPTION OF CONTENTS: PROGRAMME

The course is an introduction to the calculus of functions of several variables.

The topics studied are the following ones: Functions of several variables: Continuity. Calculus of several variables: partial derivatives. Differentiable functions. Convexity. Implicit differentiation.

LEARNING ACTIVITIES AND METHODOLOGY

The course lectures will be based on combining theoretical explanations with several practical exercises. The students should attempt to solve the exercises by themselves, before they are addressed in class.

Student participation is considered very important in order to acquire the skills needed to pose and solve economic models.

ASSESSMENT SYSTEM

"The final grade is the weighted average of the final exam and the class grade. The final exam is the same for all the Mathematics for Economics II groups and consists of practical exercises and theoretical questions. The class grade is determined by each professor and is based on quizzes done in the classes as well as in the participation in the classes. These quizzes will be announced in advance.

Ordinary exam: The final grade is the weighted average of 60% the grade in the final exam and 40% the class grade.

Extraordinary exam: The final grade is the maximum of the following grades:
a) A weighted average consisting of 60% the grade in the final exam and 40% the class grade.
b) The grade in the final exam."

% end-of-term-examination:	60
% of continuous assessment (assigments, laboratory, practicals…):	40

BASIC BIBLIOGRAPHY

- Larson, Hostetler & Edwards Calculus, Volume II. English edition, McGraw-Hill.