VNIVERSITAT ĜĎ VALÈNCIA

COURSE DATA

Data Subject	
Code	44943
Name	Quantitave Methods
Cycle	Master's degree
ECTS Credits	5.0
Academic year	2022 - 2023

Study (s)			
Degree	**Center**	**Acad. year**	**Period**
2242 - M.D. in Economics	Faculty of Economics	1	First term

Subject-matter		
Degree	**Subject-matter**	**Character**
2242 - M.D. in Economics	1 - Instrumental matter	Obligatory

Coordination	
Name	**Department**
CABALLERO SANZ, FRANCISCO	10 - Economic Analysis
ROCHINA BARRACHINA, MARIA ENGRACIA	132 - Economic Structure

SUMMARY

This course gives an introduction to the quantitative methods required to study Economics at the masters level.

The course begins by covering matrix algebra, which is an important tool that is frequently used in both theoretical economics and econometrics. The course then progresses to covering unconstrained and constrained optimisation methods. The final topic is mathematical methods of economic dynamics, which are required to analyse the behaviour of economic agents over time.

PREVIOUS KNOWLEDGE

Relationship to other subjects of the same degree

There are no specified enrollment restrictions with other subjects of the curriculum.

Other requirements

None

OUTCOMES

2242 - M.D. in Economics

- Students should apply acquired knowledge to solve problems in unfamiliar contexts within their field of study, including multidisciplinary scenarios.

- Gain the capacities of abstraction and logical reasoning that are essential for the creation of economic models: ability to express oneself using formal, graphic and symbolic languages, to apply analytical and mathematical methods to economics, and to relate and manipulate concepts according to a purpose.

- Acquire linguistic and technological skills: ability to use English in the scientific field of economics and to use ICT in the field of economic study and research.

LEARNING OUTCOMES

1- Students being able to apply the knowledge acquired and develop an ability to solve problems in new or unfamiliar environments within broader (or multidisciplinary) contexts related to their field of study.

2- Gain the capacities of abstraction and logical reasoning that are essential for the creation of economic models: ability to express oneself using formal, graphic and symbolic languages, to apply analytical and mathematical methods to economics, and to relate and manipulate concepts according to a purpose.

3- Acquire linguistic and technological skills: ability to use English in the scientific field of economics and to use ICT in the field of economic study and research.

DESCRIPTION OF CONTENTS

1. Quantitative Methods

Topic 1. Matrix algebra

Topic 2. Optimisation

Topic 3. Analysis of dynamic economic behaviour

WORKLOAD

ACTIVITY	Hours	% To be attended
Theory classes	40,00	100
Classroom practices	10,00	100
Study and independent work	75,00	0
TOTAL	**125,00**	

TEACHING METHODOLOGY

The classes will consist of the presentation of the theoretical aspects of the topic, with frequent use of examples that illustrate the application of the methods to economic phenomena. When relevant the examples will involve the use of appropriate software packages.

EVALUATION

The grade of the theory and practice can be obtained through submission of assignments that will be distributed during the delivery of the course (50% of the mark). At the end of the course, the students will take an exam, which represents the remaining 50% of the mark.

REFERENCES

Basic

- Knut Sydsæter, Peter Hammond, Arne Strøm, Andrés Carvajal (2021): Essential Mathematics for Economic Analysis. Pearson.
  - Alpha C. Chiang (1984): Fundamental methods of mathematical economics. McGraw-Hill.

Additional

- Alpha C. Chiang (2000): Elements of Dynamic Optimization. Waveland Press.
  - Akira Takayama (1994): Analytical methods in Economics. Harvester, Hertfordshire.
  - Gerhard Sorger (2015): Dynamic economic analysis: deterministic models in a discrete time. Cambridge University Press.
  - Nancy L. Stokey, Robert E. B. Lucas, Edward C. Prescott (1989): Recursive Methods in Economic Dynamics. Harvard University Press.
  - Rangarajan K. Sundaram (1996): A first course in optimization theory. New York University.