

# Mathematics

**MASTER'S DEGREE IN ECONOMICS AND FINANCE**

***UNIVERSIDAD INTERNACIONAL MENÉNDEZ PELAYO***

This document can be used as reference documentation of this subject for the application for recognition of credits in other study programmes. For its full effect, it should be stamped by UIMP Student's Office.



## GENERAL DATA

**Name**

Mathematics

**Code**

102660

**Academic year**

2023-24

**Degree**[MASTER'S DEGREE IN ECONOMICS AND FINANCE](#)**ECTS Credits**

4

**Type**

MANDATORY

**Duration**

Cuatrimestral

**Language**

English

# CONTENTS

## Contents

- Linear algebra.
- Mathematical analysis: continuity and differentiability.
- Theory of static optimization.
- Differential and difference equations.
- Dynamical systems.

# COMPETENCES

## General competences

G1 - Demonstrate solid knowledge of economic theory, and the relevant economic, econometric and computational techniques.

G2 - Know how to apply the knowledge acquired and be able to use problem-solving abilities in new or relatively unknown settings within wider or multidisciplinary contexts related to economics and finance.

G3 - Integrate knowledge and tackle the complexity involved with making judgements based on incomplete or limited information, and which includes reflections on the social and ethical responsibilities tied to the application of one's knowledge and judgement.

G4 - Critically analyse, assess and summarise new and complex ideas related to empirical theories and methodologies in the field of economics.

## Specific competences

ET1 - Rigorous and full knowledge of the main mathematical methods used in economics.

## LEARNING PLAN

### Training activities

Type of activity	Hours	%In person
Theory classes	35	100
Practical classes	15	100
Study of the theory content of the course	40	0
Solve practical exercises	10	0

### Teaching methods

Theory classes  
Exercises

### Learning outcomes

Be aware of the main mathematical methods used in economics at graduate level.

# EVALUATION

## Evaluation system

Type	Minimum score	Maximum score
Exercises	0.05	0.3
Presentations	0.05	0.15
Exams	0.7	0.95

## Official examination dates

Academic schedule

## **FACULTY**

### **Coordinator/s**

**Amengual Baez, Dante**

*Doctor en Economía, Princeton University*

*Profesor de Economía*

*Centro de Estudios Monetarios y Financieros (CEMFI)*

### **Lecturers**

Professor responsible for the subject

# SCHEDULE

## Schedule

Monday through Friday, (9:30 - 13:00)



## BIBLIOGRAPHY AND LINKS

### Bibliography

#### Bibliografía básica

- Simon, C.P. and Blume, L. (2010) *Mathematics for Economists*. W.W. Norton, New York.
- Sydsaeter, K. and Hammond, P. (2006). *Essential Mathematics for Economic Analysis*. Second Edition. Prentice Hall, Harlow, England.
- Sydsaeter, K. and Hammond, P. (2005). *Further Mathematics for Economic Analysis*. Prentice Hall, Harlow, England.

#### Bibliografía recomendada

- Apostol, T.M. (1974). *Mathematical Analysis*. Second Edition. Addison-Wesley, Reading, Massachusetts.
- Binmore, K.G. (1983). *Calculus*. Cambridge University Press, Cambridge.
- Burger, E.B. and Starbird, M. (2005). *The Heart of Mathematics. An invitation to effective thinking*. Second Edition. Key College Publishing. Emeryville, California.
- De la Fuente, A. (2000). *Mathematical Methods and Models for Economists*. Cambridge University Press.
- Gilbert, L. and Gilbert, J. (1995). *College Algebra with Trigonometry*. McGraw-Hill, New York.
- Haeussler, E.F. and Paul, R.S. (1996). *Introductory Mathematical Analysis for Business, Economics, and the Life and Social Sciences*. Eighth Edition. Prentice Hall, Upper Saddle River, New Jersey.
- Jacques, I. (1999). *Mathematics for Economics and Business*. Third Edition. Prentice Hall, Harlow, England.
- Klein, M.W. (1988). *Mathematical Methods for Economics*. Addison-Wesley, Reading, Massachusetts.
- Mas-Colell, A., Whinston, M.D., and Green, J.R. (1995). *Microeconomic Theory*. Oxford University Press.
- Novshek, W. (1993). *Mathematics for Economists*. Academia Press, San Diego.
- Wooldridge, J. (2006). *Introductory Econometrics: A Modern Approach*. SouthWestern College Publishing. Third Edition.