Universidad de Navarra

Mathematical Analysis for Economic Research (MEF)

Guía docente 2023-24

PRESENTACIÓN

Breve descripción: This is the intensive mathematics, probability, and statistics course for newcoming graduate students. While it strives to improve your computational skills, its main goal is to bring your mathematical sophistication to the level necessary to successfully follow graduate courses. Thus, though we will concentrate on the basic topics, the main emphasis will be put on developing an understanding of abstract logical reasoning, mathematical ideas and intuition, and the ability to produce rigorous proofs, rather than on acquiring techniques in a "cookbook" approach. You are expected to be familiar with standard mathematical techniques, such as calculus (both one- and multi-variable) and linear algebra. While we will review them, it is very difficult to master such skills during the course if you never saw them before. Our topics include set theory, real analysis, linear algebra, topology, multi-variable calculus, optimization, and, to the extent time permits, some others.

- **Titulación**: Master in Economics and Finance (MEF)
- **Módulo/Materia**: Obligatoria; Análisis cuantitativo
- **ECTS**: 3.5
- **Curso, semester**: First, fall semester
- **Carácter**: Mandatory
- **Profesorado**: Raúl Bajo and Juan Equiza
- **Idioma**: English
- **Aula, Horario**: TBA

COMPETENCIAS

- CG1) To train high level specialists in both economic theory and finance.
- CG2) To provide students with the appropriate and necessary mathematical and economical techniques to carry out the work, both theoretical and empirical, in the fields of economic theory and finance.
- CG5) To provide students with the basic theoretical foundations to begin doctoral studies in economics or finance.
- CE1) Study the major concepts and techniques of mathematical analysis, probability and statistics, which are required in the areas of economics and finance.

PROGRAMA

MATH ECON (Raúl)

1. Introduction (set theory)
2. Real Analysis
3. Linear Algebra
4. Metric and Normed spaces
5. Convexity
6. Differential Calculus

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7. Optimization

STATS (Juan)

1. Probability Theory

2. Transformations and Expectations

3. Common Families of Distributions

4. Multiple Random Variables

5. Properties of a Random Sample

6. Principles of Data Reduction

7. Point Estimation

ACTIVIDADES FORMATIVAS

- Problem sets
- Final exam
- In-person lectures

EVALUACIÓN

CONVOCATORIA ORDINARIA

- ver syllabus

CONVOCATORIA EXTRAORDINARIA

- ver syllabus

HORARIOS DE ATENCIÓN

Raúl Bajo (rbajo@unav.es)

- Despacho 2500 Edificio Amigos. Planta 2 (torre)
- Horario de tutoria: by appointment

Juan Equiza (jequizag@unav.es)

- Despacho 2030 Edificio Amigos. Planta 2 (hilera)
- Horario de tutoria: TBA

BIBLIOGRAFÍA

Universidad de Navarra

- Mathematics for Economists. Carl P. Simon and Lawrence Blume. WW Norton & Co (8 de junio de 1994) Find it in the Library
- Fundamental Methods of Mathematical Economics. Alpha C. Chiang. Mc Graw-Hill (1984). Find it in the Library
- Statistical Inference. G. Casella and R. Berger. Duxbury Advanced Series (1990). Find it in the Library
- Introduction to the theory of statistics. A. Mood, F. Graybill and D. Boes. McGraw-Hill (1974). Find it in the Library
- Introduction to Mathematical Statistics. R.V. Hogg, J.W. Craig & A.T. McKean. Pearson (2019) Find it in the library.