Universitat Pompeu Fabra Barcelona

Curs Acadèmic: 2025/26

23168 - Real Analysis

Informació de la Guia Docent

Curs acadèmic: 2025/26

Centre acadèmic: 304 - Facultat de Dret i Facultat d'Economia i Empresa
332 - Facultat d'Economia i Empresa

Estudi: 3327 - Grau en Estudis Internacionals d'Economia i Empresa/International Business Economics

Assignatura: 23168 - Real Analysis

Crèdits: 5.0

Curs: 3 i 4

Idiomes de docència:

Teoria: Grup 1: Anglès

Seminari: Grup 101: Pendent

Professorat: Gabor Lugosi

Periode d'Impartició: Segon trimestre

Presentació

Real analysis covers various topics centered around the study of behavior of real-valued functions: set theory, real topology, continuity, differentiation, and convexity. It is essential for more advanced studies in economics, econometrics and optimization.
Real analysis is a standard first year course in undergraduate mathematics. Typically courses offered in mathematics are too advanced relative to the needs of a vast majority of economics students, and concentrate on various topics that are not readily helpful for studying economic theory. The topics covered in this course reflect a standard background material of any advanced optimization course and are much more relevant for economics.
The focus of the course is on developing the skill of writing rigorous proofs, which is essential in modern theoretical economics and econometric. In this sense this course is the first encounter with real mathematics. Most of the results in the course are proved formally and so the student will have plenty of opportunity to sharpen his/her understanding of the “theorem-proof” duality, and to work through a variety of theorems of real analysis.

Competències associades | Resultats generals d'aprenentatge

General competences
1. Problem solving
2. Oral and written skills.
3. Research skills
4. Learning capacity
5. Group work economics and econometrics
6. Creativity
7. Oral and written skills in English

Specific competences

1. Ability to read advanced topics in theoretical economics and econometrics
2. Learning how to proof things rigorously and how to read proofs critically

Resultats d'aprenentatge | Resultats d'aprenentatge específics

The students will learn rigorous mathematical reasoning and elements of real analysis and calculus.

Continguts

Block 1: Set theory and real numbers
Block 2: Basic topology and compact sets
Block 3: Real sequences and limits
Block 4: Continuous functions
Block 5: Differentiation

Sistema d'avaluació i qualificació

The final grade of the course will be obtained as follows:

NOTA: L'assignació docent d'aquesta assignatura està pendent, per tant tot i que la descripció de l'assignatura no variarà, altres aspectes d'aquest PDA poden canviar un cop acabada l'assignació docent.

NOTE: The teaching assignment for this course is pending, therefore, even if the course description will not change, other aspects of this syllabus may be different once the teaching assignment has been finalized.

Course work:
Homework and attendance in Seminars 20%

Exam:
Final exam 80%

In order to pass the course a minimum grade of 5 out of 10 is required, with the additional constraint of getting at least 4 out of 10 in the final exam. If the grade in the final exam is less than 4 out of 10, then the final grade is by definition equal to the grade of the final exam (and, thus, the student fails the course automatically).

Recuperation Exam
Students that fail the course may retake the final exam with the same conditions as before. The recuperation exam will only be allowed to students that have attended at least 6 of the 8 Seminars and have taken the original final exam.