Universitat Pompeu Fabra Barcelona

Curs Acadèmic: 2021/22

23168 - Real Analysis

Informació del Pla Docent

Curs acadèmic: 2021/22
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: Anglès
	Grup 102: Anglès

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

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 de l'aprenentatge

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

Objectius de Desenvolupament Sostenible

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Prerequisits

Basic math courses.

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

Metodologia docent

The following weekly work plan is suggested:

BEFORE each theory lecture: read the related class notes. Attend theory lectures. Revisit class notes, study related solved problems.

BEFORE each Seminar: Work out the weekly homework. Attend the Seminar. Review and compare your solutions to the weekly homework against the published solutions.

Avaluació

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

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.

Bibliografia i recursos d'informació

Textbooks:
RUDIN, W. Principles of Mathematical Analysis, McGraw-Hill 1976 OK, E.A. Real Analysis with Economic Applications,