



Department/Area of Study: Economics
Discipline: Introduction to Mathematical Analysis
for Economists (EA034)
Number of credits: 4
Academic hours: 60 h/a
Prerequisites: -

1 Overview

This course introduces to the student the methods of the basic mathematical analysis rigorously. It concentrates in develop mathematical maturity and covers: Normed Spaces; Convergence of Sequences and Series; Continuity; Differentiability; Riemann Integral, Sequences and Series of Functions, Uniformity, Functions of several variables, The Inverse Mapping theorem; Integration of differential forms.

2 Objectives

By the end of the course students will be able to:

1. Understand and use the main theorems in mathematical analysis .
2. Proof the main results developed in the course.
3. Apply these methods in the Economics and other sciences .

3 Contents

1. Calculus (**Calculus 1**): Sets and Mappings; Real Numbers; Limits and Continuous Functions; Differentiation; Elementary functions; Integral.
2. Convergence (**Con**): Normed vector spaces; Limits; Basic topology; Series; The Integral of one variable;
3. Applications of the Integral (**Integral 1**): Approximations; Improper Integral; Fourier Integral.



4 Texts

Principal

- Lang, Serge (2005). Undergraduate Analysis. Springer-Verlag GmbH. ISBN: 0387948414.
Lima, E. L. (2015). Curso de Análise, vol. 2. IMPA.
Lima, Elon Lages (2017). Curso de Análise - Vol.1. IMPA. ISBN: 978-85-244-0118-3.
3. Rudin, Walter (1976). Principles of Mathematical Analysis. McGraw-Hill Education - Europe. 352 pp. ISBN: 007054235X.

Complementary

- Herbert Amann, Joachim Escher (2004). Analysis I. Birkhäuser. 448 pp. ISBN: 3764371536.
— (2008). Analysis II. Birkhäuser. 416 pp. ISBN: 3764374721.
Lang, Serge (1993). Real and Functional Analysis. Springer-Verlag GmbH. 600 pp. ISBN: 0387940014.
Munkres, James R. (1997). Analysis On Manifolds (Advanced Books Classics). West-view Press. ISBN: 0201315963.
Shilov, Georgi E. (1996). Elementary Real and Complex Analysis. DOVER PUBLN INC. 544 pp. ISBN: 0486689220.
Spivak, Michael (2008). Calculus, 4th edition. Publish or Perish. ISBN: 0914098918.

5 Contact Information

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