SYLLABUS DEL CORSO

Probabilità Applicata

2021-1-F8204B004-F8204B006M

Learning objectives

Introducing and illustrating the concepts and tools of probability theory and applied mathematics needed for statistical inference and economics.

Contents

Random events and probability measures.

Discrete and continuous random vectors.

Convergence of random variables and limit theorems.

Convexity and optimization with equality and inequality constraints.

Detailed program

Random events and probability measures.

Discrete and continuous random vectors.

Special multidimensional distribution functions.

Moments and generating functions.

Convergence of random variables.

Law of large numbers and central limit theorem.

Functions of random vectors. Convex functions.

Optimization with equality constraints. Optimization with inequality constraints. Kuhn-Tucker conditions.

Prerequisites

Knowledge of the topics covered by basic courses in Probability and Calculus.

Teaching methods

Class lectures.

Assessment methods

Written and oral exams.

The written exam aims at testing the problem-solving ability while the oral exam aims at evaluating the theoretical skills.

The overall mark is the average of the marks obtained in the two exams.

Examples of questions for the exams are available on the e-learning platform.

Textbooks and Reading Materials

A. Gut, "An Intermediate Course in Probability", Springer, 2009.

K. Lange, "Optimization", Springer, 2013.

E.L. Lehmann, "Elements of Large-Sample Theory", Springer, 1999.

Lecture notes available on the e-learning platform.

Semester

The course is scheduled in the first semester.

Teaching language

Italian.