UNIVERSITÀ
DEGLI STUDI DI MILANO-BICOCCA

COURSE SYLLABUS

Probability

2021-1-E4101B006

Learning objectives

Introducing to the basic concepts and tools of probability theory needed for statistical inference.

Contents

Random events and probability measures. Stochastic independence and conditional probability.

Discrete and continuous random variables. Two-dimensional random variables.

Limit theorems.

Detailed program

Views of probability. Random experiments; random events; sample space. Probability measures.

Stochastic independence; conditional probability; Bayes theorem.

Random variables; distribution function; discrete and continuous random variables. Expected value; location and scale parameters.

Special discrete distributions. Special continuous distributions.

Multivariate random variables.

Stochastic independence of random variables; sum of independent random variables.

Convergence in distribution and in probability; law of large numbers and central limit theorem.

Prerequisites

Knowledge of the topics covered by “Calculus I” and “Statistics I”.

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

F. Caravenna e P. Dai Pra, “Probabilità. Un’introduzione attraverso modelli e applicazioni”, Springer, 2013.

Lecture notes available on the e-learning platform.

Semester

The course is scheduled in the second semester.

Teaching language

Italian.