UNIVERSITÀ
DEGLI STUDI DI MILANO-BICOCCA

SYLLABUS DEL CORSO

Inference

2021-1-F1601M086-F1601M083M

Learning objectives

This course provides a good level of understanding the statistical techniques useful in the inference problems.

Contents

Problems of estimation and hypothesis testing.

Detailed program

Sample distribution: population and random sample; statistics and sample moments; Cebiceff's inequality; weak law of large numbers; central limit theorem; sample mean and sample variance distributions; Chi-squared, Student's, Fisher's distributions.
Parametric inference: method of moments, maximum likelihood estimator; properties of estimators; Rao-Cramer inequality; exponential family; confidence intervals; pivotal quantity.
Hypothesis testing: Neymann-Pearson's lemma; test for parameters of normal distribution; Slutsky's theorem.
Test and confidence interval for two independent samples.
P-value.

Prerequisites

Probability and main random variables.

Teaching methods

Some lectures and some practical sessions are provided.

In the case of Covid-19 emergency, lessons (theory and examples) will take place remotely and asynchronously, with additional synchronous videoconferencing events.

Tutoring is also provided, both during the course and in preparation to exams.

Assessment methods

Written and oral exam.

Textbooks and Reading Materials

M. Zenga, Inferenza statistica, Giappichelli, Torino, 1996

Semester

First semester.

Teaching language

Italian.