UNIVERSITÀ
DEGLI STUDI DI MILANO-BICOCCA

COURSE SYLLABUS

Statistics

2425-1-F1601M086

Learning objectives

The course consists of the Inference (6 CFU) and Credit Risk (5 CFU) modules.

The course introduces some new statistical tools about probability and statistical inference in order to study characteristics of the random variables representing notable economic-financial phenomena. Greater emphasis will be given on the study of models and tools for assessing the risk involved in a loan portfolio.
Starting from a set of collected data, the new concepts introduced will make it possible to:

1. build parametric/non-parametric estimators and study their properties;
2. construct interval estimators (confidence intervals) and evaluate if the empirical evidence provided by the collected data is consistent with some hypotheses concerning the characteristics under study (hypothesis testing).

Concerning to the study of Credit Risk, the concepts of Probability of Default and Recovery Rate will be introduced along with their estimators. The two credits portfolio models called CreditMetrics and CreditRisk+ will also be studied in dept.

Contents

Inference
This course provides a basic understanding of the uses of statistical inference. Particular attention is devoted to problems of estimation and to hypothesis testing that frequently occur in economic applications and in finance.

Credit Risk
Recalls on random variables. Definition and study of default probability and recovery rate. Discriminant analysis and its use in credit risk analysis. Introduction to CreditMetrics and CreditRisk models.

Detailed program

See each module's Syllabus.

Prerequisites

Basic knowledge of descriptive statistics, probability and main random variables.

Teaching methods

Inference
Some in-person lessons for a total of 35 hours are provided.
Some practical sessions and tutoring is also provided, both during the course and in preparation to exams.

Credit Risk
Lessons and practical sessions (exercises using Excel software)
In all lessons, a "mixed" approach is adopted: erogative teaching will alternate with interactive teaching in variable proportions. Typically the "interactive component" will be greater during practical sessions. Approximately, interactive teaching regards 30% of the course.

Assessment methods

In order to pass the exam, it is necessary to pass the tests of both modules according to the procedures given in the Syllabuses of each module.
The final grade is given by the weighted arithmetic average (with respect to credits) of the module grades.

Textbooks and Reading Materials

See each module's Syllabus.

Semester

Inference
First semester.

Credit Risk
Second semester.

Teaching language

Italian.

Sustainable Development Goals

QUALITY EDUCATION