UNIVERSITÀ
DEGLI STUDI DI MILANO-BICOCCA

COURSE SYLLABUS

Industry Lab

2122-2-F9101Q035

Aims

The contents of the Industry Lab change every year, and refer to hot topics for industries and companies. Several companies participate in the lessons by proposing problems on these topics to the students, that individually or in group will investigate for a solution. At end solutions proposed by students will be compared and commented.

Contents

Application of statistical and machine learning techniques to solve problems of various nature and objectives, inherent in the industrial sector.

The problems are proposed by companies outside the university participating in the course and making real production data available to the students.

Detailed program

The theoretical part of the course focuses on the Industry 4.0 topic in order to best contextualize the project activities in this field of study.

The part of the course that focuses on the projects is organized in multiple classes that have the following structure:

- review of the main statistical and machine learning models and techniques (in Python)
- problem proposal and presentation by the contact persons of the collaborating companies

- class and home work by the students, followed by the project development
- discussion and comparison of solutions investigated by students

Prerequisites

Courses held in the first and second year on statistics, machine learning, decision models, ict technologies.

Teaching form

Problem proposal, group work, revisions and feedback, discussion and comparison of solutions.

Textbook and teaching resource

Will be ready one week before every slot of lessons.

Semester

Second semester

Assessment method

The exam consists of two parts:

1. Project activity
2. Oral presentation

The project activity is the proposal of a solution for one of the scenarios that were presented by the companies during the course. The student must, individually or in a group:

- implement a software solution to analyze the proposed data and solve the problem
- write a report, in which the student contextualizes the problem within the Industry 4.0 topic and details the implementation choices, the exploration of the data and the models used, motivating the decisions and assumptions made in each phase of the analysis

Each group wishing to enroll in an exam session must necessarily deliver the software solution and the written report before the exam date.

During the exam sessions, students will orally present their project and they will answer the questions posed by the teacher about the project. Finally, their grades will be proposed.

The written report and the oral presentation can both be in Italian, in English or follow a mixed approach (written in English and presentation in Italian or vice versa).

The final evaluation will take into consideration:

- the readability and completeness of the written report
- the quality and reproducibility of the software code
- the synthesis and precision of the oral exposition

Statistics of grades in the past edition:

- mean: 28.8
- minimum: 22
- % grades > 26: 88%
- % grades > 29: 60%
- % 30 cum laude: 25%

Office hours

To be agreed individually with the course teachers