UNIVERSITÀ
DEGLI STUDI DI MILANO-BICOCCA

COURSE SYLLABUS

Ict and Business Modeling

2122-3-E3101Q131

Aims

The course aims to provide the student with professional knowledge and skills regarding:

- Analysis of the main functions in the organization and management of a company
- Reading and interpretation of a company's financial documents.
- Marketing data analytics techniques based on Machine Learning with particular attention on Reccommender Systems
- Analysis of specific problems with the development of data analytics applications in R / Python.

During the labs, business analytics skills are acquired, specifically focusing on the R/ Python languages for marketing data modelling and analysis.

Particular emphasis will be given to the analysis of specific problems in the marketing field, to the presentation of specific data sets, to the development of machine learning applications for marketing data analysis in R / Python and to the evaluation of the results.

Contents

The course is divided into four modules:

- Business organization and management
- Marketing analytics techniques
- Recommender systems
- Exercises and laboratory: analysis of specific problems in the marketing and development of applications in R / Python

Detailed program

1. Organization and business management

- Elements of economics and business organization
- Accounting and budget
- Corporate finance

2. Marketing analytics techniques

- Key Performance Indicators (KPIs)
- Product / Consumer analytics
- Marketing mix and attribution modeling

3. Recommender systems

- collaborative filtering
- matrix factorization
- machine learning

4. Exercises and Lab

4.1 Analysis of specific problems in the marketing field

- Presentation and discussion of specific cases of marketing problems
- Data preparation and visualization: Business Intelligence (BI) and Data Modeling in the corporate environment
- Data processing: introduction to the main machine learning techniques for marketing data analysis (e.g. regression, classification, clustering)

4.2 Laboratory: development of applications in R / Python

- Introduction to R / Python
- Exploratory / descriptive analysis of datasets related to marketing problems
- Machine learning application development in R / Python

Prerequisites

- Probability and statistics for computer science
- Software analysis and design

Teaching form

The training activity will be divided into:

- lectures: in which the topics relating to points 1,2 and 3 will be presented.
- exercises and laboratories: in which the topics of marketing data analytics will be explored with development in R / Python of specific applications with real data. These activities will be preparatory to the setting up and development of the end-of-course project which, for example, may consist in the creation of a recommendation system. (recommender systems).

The course will be delivered in Italian.

Textbook and teaching resource

During the lessons the following didactic material will be made available:

- Slides created by the teachers
- Additional material eg. links to news, forums, specific web resources on the topics covered in class

Semester

First semester

Assessment method

- ***Traditional***: oral exam at the end of the course that focuses on the topics covered in class by the two teachers. The oral exam regarding the topics of points 1,2 and 3 will not be required for students who have passed the intermediate test.
- ***Intermediate Check***: (mid-December): the test consists of a test with a set of questions (maximum 10) with open answers regarding the topics presented in points 1, 2 and 3 . Each question will be associated with a score, from 3 to 5. The student can answer any number of questions. The evaluation of the partial will be expressed through a quali-quantitative judgment: Insufficient [<18], Sufficient [18-> 22], Good [23-> 26], Excellent [27-> 30], Top [> 30]

Laboratory Project in R / Python:

The project is divided into:

- Implementation of an application in R/Python for the analysis of marketing data
- Report
- Oral discussion of the project using a set of slides

Delivery times will be communicated on Moodle

Office hours

The two instructors are available for meet students or immediately after the lectures or setting up a meeting anytime in office hours by email.

During the COVID emergency period oral examinations will take place remotely through thr Webex platform.On the e-learning page of the coursethere will be apublic linkfor accessing to the examination of possible virtual spectators.