



UNIVERSITÀ
DEGLI STUDI DI MILANO-BICOCCA

COURSE SYLLABUS

Data Methods and Analysis for Business Decisions

2627-2-E1805M014

Learning objectives

The aim of the course is to provide students with the skills to structure, process, analyse data and communicate information effectively, in the solution of economic, financial and management problems, and in support of decision-making processes.

Contents

The course is divided into three sections highlighting as many areas of competence, integrated with each other according to the course's final objective:

1. Processing and analysing data: delving into the spreadsheet (Excel) from an application point of view to import, structure, analyse and process data, understanding the logic and use of functions in professional problem solving;
2. Business Intelligence and Data Science: introduction to BI and the main Data Visualisation tools. Use of a programming language (Python) and related libraries for data analysis.

Detailed program

The course is organised in an introductory part and three sections corresponding to as many areas of competence, integrated with one another according to the final objective of the course.

Introductory part – Fundamentals of computer science

Definition and evolution of ICT; the concepts of data and information; the binary code; evolution of programming languages; introduction to algorithmical thinking.

Section 1 – Processing and analysing data with the spreadsheet (Excel)

Building a spreadsheet; structuring and processing data; problem analysis; what-if/simulation analysis; data analysis with the spreadsheet; lookup and reference functions. The theoretical part is complemented by hands-on practice sessions on real cases.

Section 2 – Business Intelligence and Data Science

Introduction to programming and Python basics; control flow statements; functions; sequences and non-sequences (strings, lists, tuples, dictionaries); Introduction to Business Intelligence and data science; data analysis applications: regression, classification, clustering and time series analysis. Learning to program (Python)
The theoretical part is complemented by practice sessions applying the concepts to professional problems.

Prerequisites

none

Teaching methods

12 hours of frontal classes (in presence)
24 hours of interactive learning (remotely)

Assessment methods

There are no intermediate (in itinere) tests.

The exam consists of a project work and an individual oral examination.

The project work may be carried out individually or in groups (maximum 4-5 participants) and requires applying the data structuring, processing and analysis techniques practised during the course (Excel, Python, Business Intelligence and data visualization tools) to the solution of a business/economic problem. The project work is the starting point of the oral examination.

The oral examination is organized by groups, following the composition of the project work teams: it starts from the discussion of the project work and extends to the topics, methods and tools covered in the course.

The use of artificial intelligence tools is allowed in carrying out the project work, provided that such use is made explicit, indicating how and for which activities the tools were employed.

Assessed competences: ability to structure, process and analyse data in support of business decisions; command of the applied tools (Excel, Python, BI and data visualization tools); ability to provide a managerial interpretation of the results; critical ability to identify errors, limits and biases in the analyses, including those produced with the support of AI; ability to communicate information clearly and effectively.

Assessment criteria: correctness and completeness of the analysis; methodological appropriateness and proper use of the tools; quality of the interpretation and communication of the results; autonomy in motivating and justifying the choices made. The final mark is expressed out of thirty and is graduated according to the level achieved for each of these criteria.

Textbooks and Reading Materials

Teaching materials (slides, notebooks, working files and exercises) provided by the lecturer and made available on the University e-learning platform (Moodle). No compulsory textbook is required.

Semester

second semester

Teaching language

Italian

Sustainable Development Goals

QUALITY EDUCATION
