UNIVERSITÀ
DEGLI STUDI DI MILANO-BICOCCA

COURSE SYLLABUS

Business Analytics

2627-1-F7704M018-F7704M018-2

Learning objectives

The main objective of this module will be to learn how to apply quantitative methods to analyse data and support a data-driven decision making.

- Knowledge and understanding. Students will understand the role of business analytics in decision-making and know the main quantitative methods (descriptive, predictive, and prescriptive) are used to analyse business data.
- Applying knowledge and understanding: Students will apply statistical techniques to real datasets, translate business problems into analytical questions, and build, interpret, and visualize quantitative models to support managerial decisions.
- Making judgements: Students will critically evaluate data quality and analytical outputs, assess the validity of different methods given business and ethical constraints, and formulate evidence-based recommendations under uncertainty.
- Communication skills: Students will present analytical results clearly to technical and non-technical audiences, producing structured reports that link data analysis to actionable business insights.
- Learning skills. Students will independently develop their analytical skills, critically engage with advanced statitistical analytics, and transfer a structured, evidence-based problem-solving approach to other professional contexts.

Contents

1. Introduction to BA
2. Data management (collection, quality, cleaning)
3. Descriptive analytics and data visualization
4. Regression analysis
5. Project work

Detailed program

1. Introduction to BA
   a. what is business analytics
   b. descriptive, prescriptive and predictive analytics
   c. using data for decision: ethics, limits, and communication
2. Data management (collection, quality, cleaning)
   a. types of data (firm-level, industry-level, country-levels, patents, trade data) and where to find them
   b. import and cleaning data (missing values, outliers, normalizing, merging data)
3. Descriptive analytics and data visualization
   a. descriptive statistics, graphs, matrices
   b. correlation
   c. dashboards
4. Regression analysis
   a. causal relations
   b. types of dependent variables and controls
   c. intepretation and predictions
   d. non-linear relation (interactions, u-shaped, s-shaped)
5. Project work:
   a. Analyzing a dataset
   b. Creation of a presentation and a report
   c. Critical discussion of the results

Prerequisites

"Quantitative Methods for Decision-Making" (first year, first semester), or an equivalent course of advanced statistics.
Attendace of "Econometrics" (first year, second semester), or an equivalent course of econometrics.

Teaching methods

Lectures, labs, and group work.
Business guest lecture.
In detail:

- 14 frontal lectures, 2-hour duration;
- 6 labs, 2-hour duration.

Assessment methods

Class participation, final group essay with presentation to the class, and individual oral exam.
Details:

- Group grade (40% essay, 10% presentation)

- Individual grade (50%)
- Up to 2 extra points for class participation (0 for low attendance and/or participation, 1 for inconsistent attendance and participation, 2 for consistent attendance and active participation).

Textbooks and Reading Materials

Cameron, A.C. & Trivedi, P. K. (2009) "Microeconometrics using Stata". College Station: Stata press.

Camm ,J. D. Cochran, J. J., Fry M. J., Ohlmann, J. W. (2026), "Business Analytics", Cengage International Edition, 6th Edition.

Articles, databases, and other relevant sources will be available during the course.

Semester

Second semester

Teaching language

English

Sustainable Development Goals

QUALITY EDUCATION | GENDER EQUALITY | INDUSTRY, INNOVATION AND INFRASTRUCTURE | RESPONSIBLE CONSUMPTION AND PRODUCTION