



UNIVERSITÀ
DEGLI STUDI
DI MILANO

Master's degree programme in
Data science for economics

FACOLTÀ DI

Scienze Politiche

Economiche e Sociali

Applications and admissions

Open, subject to entry requirements.

Admission requirements

Applicants may come from various bachelor's, but must have earned at least 30 ECTS in computer science and mathematics and/or in the area of economic sciences and statistics. The specific scientific sectors are published on the DSE website. Minimum curricular requirements are necessary but not sufficient conditions to be admitted.

Admission is conditional and it depends on the assessment of the personal competencies and skills of the candidate according to the evaluation of the Admission Board of DSE. The assessment of the personal competencies and skills is based on the coherence of the academic curriculum with respect to the DSE programme. The Admission Board can require the applicant an oral interview, aimed at verifying the individual knowledge and skills required by DSE. The oral interview is organized in English via remote communication platforms (e.g., Teams, Skype, Zoom). A complete, detailed list of topics that can be asked during the interview is published on the DSE website.

The B2 level in the English language is a further entry requirement. Candidates can prove their English proficiency by presenting:

- A language certificate at B2 level or higher recognized by the University of Milan and obtained no more than three years earlier;
- The result of a Placement Test taken at the Language Centre (SLAM) of the University of Milan;
- An English assessment at B2 level or higher obtained in the framework of a Bachelor's degree programme through SLAM courses and tests no more than four years earlier.

The candidates that do not satisfy the requirement by the deadline will not be admitted to the Master's degree programme and they will not have the opportunity to take further tests.

Candidates without an Italian degree or diploma must obtain 3 credits in "Additional language skills: Italian" by proving an Italian language proficiency at level A2 within the Common European Framework of Reference for Languages (CEFR). The level of Italian proficiency can be assessed by the end of the degree course according to one of the following ways:

- by submitting a language certificate at A2 level or higher recognized by the University of Milan and obtained no more than three years earlier to the submission;
- by passing an entry-level test, organized by SLAM, which can be taken at the beginning of each semester.

Objectives

Graduates of this Master programme will receive advanced training on methodologies and IT tools, quantitative and methodological notions, to interpret and analyze economic phenomena using approaches that integrate business, market and social media data. Among these, the master focuses on the analysis of the effects of economic policies and the evaluation of actions, and any further activity related to the sectors of economy, marketing, business.

The course of study enforces the construction of solid methodological bases through the development of topics of economic theory, decision theory under uncertainty conditions, micro-econometric techniques, and analysis of time series. It also enforces the study of new data management technologies and scalability of analysis systems in cloud environments, as well as machine learning techniques for the extraction and classification of information.

Career prospects

The MSc programme in Data Science for Economics aims to train the following professional figures.

Data Scientist

Its main functions are to analyze and elaborate forecasts on large data flows, identifying and applying the most appropriate software tools and statistical techniques for their processing; create complex models for predictive data-driven analysis.

The Data Scientist knows the different contexts in which data emerge and can interact with experts from various disciplines.

Data Driven Economist

Its main functions are to frame problems of economic analysis in the context of data science by identifying data and technologies that can provide new keys for reading or evaluating economic and social phenomena.

Data-Driven Decision Maker

Its main functions are to exercise managerial functions of high responsibility in private and public companies with an international vocation and a strong technological component within it, using data analysis to guide strategic and operational decisions.

Analyst of development projects or economic policies

Its main functions are to contribute to the formulation, monitoring and analysis of development projects or economic policies.

Data Analyst

Its main functions are to exercise functions of identification and supervision of operational decision-making processes in direct coordination with the company's executive management.

Degree syllabus

I year

COMPULSORY LEARNING ACTIVITIES	ECTS
Coding for data science and data management	12
Data-Driven Economic Analysis	12
Dynamic Economic Modeling	9
Machine learning and Statistical learning	12
Statistical Theory and Mathematics	12

II year

COMPULSORY LEARNING ACTIVITIES	ECTS
Cybersecurity and Protection of Personal Data: Legal and Policies issues	6
Privacy, data protection, and massive data analysis in emerging scenarios	12

Elective courses

3 activities among the selected path for 18 ects

PATH: DATA SCIENCE

3 COURSES CHOSEN FROM THE FOLLOWING, AT MOST 1 AMONG THOSE MARKED WITH THE SYMBOL *	ECTS
<ul style="list-style-type: none">- Advanced multivariate statistics- Bayesian analysis- Functional and Topological Data Analysis- Marketing Analytics*- Network Science- Project Management and Innovation*- Reinforcement learning- Text Mining and Sentiment Analysis- Time Series and Forecasting*	6+6+6

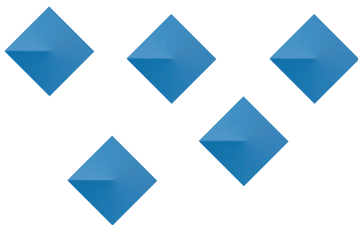
PATH: ECONOMIC DATA ANALYSIS

3 COURSES CHOSEN FROM THE FOLLOWING, AT LEAST 2 AMONG THOSE MARKED WITH THE SYMBOL **	ECTS
<ul style="list-style-type: none">- Advanced multivariate statistics- Bayesian analysis- Causal Inference and Policy Evaluation**- Experimental Methods and Behavioral Economics**- Text mining and sentiment analysis- Time Series and Forecasting**	6+6+6

Elective activities common to both paths


- 9 ects for elective activities;
- 3 ects for internship/stage;
- 3 ects for Italian Language (only students without an Italian degree or diploma)
- 3 ects for Transversal Skills/Laboratory (only students not involved in the verification of the Italian Language)
- Final exam (12 ects)

INFO



 **Disciplinary classification:** LM DATA - DATA SCIENCE

 **Duration:** 2 years (120 ects)

 **Attendance:** No obligation

 **Locations:**

- Department of Economics, Management and Quantitative Method - via Conservatorio, 7 - Milan
- Department of Computer Science "Giovanni degli Antoni" - via Celoria, 18 - Milan

 **For information:**

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 **Websites:**

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