

Data Science for Business

Master data-driven strategies to lead in modern business



Tackle real-world business challenges with innovative data science strategies

This module introduces advanced techniques for interpreting and extracting data-driven insights. You'll dive into innovative data science methods and algorithms that promote creative problem-solving and optimise models crucial for digital transformation. Learn how to apply statistical and machine learning techniques to synthesise insights, driving informed decision-making and clear communication.

You'll also explore advanced visualisation and business intelligence tools, gaining the ability to effectively communicate complex data insights. These skills will boost model performance, while fostering business innovation and success.

Learning objectives

This module is central to digital transformation, equipping students to apply data science theories, concepts, and practices to solve real-world business problems. By the end of the course, you won't just master essential concepts — you'll be ready to drive innovative changes in the digital era. Here's what you'll achieve:

Evaluate and apply data science concepts and techniques to solve business challenges, extract valuable insights, and drive data-driven decisions, ensuring effective problem-solving and strategic improvements in a digital business environment.

Implement advanced algorithms and cutting-edge methods in data science to enhance problem-solving capabilities, improve model optimisation, and develop data-driven strategies that contribute to real-world business success and digital transformation.

Conduct comprehensive data analysis using statistical and machine learning techniques, providing actionable insights for decision-making, and effectively communicating complex data findings to diverse stakeholders within the business landscape.

Develop, implement, and assess data visualisations and business intelligence tools, enhancing your ability to interpret and present complex insights, optimise performance, and drive business innovation through advanced data solutions.

Criteria — are you eligible?

- **Language proficiency:** Minimum C1 English proficiency, plus 2 years' work or education in an English-speaking environment. IELTS: 6.0; TOEFL PBT: 600; TOEFL CBT: 200; TOEFL iBT: 100
- **Education:** Relevant EQF Level 6 qualification required (eg STEM, economics). Without this you will have an interview and assessment to evaluate certifications, qualifications or professional experience.
**EQF levels explained*
- **Residency:** This EU-funded programme is open to all EU nationals with a passport or valid ID from one of the 27 EU countries.

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Opening up new digital opportunities

This course is ideal for professionals seeking to deepen their data science expertise. It opens up careers in data analysis, machine learning, AI, and business intelligence. Graduates can pursue roles like data scientists, AI specialists, or business intelligence developers.

The whole programme offers a broad range of modules that complement the Data Science for Business course.



Flexible online learning with expert guidance

This module is fully delivered online, offering a hybrid learning experience that combines live (synchronous) and self-paced (asynchronous) sessions. Led by expert tutors, you'll progress through dynamic lectures, individual study, and hands-on lab work.

Key methods include problem-based learning, gamification, and flipped classrooms. Using the latest in artificial intelligence, the module keeps you on the cutting edge of educational research and methods. Continuous assessments ensure steady progress, with projects and exams to apply data science concepts to real business problems.

Time commitment

- Classroom and demonstrations: 36 hours
- Practical work/tutorials: 36 hours
- Independent learning: 178 hours
- Total: 250 hours

Credit points

- 10 ECTS

Full course content

Subjects covered:

Data Science for Business is a 10 ECTS module delivered over 5 hours per week for 12 weeks. An indicative schedule of topics to be addressed each week is outlined below:

● Introduction to Data Science

- Overview of data science processes
- Methods, tools and real-world applications

● Python for Data Science

- Python programming basics
- Data structures
- Packages for data analysis

● Data Collection and APIs

- APIs
- Web scraping
- Working with unstructured data sources

● Databases and Data Warehousing

- Relational databases
- SQL
- ETL processes
- Data warehousing principles

● Data Pre-processing and Cleaning

- Handling missing data
- Outliers
- Feature encoding
- Normalisation

● Exploratory Data Analysis

- Summary statistics
- Visualisations
- Identifying patterns

● Statistical Analysis and Modelling

- Regression
- Classification
- Forecasting methods

● Machine Learning

- Supervised learning models like classification and regression

● Advanced Machine Learning Methods

- Neural networks
- Deep learning
- Reinforcement learning

● Business Intelligence and Analytics

- BI process
- Dashboards
- Data storytelling
- Predictive analytics

● Data Visualisation and Dashboards

- Visual encodings
- Interactive reports
- Communicating insights

● Ethics, Bias and Privacy in Data Science and Major Trends in ML and DS

- Responsible AI
- Transparency
- Ethical use of data
- Major trends in ML and DS