Digital 4 Business
Evolving your digital future

Data Science for Business

Lead digital change with innovative strategies

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 integrate data science principles to solve real-world business challenges, demonstrating creativity in data interpretation and insight extraction. (Transferable Skill: Critical Thinking)

Synthesise insights using statistical and machine learning techniques to make informed decisions, effectively communicating results to diverse audiences. (Transferable Skill: Communication)

Apply advanced data science methods and algorithms to develop and optimise models that address complex business problems. (Transferable Skill: Problem Solving)

Design and assess advanced visualisations, dashboards, and BI tools to deliver actionable insights and enhance business decision-making. (Transferable Skill: Service Orientation)

Collaborate within teams to design and implement data-driven solutions, fostering teamwork and adaptability. (Transferable Skill: Team Competence)

Criteria — are you eligible?

- **Language proficiency:** Minimum B2 English proficiency, or 2 years' work or education in an English-speaking environment. IELTS: 6.0; TOEFL PBT: 600; TOEFL CBT: 200; TOEFL iBT: 100. Alternatively, proficiency may be assessed via a test or interview
- **Education:** Relevant EQF Level 6 qualification required in a relevant field including but not limited to: computer science, IT, engineering, maths, business, or economics. Without this you will have an interview and assessment to evaluate certifications, qualifications or professional experience.
  *EQF levels explained
- **Residency:** This EU co-funded programme is open to all EU27, EEA, UK and Ukrainian nationals with a passport or valid ID from one of these countries.

Data Science for Business

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 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

Data Science for Business is a 10 ECTS module delivered over 6 hours per week for 12 weeks — 3 hours live class time and 3 hours asynchronous learning, with materials provided. An indicative schedule of topics is below:

- **Introduction to Data Science**
  - Overview of data science processes
  - Methods, tools and real-world applications

- **Introduction to 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
  - Ootliers
  - Feature encoding
  - Normalisation

- **Exploratory Data Analysis**
  - Summary statistics
  - Visualisations
  - Identifying patterns

- **Digital Competences**
  - Regression
  - Classification
  - Forecasting methods

- **Machine Learning**
  - Supervised learning models like classification and regression

- **Advanced Machine Learning Methods**
  - Neural networks
  - Deep 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

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Thank You!

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Co-funded by
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