COURSE DATA

DATA SUBJECT

Code: 37071
Name: Dades Science in International Business
Cycle: Undergraduate Studies
ECTS Credits: 6
Academic year: 2026-27

STUDY (S)

Degree	Center	Acad. year	Period
1314 - Degree in International Business	Facultat d'Economia	4	First quarter

SUBJECT-MATTER

Degree	Subject-matter	Character
1314 - Degree in International Business		

COORDINATION

PEREZ GIMENEZ VIRGILIO

SUMMARY

This course is designed as a comprehensive introduction to data science applied to the context of international business. Through six teaching units, students will explore topics ranging from the fundamentals of programming and data management to advanced techniques in data visualization and reporting. The course is practice-oriented, enabling students to solve real-world problems and develop key competencies for data-driven decision-making. In addition, students will learn techniques for data acquisition, cleaning, and organization, the generation of dynamic and automated reports, and an introduction to advanced data science methods such as machine learning and web scraping. The course provides a solid and multidisciplinary foundation, designed to prepare students to address current and future challenges in the field of international business while developing the skills necessary for their professional growth.

PREVIOUS KNOWLEDGE

RELATIONSHIP TO OTHER SUBJECTS OF THE SAME DEGREE

There are no specified enrollment restrictions with other subjects of the curriculum.

OTHER REQUIREMENTS

The course has no formal prerequisites. However, it is assumed that students possess a basic level of mathematics and statistics in order to successfully complete the course.

COMPETENCES / LEARNING OUTCOMES

DESCRIPTION OF CONTENTS

Topic 1: Introduction to Data Science Environments

- Setting up computational tools for data analysis.
- Programming fundamentals: syntax, data types, and basic operations.
- Fundamental and advanced data structures.
- Management of resources and libraries for data science.
- Introduction to reproducible data workflows and best practices.

Topic 2: Data Acquisition, Manipulation, and Organization

- Techniques for importing and exporting data in different formats.
- Data cleaning, manipulation, and transformation using modern tools.
- Organization of structured and unstructured data.
- Programming flow control: conditionals and loops.
- Implementation of custom functions to automate processes.
- Principles and standards for efficient and readable programming.

Topic 3: Data Visualization

- Principles of effective visualization design.
- Creation of basic and advanced charts for different types of data.
- Customization of visual elements and professional chart design.
- Exploration of tools and libraries for creating dynamic visualizations.

Topic 4: Automated Reporting and Report Generation

- Introduction to tools for creating dynamic reports.
- Automation of reporting processes and generation of reproducible documents.
- Design of interactive dashboards for decision-making.
- Publishing results in different formats.

Topic 5: Data Science Applied to International Business

- Exploratory and descriptive data analysis in professional contexts.
- Representation and analysis of spatial and spatiotemporal data.
- Case studies related to international business.
- Use of data in solving real-world business problems.

Topic 6: Advanced Data Science Tools

- Introduction to machine learning.
- Application of basic prediction and classification algorithms.
- Introduction to web scraping and its use in data projects.
- Exploration of advanced topics based on current trends in data science.

WORKLOAD

PRESENCIAL ACTIVITIES

Activity	Hours
Theory	30,00
Classroom practices	30,00
Total hours	**60,00**

NON PRESENCIAL ACTIVITIES

Activity	Hours
Attendance at other activities	0,00
Individual or group project	20,00
Independent study and work	20,00
Preparation of lessons	10,00
Preparation for assessment activities	20,00
Resolution of case studies	20,00
Total hours	**90,00**

TEACHING METHODOLOGY

The course is organized into two-hour theoretical-practical sessions, with a primary focus on the practical and applied aspects of data science. The teaching methodology is designed to promote active learning and the use of computational tools, which are essential in modern society. Students will work with specific environments and tools to solve practical problems and explore key concepts covered in the course.

Throughout the sessions, exercises based on real-world situations will be proposed, allowing students to develop practical skills and tackle challenges similar to those they are likely to encounter in their future professional careers. In addition, autonomous and collaborative learning will be encouraged through the implementation of projects and the resolution of practical case studies, ensuring that students acquire a comprehensive understanding of the topics covered. This approach also fosters adaptability to new tools and technologies, taking into account the rapid evolution of the field of data science.

EVALUATION

Throughout the course, students will complete several practical assignments and assessment activities through which they will demonstrate their understanding of both theoretical and practical concepts. The combined practical assignments and assessments will account for 60% of the final grade.

As a final course project, students will be required to complete a research project in which they apply the knowledge and skills acquired throughout the course. The final report must be submitted no later than the date scheduled for the first examination session and will account for 40% of the final grade.

While practical assignments are not eligible for reassessment, students who do not pass the course in the first examination session may resubmit the final project report. The revised report must be submitted no later than the date scheduled for the second examination session.

In order for the above grading percentages to be applied, students must obtain a minimum grade of 5 out of 10 on the final course project.

As part of the course assessment activities, instructors may require students to defend, present, or orally explain specific assignments, coursework, or the final project. The purpose of these activities is to verify authorship, further explore the content developed, and assess communication and presentation skills. Where applicable, the specific conditions of these activities will be communicated to students at the beginning of the course or with sufficient advance notice.

REFERENCES

Boehmke, B., & Greenwell, B. (2019). Hands-On Machine Learning with R. https://bradleyboehmke.github.io/HOML/

Fernández-Avilés, G., & Montero, J.-M. (2024). Fundamentos de ciencia de datos con R. McGraw Hill. https://cdr-book.github.io/

Fleischhacker, A. (2024). A Business Analyst's Introduction to Business Analytics (2ª ed.).

Rohan, A. (2023). Telling Stories with Data. https://tellingstorieswithdata.com/

Wickham, H., Çetinkaya-Rundel, M., & Grolemund, G. (2023). R for Data Science (2ª ed.). https://r4ds.hadley.nz/

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