1. BASIC INFORMATION

Course	BUSINESS INTELLIGENCE AND PROGRAMMING
Degree program	Economics Degree
School	Economic, Business and Communication Sciences
Year	3º
ECTS	6
Credit type	Compulsory
Language(s)	English
Delivery mode	In person
Semester	S5
Academic year	2025-2026
Coordinating professor	

2. PRESENTATION

The course *Business Intelligence and Programming* aims to provide students with a solid understanding of the tools, concepts, and methodologies that enable the transformation of data into actionable knowledge for strategic decision-making. It begins with the fundamentals of business intelligence, exploring the role of Big Data and data science in today's business environment. Students will study different types of databases, the importance of data governance, and analytics applied to customers, operations, and people. Throughout the course, key processes such as data mining, reporting, performance metrics, query execution, and the visualization of large datasets will be addressed. Project management will be explored with a focus on economic modeling and the application of effective methods to solve real-world problems. In the programming section, Python will be introduced as a fundamental tool for data analysis, and students will develop practical skills using visualization platforms such as Tableau and Power BI, including the creation of dashboards, workflows, and interactive graphical analyses. This course combines theory and practice to prepare professionals capable of extracting value from data and applying it in dynamic, technology-driven business contexts.

3. COMPETENCIES AND LEARNING OUTCOMES

KNOWLEDGE:

CON03. Recognise centralised and decentralised economic data algorithms, patterns, trends and systems.

- Identify economic models for optimal economic/business performance.
- Select different data analysis methods and tools for different functional areas of the company: logistics, finance, marketing, acquisitions and sales.

SKILLS:

HAB03. Extract information from the analysis of large amounts of data by exploring and identifying algorithms, patterns and centralised and decentralised data systems.

- Use Data Driven Project Management software to propose effective models and methods.
- Exploit the data using Python and R programming languages and visualise them with Tableau and PowerBI tools.
- Develop programmes designed with artificial intelligence (Machine Learning) for data analysis and decision making.
- Develop a descriptive analysis summarising historical data from Big Data sources at different economic points in time.

COMPETENCIAS/COMPETENCIES:

- COMP02. Use the necessary mathematical tools to solve problems using programming and analysis methods.
- COMP7. Programming and developing national or international economic-financial management projects.
- COM18. Describe and examine the international business process and its different phases: planning, organisation, management and control.

4. CONTENT

1) Fundamentals of business intelligence, Big Data and Data Science
2) Types of databases, data governance and analytics (customer-operations-people analytics)
3) Processes and concepts of data mining, reporting, performance metrics, descriptive and statistical analysis, query execution and visualisation and development of big data sources.
4) Project management aimed at economic modelling and the application of effective methods.
5) Python programming.
6) Development of masks, processes and graphical analysis with Tableau and PowerBI.

5. TEACHING-LEARNING METHODOLOGIES

- Masterclass
- Case study
- Problem-based learning
- Project-based learning
- Workshop-based learning
- Simulation environments

6. LEARNING ACTIVITIES

Listed below are the types of learning activities and the number of hours the student will spend on each one:

Campus-based mode:

Learning activity	Number of hours
Master Classes	12

Practical application seminars	18
Case studies	14
Oral presentation of work	4
Preparation of reports and written papers	16
Research and projects	8
Independent work	56
Debates and colloquiums	8
Face-to-face assessment tests	12
TOTAL	**150**

7. ASSESSMENT

Listed below are the assessment systems used and the weight each one carries towards the final course grade:

Campus-based mode:

Assessment system	Weight
In-person assessment tests	50%
Problem case	30%
Lab/workshop practice notebook	20%

When you access the course on the *Campus Virtual*, you'll find a description of the assessment activities you have to complete, as well as the delivery deadline and assessment procedure for each one.

7.1. First exam period

To pass the course in the first exam period, you must obtain a final course grade of at least 5 out of 10 (weighted average).

In any case, you will need to obtain a grade of at 5.0 in the final exam in order for it to count towards the final grade along with all the grades corresponding to the other activities.

7.2. Second exam period

To pass the course in the second exam period, you must obtain a final grade of at least 5 out of 10 (weighted average).

In any case, you will need to obtain a grade of 5.0 in the final exam in order for it to count towards the final grade along with all the grades corresponding to the other activities.

The student must deliver the activities not successfully completed in the first exam period after having received the corresponding corrections from the professor, or those that were not delivered in the first place.

8. SCHEDULE

This table shows the delivery deadline for each assessable activity in the course:

Assessable activities	Deadline
Activity 1 -2	Week 1 - 7
Activity 2 – 4	Week 8 - 10
Activity 3 – 5	Week 3 - 15
Exam	Week 16 -18

This schedule may be subject to changes for logistical reasons relating to the activities. The student will be notified of any change as and when appropriate.

9. BIBLIOGRAPHY

The following is a recommended bibliography:

- Deckler, G. (2021). *Learn Power BI: A comprehensive, step-by-step guide for beginners*. Packt Publishing.
- Few, S. (2013). *Information Dashboard Design: Displaying Data for At-a-Glance Monitoring*. Analytics Press.
- Khan, M. E. (2020). *Business Intelligence in Project Portfolios*. Project Management Institute.
- Ladley, J. (2019). *Data Governance: How to Design, Deploy, and Sustain an Effective Data Governance Program* (2nd ed.). Academic Press.
- Marr, B. (2016). *Big Data in Practice: How 45 Successful Companies Used Big Data Analytics to Deliver Extraordinary Results*. Wiley.
- McKinney, W. (2017). *Python for Data Analysis: Data Wrangling with Pandas, NumPy, and IPython* (2nd ed.). O'Reilly Media.
- Milligan, J. N. (2016). *Learning Tableau 10: Business Intelligence and Data Visualization*. Packt Publishing.
- Provost, F., & Fawcett, T. (2013). *Data Science for Business: What You Need to Know About Data Mining and Data-Analytic Thinking*. O'Reilly Media.
- Siegel, E. (2016). *Predictive Analytics: The Power to Predict Who Will Click, Buy, Lie, or Die* (2nd ed.). Wiley.

10. EDUCATIONAL GUIDANCE AND DIVERSITY UNIT

From the Educational Guidance and Diversity Unit we offer support to our students throughout their university life to help them reach their academic achievements. Other main actions are the students inclusions with specific educational needs, universal accessibility on the different campuses of the university and equal opportunities.

From this unit we offer to our students:

1. Accompaniment and follow-up by means of counselling and personalized plans for students who need to improve their academic performance.
2. In terms of attention to diversity, non-significant curricular adjustments are made in terms of methodology and assessment for those students with specific educational needs, pursuing an equal opportunities for all students.
3. We offer students different extracurricular resources to develop different competences that will encourage their personal and professional development.
4. Vocational guidance through the provision of tools and counselling to students with vocational doubts or who believe they have made a mistake in their choice of degree.

Students in need of educational support can write to us at:
orientacioneducativa@universidadeuropea.es

11. ONLINE SURVEYS

Your opinion matters!

The Universidad Europea encourages you to participate in several surveys which help identify the strengths and areas we need to improve regarding professors, degree programs and the teaching-learning process.

The surveys will be made available in the “surveys” section in virtual campus or via e-mail.

Your assessment is necessary for us to improve.

Thank you very much for your participation.