TEACHING GUIDE - 2026-2027

Algorithmic Thinking & Programming

UGRA_016396

Departments	Data, Analytics, Technology and Artificial Intelligence (DATA), Dept. of Operations, Innovation & Data Sciences
Teaching Languages	English, Spanish, Catalan
ECTS	6
Teacher responsible	Jordi Tarda Valls - jordi.tarda@esade.edu

Course Goals

The course aims for Business Administration students to understand the fundamentals of algorithmic logic and its application in problem-solving. Additionally, it seeks to equip them with basic programming skills in Python, focusing on data manipulation and automation of administrative tasks. Finally, the course aims to develop critical thinking and analytical skills to enhance data-driven decision-making.

Previous knowledge

No previous programming knowledge required

Prerequisits

There are no prerequisites for this course.

Teaching methodology

This is a hands-on course that requires participants to be active in their own learning. Participants must do autonomous work to prepare each session. This preparatory work involves reading the content of the next session, reviewing the prior session, and doing and submitting exercises. The details of the preparatory work can be found in the website of the course. The session will build upon and leverage the preparatory work of participants. The sessions on campus will be used to review the preparatory work, solve doubts, do new exercises, individual quizzes, team activities and challenges. This course requires that all participants bring their own device (laptop or tablet) to the sessions to carry out different activities.

Class attendance is compulsory. During several sessions, participants will do individual quizzes and team activities. Those individual quizzes and team activities, which will be graded, will be announced in the course website before the session.

Description

Course

A course in algorithmics and Python programming can significantly enhance a

contribution to program

Business Administration career by providing tools for data analysis and management, automation of accounting and financial processes, and optimization of operations. It facilitates the understanding and application of statistics in market studies and financial analysis, improves the management of information systems, and supports data-driven decision-making across all areas, from marketing to business sociology.

Short description

In this course, participants will develop algorithmic thinking capabilities that enable them to navigate complex problems. In particular, participants will build a core foundation in algorithmic thinking, the Python programming language and how to use it for data analysis.

Program Learning Objectives

BBA25-Bachelor of Business Administration (BBA)

- Critical and Analytical Thinking
  - Apply data analysis as an integral part of the evaluation and decision-making process.
- Technological Savviness
  - Identify the role technology plays in society and the business environment.

Bibliography

Matthes, E., Python crash course: A hands-on, project-based introduction to programming (3rd ed.), No Starch Press, 978-1-7185-0270-3 (Book)
Sweigart, A., Automate the boring stuff with Python: Practical programming for total beginners (3rd ed.), No Starch Press, 978-1-7185-0340-3 (Book)

Content

#	Topic
1	Introduction - Basic Data Types
2	Conditionals & Loops
3	Lists & Dictionaries
4	Functions
5	The Pandas & Matplotlib Library

Assessment

Tool	Assessment tool	Category	Weight %
Quizzes/tests	Individualñ quizzes	Retake and ordinary round	10.00%
Individual or team exercises	Team work	Retake and ordinary round	15.00%

Tool	Assessment tool	Category	Weight %
Group project	Final project	Retake and ordinary round	20.00%
Written and/or oral exams	Final exam	Retake and ordinary round	45.00%
Attendance and punctuality	Attendance	Retake and ordinary round	10.00%

PROGRAMS

BBA20-Bachelor of Business Administration (BBA) (Undergraduates: Business)
BBA20 Year 1 (Mandatory)

BBA25-Bachelor of Business Administration (BBA) (Undergraduates: Business)
BBA25 Year 1 (Mandatory)

GBD25-Double Degree in Business Administration and Law (Undergraduates: Law)
GBD25 Year 1 (Mandatory)

GBL25-Double Degree in Business Administration and Global Governance, Economics and Legal Order (Undergraduates: Business)
GBL25 Year 1 (Mandatory)