1. OVERVIEW

Subject area	Project: Data Analysis I
Degree	Bachelor's Degree in Industrial Organisation Engineering
School/Faculty	Faculty of Science, Engineering and Design
Year	1
ECTS	6
Type	Core
Language(s)	Spanish
Delivery Mode	On campus and Online
Semester	2

2. INTRODUCTION

Data analysis currently presents a great challenge to professionals in any field or sector. It involves interpreting values, setting limits, knowing how to share relevant information and with whom - all so that interested parties can make correct decisions at any given time.

Data Analysis I project is designed to help students learn how to do this.
The subject has a practical and functional focus, although time is also spent on key theory to understand how to undertake a data visualisation project. This project encompasses all students have learnt up to now.

Students will be able to manage connections to external data, visualise information in line with usability, and represent all of this in a data pane or report. Over the course of this subject area, we will also touch on project development, as well as documentation, project phases, methods, human aspects and more.

3. SKILLS AND LEARNING OUTCOMES

Basic skills (CB, by the acronym in Spanish):

- CB1 - Students have shown their knowledge and understanding of a study area originating from general secondary school education, and are usually at the level where, with the support of more advanced textbooks, they may also demonstrate awareness of the latest developments in their field of study.
- CB2 - Students can apply their knowledge to their work or vocation in a professional manner and possess the skills which are usually evident through the forming and defending of opinions and resolving problems within their study area.
- CB3 - Students have the ability to gather and interpret relevant data (usually within their study area) to form opinions which include reflecting on relevant social, scientific or ethical matters.
- CB4 - Students can communicate information, ideas, problems and solutions to both specialist and non-specialist audiences.
- CB5 - Students have developed the learning skills necessary to undertake further study in a much more independent manner.

Cross-curricular skills (CT, by the acronym in Spanish):

- CT1 - Ethical values: ability to think and act in line with universal principles based on the value of a person, contributing to their development and involving commitment to certain social values.
- CT3 - Teamwork: ability to integrate and collaborate actively with other people, areas and/or organisations to reach common goals.
- CT4 - Written/spoken communication: ability to communicate and gather information, ideas, opinions and viewpoints to understand and be able to act, spoken through words or gestures or written through words and/or graphic elements.
- CT5 - Analysis and problem-solving: be able to critically assess information, break down complex situations, identify patterns and consider different alternatives, approaches and perspectives in order to find the best solutions and effective negotiations.
- CT6 - Adapting to change: be able to accept, consider and integrate different perspectives, adapting your own approach as required by the situation at hand, and to work effectively in ambiguous situations.
- CT7 - Leadership: be able to direct, motivate and guide others by identifying their skills and abilities, in order to effectively manage their development and common interests.
- CT8 - Entrepreneurial spirit: ability to take on and carry out activities that generate new opportunities, foresee problems or lead to improvements.

Specific skills (CE, by the acronym in Spanish):

- CE01 - Ability to solve mathematical problems which may arise in engineering by applying core knowledge of linear algebra, geometry, differential and integral calculus, differential equations and partial derivatives, statistics and optimisation.
- CE04 - Ability to understand and use programming languages, operating systems, databases and programs for problem solving in the field of engineering.
- CE18 - Ability to organise, complete and defend a project in the field of industrial organisation engineering.

Learning outcomes (RA, by the acronym in Spanish):

- RA1 - Complete a team project which includes data analysis by means of statistical calculations and creation of a basic computer application which shows the results.
- RA2 - Plan the tasks involved, assigning responsibility, deadlines and end products.
- RA3 - Hold work meetings where students use critical thinking to reflect on where they and their colleagues stand. Propose innovative solutions and develop objective arguments which lead to a unified decision-making process.
- R04 - Present the results to a specialised audience.

The following table shows how the skills developed in the subject area match up with the intended learning outcomes:

Skills	Learning outcomes (RA, by the acronym in Spanish)
CB1, CB2. CB3, CB4, CT3, CE18	R01
CB5, CT1, CT3,	R02
CT5, CT7,	R03
CT4	R04

4. CONTENTS

The subject matter is divided into six learning units:

Unit 1. Introduction to Data Analysis Projects
Unit 2. Dashboard design
Unit 3. Data processing
Unit 4. Data visualisation tools
Unit 5. Google Data Studio or Looker
Unit 6. Project

5. TEACHING/LEARNING METHODS

The types of teaching/learning methods are as follows:

- Lectures.
- Collaborative learning.
- Problem-based learning.
- Project-based learning.
- Case study
- Field work (field trips, work experience)

6. LEARNING ACTIVITIES

The types of learning activities, plus the amount of time spent on each activity, are as follows:

On Campus/online:

Learning activity	Number of hours
Master lectures and practical seminars	14
Problem-solving	5
Case studies and field studies	5
Integration projects	67
Debates and discussions	8
Learning contract (definition of interests, needs and objectives)	2
Autonomous learning	35
Tutorials	12
Knowledge tests	2
TOTAL	**150**

7. ASSESSMENT

The assessment systems, plus their weighting in the final grade for the subject area, are as follows:

On campus:

Assessment system	Weighting
Attitude assessment tests (attitude assessment rubrics, class participation)	10
Self- and co-assessment (learning contract, learning objectives)	10
Project journals (integrated projects, degree dissertation)	45
Presentations and defence of projects (integrated projects, degree dissertation)	35

Online:

Assessment system	Weighting
On Campus tests to evaluate objectives of theory/practical learning (exam-type objective tests, written compositions, oral presentations, case studies/problem solving, debates, simulation tests) (distance learning)	60
Attitude assessment tests (attitude assessment rubrics, class participation)	10
Self- and co-assessment (learning contract, learning outcomes)	5
Project journals (integrated projects, degree dissertation)	25

On the Virtual Campus, when you open the subject area, you can see all the details of your assessment activities and the deadlines and assessment procedures for each activity.

8. BIBLIOGRAPHY

The reference publication to accompany this subject area is:

- A Guide to the Project Management Body of Knowledge (PMBOK® Guide). Autor: Project Manager Institute. Editorial: Project Management Institute (1 agosto 2021)
- Las leyes de UX (Diseño Multimedia). Autor: Jon Yablonski. Editorial :Parramón; N.º 1 edición (5 octubre 2022)
- Google Data Studio o Looker. Autor: Soporte Google. (https://support.google.com/)