VNIVERSITAT ĐĐ VALÈNCIA

COURSE DATA

Data Subject	
Code	36503
Name	Visual Analytics and Communication
Cycle	Grade
ECTS Credits	6.0
Academic year	2023 - 2024

Study (s)			
Degree	**Center**	**Acad. year**	**Period**
1332 - Degree in Business Intelligence and Analytics	Faculty of Economics	1	Second term

Subject-matter		
Degree	**Subject-matter**	**Character**
1332 - Degree in Business Intelligence and Analytics	5 - Fundamentos del Análisis de Datos	Basic Training

Coordination	
Name	**Department**
ALVAREZ JAREÑO, JOSE ANTONIO	110 - Applied Economics

SUMMARY

Visual Analytics and Communication is a basic training subject assigned to the area of Quantitative Methods for Economics and Business that is taught in the second term of the first year of the BUSINESS INTELLIGENCE AND ANALYTICS degree, with a total teaching load of 6 ECTS credits.

In a degree that aims to develop professionals with significant business knowledge that are able to explore and exploit, with business vision, the increasing data flows (both internal and external) that the new digital age is providing, a subject such as Visual Analytics and Communication becomes fundamental and essential. With billions of data being produced daily and with our ability to collect and store them increasing faster than our ability to analyse them, the new graduates need development proper skills that guide them in the process of analysis and in the process of properly communicate the findings for correct decision making.

The ability to combine the creative potential of the human being and its flexibility of thought in a process guided by knowledge, with the capacity of storage and computer processing that we have, offers us new opportunities and solutions to the most complex problems, for better informed decisions. Having instruments with which to support the production, presentation and dissemination of the results of an analysis to proper communicate the conclusions reached in the appropriate context and to a variety of audiences, enables opportunities to be exploited and adequately monetized.

This subject aims to train the student in the need to correctly visualize the data, as instruments that facilitate the recognition of patterns, the identification of relationships and trends that lead to rapid operational decision making. The idea is to take advantage of the capacity of the human mind to process images as a mechanism for a rapid comprehension of large amounts of information, reducing drastically the complex cognitive processes, and to use the appropriate communication tools that allow to transfer the acquired knowledge to the appropriate agents. The subject is divided into two differentiated and interconnected parts: one dedicated to the analysis and graphic representation of data and the other focused on aspects of communication.

PREVIOUS KNOWLEDGE

Relationship to other subjects of the same degree

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

Other requirements

There are no specified enrolment restrictions with other subjects of the curriculum

No prerequisites. It is assumed that in order to successfully complete this subject the student has a basic level of mathematics (a level of knowledge corresponding to the first and second of Baccalaureate in the branch of science or social sciences).

OUTCOMES

1332 - Degree in Business Intelligence and Analytics

- Students must be able to apply their knowledge to their work or vocation in a professional manner and have acquired the competences required for the preparation and defence of arguments and for problem solving in their field of study.

- Students must have the ability to gather and interpret relevant data (usually in their field of study) to make judgements that take relevant social, scientific or ethical issues into consideration.

- Students must be able to communicate information, ideas, problems and solutions to both expert and lay audiences.

- Demonstrate skills for analysis and synthesis.

- Be able to analyse and search for information from diverse sources.

- Be able to learn autonomously.

- Be able to use ICT, both in academia and in professional practice.

- Be able to define, solve and present complex problems systemically.

- Be able to work in a team demonstrating commitment to quality, ethics, equality and social responsibility.

- Apply methods and techniques of analysis, synthesis and graphical representation by means of software tools.

- Communicate the results of analyses effectively.

LEARNING OUTCOMES

The expected learning outcomes from this subject are the following:

• Know how to make different types of graphics through computer programs.

• Know how to extract, synthesize and communicate information in graphic form.

• Know the components of a graphic representation and the most effective way to communicate.

• Know how to search, select and assess the appropriate information for the analysis.

• Know how to use basic quantitative tools and their application to the economic environment.

• Know how to use basic communication tools and their application to the business environment.

• Know the different ways of communicating and how to do it more effectively.

• Know the components of a report, how to structure it and how to elaborate it effectively.

• Develop communication skills and their application to the business environment.

DESCRIPTION OF CONTENTS

1. INTRODUCTION

1. Why make graphics?
2. Graphic representations and Exploratory Data Analysis.
3. Graphic representations and communication.
4. Graphics for analysis and graphics for publication.

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2. RMARKDOWN

1. Text, code and outputs.
2. RMarkdown: communication, collaboration and work tool.
3. Output formats.
4. Components of a RMarkdown document: body, chunks and yaml.
5. Personalization.
6. Tables.
7. Automatic reports.

3. TYPES OF GRAPHICS

1. Basic graphics: Histograms, Bar charts, line charts, point clouds, stem-leaf and box-whisker plots, continuous histograms, sector diagrams, radar charts.
2. Advanced graphics: mosaic plots, path plots, sunflower plots, maps, cartograms, word-cloud plots, networks, etc.

4. COMPONENTS OF A GRAPHIC

1. Labelling: title, subtitle, axes, labels, legends, comments.
2. Visual elements and dimensions: position, length, angle, direction, shapes, area, volume, colour, saturation, tonality.
3. Geometries.
4. Coordinate systems. Scales
5. The language of graphics.

5. GRAPHICS WITH R

1. Base graphics.
2. Lattice.
3. ggplot2.
4. Interactive and dynamic graphics.

6. ELEMENTS OF COMMUNICATION

1. Oral Communication.
2. Active listening.
3. Non-verbal communication.
4. Organization and elaboration of messages.

7. EXECUTIVE SUMMARIES AND REPORTS

1. Search and Organization of Information.
2. The summary, the synthesis and the paraphrase.
3. Structure of a Report.
4. Attitudes and ethics: plagiarism.

8. DESIGN OF EFFECTIVE PRESENTATIONS: STAGES

1. Preparation.
2. Design.
3. Execution.

WORKLOAD

ACTIVITY	Hours	% To be attended
Theory classes	30,00	100
Computer classroom practice	30,00	100
Study and independent work	50,00	0
Preparation of evaluation activities	20,00	0
Preparation of practical classes and problem	20,00	0
TOTAL	150,00	

TEACHING METHODOLOGY

The development of the subject is structured mainly around classes of a more theoretical content with situations and practical examples, and practical classes where the student will use case studies from the theory classes to apply their knowledge to practical situations. Depending on the type of class (theory or practical) a didactic or other teaching method will be chosen.

In the theory classes, which last 2 hours, the main contents of each topic that make up the subject will be presented, introducing the relevant elements and concepts and contextualizing them in the different fields of application of data analysis, the business environment and its application to the business world.

The predominant teaching method in the theory classes will be the participatory master class. This methodology makes it possible to manage large groups of students in an organized manner, offering the advantages of a master class without limiting the participation of students and the tutor-student interaction. It aims to encourage participation and discussion in the class in order to provide the student with a direct involvement with the content.

In the practical sessions, which last 2 hours, the tutor will give the students situations (real or fictitious) for problem solving or case studies which the student will need to resolve through the application of techniques and use of adequate computer programs, as well as giving oral presentations or debates where required, individually and/or as a team. In the practical classes, projects and situations will be proposed that the students will have to solve, delivering the outputs that are determined in a presentable manner and

on time.

EVALUATION

For the first exams session:

1.- Evaluation of practical activities carried out by the student during the course, from the elaboration of tasks/work records and/or oral presentations, and ability to defend and justify his/her viewpoint (40%).

2.-Continuous assessment of the student based on his/her participation and involvement in the teaching-learning process in the classroom (20%).

3.- Preparation of an individual report following the structure fixed by the teachers. This report must be delivered on the date set for the first exam session (40%)

For the second exams session:

The marks obtained by the students corresponding to the continuous evaluation (practical activities carried out by the students during the course (40%) and active participation in the classroom (20%) will be maintained. Only the mark of the final report (40%) can be retrieved and delivered on the date set for the second exam session.

REFERENCES

Basic

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Additional

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