

Academic Year: ( 2020 / 2021 )

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Department assigned to the subject: Computer Science and Engineering Department

Coordinating teacher: SAEZ ACHAERANDIO, YAGO

Type: Compulsory ECTS Credits : 3.0

Year : 1 Semester : 2

## OBJECTIVES

### BASIC SKILLS

- Acquire and understand knowledge that provides a basis or opportunity to be original in the development and / or application of ideas, often in a research context.
- Know how to apply the acquired knowledge and their problem-solving capacity in new or little-known environments within broader (or multidisciplinary) contexts related to their area of study.
- Integrate knowledge and face the complexity of formulating judgments based on information that, being incomplete or limited, includes reflections on the social and ethical responsibilities linked to the application of their knowledge and judgments.
- Know how to communicate their conclusions and the latest knowledge and reasons that support them to specialized and non-specialized audiences in a clear and unambiguous way.
- Acquire learning skills that allow students to continue studying in a way that will have to be largely self-directed or autonomous.

### GENERAL COMPETENCES

- Ability to project, calculate and design products, processes and facilities in all areas of Computer Engineering.
- Ability to lead, plan and supervise multidisciplinary teams.
- Capacity for mathematical modelling, calculation and simulation in technology and business engineering centers, particularly in research, development and innovation tasks in all fields related to Computer Engineering and related multidisciplinary fields.
- Ability to apply the acquired knowledge and solve problems in new or little-known environments within broader and multidisciplinary contexts, with the ability to integrate knowledge from such environments.

## DESCRIPTION OF CONTENTS: PROGRAMME

1. Introduction
  - 1.1.- Fundamental concepts
  - 1.2.- Data processing
  - 1.3.- Visual data analysis
  - 1.4.- Methodology and application areas
  - 1.5.- Real use cases
- 2.- Business intelligence
  - 2.1.- Selection and transformation of attributes
  - 2.2.- Segmentation, prediction and identification of patterns
  - 2.3.- Advanced analysis techniques
  - 2.4.- Tools
  - 2.5.- Comparison of techniques and parameters
- 3.- Domain dependent analysis
  - 3.1.- Text analysis
  - 3.2.- Time series analysis
  - 3.3.- Other domains

- 4. Case study
- 4.1.- Loading and data processing
- 4.2.- Application of data analysis methodology
- 4.3.- Conclusions

## LEARNING ACTIVITIES AND METHODOLOGY

### FORMATION ACTIVITIES

- Theoretical class
- Practical classes
- Theoretical and practical classes
- Laboratory practices
- Tutoring
- Team work
- Individual work of the student
- Partial and final exams

## ASSESSMENT SYSTEM

<b>% end-of-term-examination/test:</b>	0
<b>% of continuous assessment (assignments, laboratory, practicals...):</b>	100
-Participation in class: 10%	
-Individual or group work carried out during the course: 90%	

## BASIC BIBLIOGRAPHY

- Phuong Vothihong, Martin Czygan, Ivan Idris, Magnus Vilhelm Persson, and Luiz Felipe Martins Python: End-to-end Data Analysis, Packt, 2017

## ADDITIONAL BIBLIOGRAPHY

- Embarak, Ossama Data Analysis and Visualization Using Python, 1st ed. US: Apress, 2018
- Stepanek, Hannah Thinking in Pandas, 1st ed. Berkeley CA Apress , 2020