

Academic Year: (2024 / 2025)

Review date: 25-04-2024

Department assigned to the subject: Computer Science and Engineering Department

Coordinating teacher: SAEZ ACHAERANDIO, YAGO

Type: Compulsory ECTS Credits : 6.0

Year : 3 Semester : 1

REQUIREMENTS (SUBJECTS THAT ARE ASSUMED TO BE KNOWN)

Have previous knowledge about statistics and/or have passed any of the Fundamentals of Statistics subject, basic programming skills

OBJECTIVES

1. Acquire the basic knowledge necessary to carry out an exploratory analysis of objective and conclusive data
2. Get a deep knowledge about the full data analytics cycle
3. Get in touch and use some of the technology tools in the industry for data analysis
4. Being able to tackle "big data" analysis

DESCRIPTION OF CONTENTS: PROGRAMME

1. Introduction to Big Data Data and Business Analytics
2. Models and Technologies for Decision Making
3. Descriptive Analytics
 - 3.1 Exploratory Data Analysis
 - 3.2 Business Reports and Visual Analytics
 - 3.3 Data Warehouses
4. Predictive Analytics and Data Mining
 - 4.1 Basic Concepts in Supervised Learning
 - 4.2 Linear Regression
 - 4.3 Decision Trees
 - 4.4 Evaluation of Classifiers
 - 4.5 Other Classification Techniques
 - 4.6 Ensemble-based Methods
5. Fundamental concepts of Neural Networks and Deep Learning
6. Big Data Specific Technologies
7. Emerging Trends and Impact of Business Analytics

LEARNING ACTIVITIES AND METHODOLOGY

AF1. THEORETICAL-PRACTICAL LECTURES. These lectures will present the knowledge that students should acquire. They will receive the lecture notes and will have basic texts of reference to facilitate the follow-up of the classes and the development of the subsequent work. Exercises, practical problems on the part of the student will be solved, and workshops and evaluation tests will be carried out to acquire the required skills.

AF2. TUTORSHIPS. Individualized assistance (individual tutorials) or group (collective tutorials) to students given by the teacher to address a number of practical exercises and specific problems. To evaluate the acquisition of the required skills, delivery of the assignments solved by the students will be adopted in the continuous evaluation (see point AF3)

AF3. INDIVIDUAL OR GROUP STUDENT WORK.

MD1 THEORY LECTURE. Talks with support of computer and audiovisual media, in which the main concepts of the subject are developed and the materials and bibliography are provided to complement the students' learning process.

MD2. PRACTICAL EXERCISES. Resolution of practical cases, problems, etc. organized by the teacher individually and/or in groups in class.

MD3. TUTORSHIPS. Individualized assistance (individual tutorials) or group (collective tutorials) to students given by the teacher. For 6 credits subjects, 4 hours will be dedicated with 100% of attendance required.

ASSESSMENT SYSTEM

% end-of-term-examination: 25

% of continuous assessment (assignments, laboratory, practicals...): 75

SE1. FINAL TEST. This test will globally assess the knowledge, skills and abilities acquired throughout all the term. It will consist of several open questions to address key concepts of the subject both theoretical and practically.

SE2. CONTINUOUS ASSESSMENT. Under this assessment method, delivery of periodical problem resolutions, oral communication skills through debates, presentations in class, work in the workshops and exposition of a final work will be evaluated.

Extraordinary Call:

Students who fail the subject in the regular call will have an extraordinary call to pass it:

1. If the student followed continuous assessment: the grade will be the one established in the subject's program for the regular call. However, the student will have the right to be graded solely based on the grade obtained in the final exam if it is more favorable.

2. If the student did not follow continuous assessment: the grade will be the one obtained in the final exam. However, exceptionally, the teacher may authorize the submission of exercises from the continuous assessment in the extraordinary call if deemed appropriate, in which case they will be evaluated in the same way as in the regular call.

BASIC BIBLIOGRAPHY

- Steve Williams Business Intelligence Strategy and Big Data Analytics: A General Management Perspective, Morgan Kaufmann, 2016

ADDITIONAL BIBLIOGRAPHY

- Stepanek, Hannah Thinking in Pandas, 1st ed. Berkeley, CA: Apress , 2020