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**Academic Year: ( 2024 / 2025 )****Review date: 25-04-2024**

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**Department assigned to the subject: Computer Science and Engineering Department****Coordinating teacher: IGLESIAS MARTINEZ, JOSE ANTONIO****Type: Compulsory ECTS Credits : 6.0****Year : 3 Semester : 2**

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## REQUIREMENTS (SUBJECTS THAT ARE ASSUMED TO BE KNOWN)

- Big Data and Business Analytics (Course 3 - First Semester)

## OBJECTIVES

The aim of the course is to provide the student with the necessary knowledge about the applications of Artificial Intelligence, through its various paradigms, in the solution of business-related problems. In the same way, the student will learn the principles, methods and techniques of Artificial Intelligence and its application in business objectives.

## DESCRIPTION OF CONTENTS: PROGRAMME

1. Introduction
  - a. Context.
  - b. Key Features
  - c. Main techniques
2. Data mining
  - a. Introduction
  - b. Applications
  - c. KDD and Data Mining
  - d. Data Mining Tasks
  - e. Applications
  - f. Case studies
3. Artificial Neuron Networks
  - a. Introduction
  - b. Artificial Neuron Networks
  - c. Applications of ANNs
  - d. Advantages and Disadvantages
  - e. Case studies
4. Text mining
  - a. Definition
  - b. General architecture
  - c. Basic Operations
  - d. Applications
  - e. Case studies
5. Web Mining
  - a. Introduction
  - b. Web Content Mining
  - c. Structure Web Mining
  - d. Usage Web Mining
  - e. Case studies

6. Knowledge-Based Systems
  - a. Fuzzy Logic and the Fuzzy Concept
  - b. Fuzzy Logic
  - c. Fuzzy reasoning systems
  - d. Applications
  - e. Case studies
7. Programming languages for AI
  - a. Introduction
  - b. Most commonly used languages
  - c. How these languages work.
8. Ethics and AI
  - a. Introduction
  - b. Risks associated with AI.
  - c. Questionable application cases.
  - d. Initiatives for ethical AI.

## LEARNING ACTIVITIES AND METHODOLOGY

- Lectures. The aim is to achieve the specific competencies of the subject. The fundamental ideas of the subject will be presented.
- Practical classes. These classes develop the specific instrumental competencies and most of the transversal competencies, such as teamwork, the ability to apply knowledge to practice, to plan and organize and to analyze and synthesize. They also aim to develop specific attitudinal skills.
- Academic Activities:
  - With the presence of the teacher. Participation in classes guided by the teacher where aspects of the subject are studied in-depth and evaluated. Tests to evaluate theoretical and practical knowledge.
  - Without the presence of the teacher. Exercises, complementary readings proposed by the lecturer, class preparation, practical work.
- Webinars. These are intended to complement the acquisition of specific cognitive competencies. In addition, they develop some transversal competencies such as the capacity for analysis and synthesis, as well as teamwork.
- Tutorials: Individualized assistance (individual tutorials) or group assistance (group tutorials) to students by the lecturer.

## ASSESSMENT SYSTEM

<b>% end-of-term-examination:</b>	0
<b>% of continuous assessment (assignments, laboratory, practicals...):</b>	100

The exercises and exams, in addition to serving as a training activity, have the dual purpose of being a measure for the assessment system. The evaluation system includes the assessment of the directed academic and practical activities according to the following weighting (the relationship with the competencies is not specified since the training activities have already been related to them).

- Directed activities in theory classes: 10%.
- 5 Short practicals: 40%.
- 2 Continuous assessment exams (mid-terms): 45% (Minimum mark 4.0).
- 1 Collaborative Session: 5%.

The whole course is assessed through continuous assessment activities (theory and practical). However, in order to pass the subject, in the continuous assessment exams, there is a minimum mark of 4.0.

## BASIC BIBLIOGRAPHY

- Akerkar, Rajendra Artificial Intelligence for Business, Springer, 2019

- Francesco Corea Applied Artificial Intelligence: Where AI Can Be Used In Business, Springer, 2019
- Jerry Overton Artificial Intelligence, O'Reilly Media, Inc, 2018
- Ramesh Sharda, Dursun Delen, Efraim Turban Analytics, data science, & artificial intelligence : systems for decision support, Pearson , 2020

#### ADDITIONAL BIBLIOGRAPHY

- Efraim Turban, Ramesh Sharda, Dursun Delen Decision Support and Business Intelligence Systems (ninth edition), Pearson, 2011
- Nilsson, N. Inteligencia Artificial. Una nueva síntesis, McGraw-Hill.
- Pyle, Dorian Business modeling and data mining, Morgan Kaufmann Publishers.
- Witten, I.H., Frank, E. Data mining : practical machine learning tools and techniques, Morgan Kaufmann.