

Academic Year: (2019 / 2020)

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Department assigned to the subject: Computer Science and Engineering Department

Coordinating teacher: LEDEZMA ESPINO, AGAPITO ISMAEL

Type: Compulsory ECTS Credits : 3.0

Year : 1 Semester : 2

OBJECTIVES

BASIC SKILLS

CB6 Possess and understand the knowledge that provides a basis or opportunity to be original in the development and/or application of ideas, often in a research context

CB7 That the students know how to apply the acquired knowledge and their ability to solve problems in new or unfamiliar environments within broader (or multidisciplinary) contexts related to your area of study

CB8 That students can integrate knowledge and face the complexity of stating 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

CB9 Let students know how to communicate their conclusions and the latest knowledge and reasons that support them to specialized and non-specialized publics in a clear and unambiguous way

GENERAL COMPETENCIES

CG1 Ability to identify, define and formulate the problems to solve related to IOT applications. This capacity includes the simultaneous assessment of all the factors at stake, not only technical but also environmental and civil liability.

CG5 Capacity of public communication of the concepts, developments, and results, related to activities in IOT, adapted to the profile of the audience.

CG6 Ability to apply the knowledge acquired and solve problems in new or unfamiliar environments within broader and multidisciplinary contexts, with the ability to integrate knowledge.

SPECIFIC COMPETENCIES

CE6 Ability to apply mathematical, statistical and artificial intelligence methods to model, design and develop applications, services, and intelligent systems in the field of IoT.

LEARNING RESULTS

The learning outcomes that students should have are:

- Analysis and synthesis capacity for advanced systems control (identification methods, learning systems, etc.)
- Know and apply the techniques of automatic learning for IoT.
- Ability to process the usual errors in the data to be able to use them.

DESCRIPTION OF CONTENTS: PROGRAMME

1. Introduction
2. Data Mining & Machine Learning
3. Methodologies
4. Exploration of the data
5. Regression & classification
6. Clustering & association
7. Other topics: Incremental learning, Time series, Text Analytics, Visualization, Graph analysis

LEARNING ACTIVITIES AND METHODOLOGY

FORMATION ACTIVITIES:

- Theoretical classes
- Laboratory practices
- Team work
- Individual student work
- Partial and final exams

METHODOLOGY:

- Exhibitions in the teacher's class with the support of computer and audiovisual media, in which the main concepts of the subject are developed, and the bibliography is provided to complement the students' learning.
- Critical reading of texts recommended by the teacher of the subject: Press articles, reports, manuals and / or academic articles, either for further discussion in class or to expand and consolidate the knowledge of the subject.
- Resolution of practical cases, problems, etc., raised by the teacher individually or in a group.
- Preparation of papers and reports individually or in groups.

TUTORIALS:

Individual tutorials that will allow the student to consult individually with the professor specific doubts about the subject of the program and the exercises/problems proposed.

EVALUATION SYSTEM

- Class participation: 10%
- Individual or group work carried out during the course (midterm exams, practices, etc.): 50%
- Final exam: 40%

ASSESSMENT SYSTEM

% end-of-term-examination/test:	40
% of continuous assessment (assignments, laboratory, practicals...):	60
- Class participation: 10%	
- Individual or group work carried out during the course (midterm exams, practices, etc.): 50%	
- Final exam: 40%	

BASIC BIBLIOGRAPHY

- Mohammed, Mohssen ; Khan, Muhammad ; Bashier, Eihab Machine Learning, CRC Press, 2016
- Sayan Mukhopadhyay Advanced Data Analytics Using Python With Machine Learning, Deep Learning and NLP Examples, Berkeley, CA : Apress, 2018
- Witten, Ian H. ; Frank, Eibe ; Hall, Mark A. ; Pal, Christopher J. Data Mining: Practical Machine Learning Tools and Techniques (4th ed.), Elsevier Science, 2016

ADDITIONAL BIBLIOGRAPHY

- Bosçtjan. Kaluzča Instant Weka how-to, Birmingham: Packt Pub, 2013
- Gilchrist, Alasdair Industry 4.0 : The Industrial Internet of Things, Apress L. P., 2016
- Gollapudi, Sunila Practical Machine Learning, Packt Publishing, 2016