Digital and Connected Design

Academic Year: (2023 / 2024) **Review date: 02/05/2023 13:57:36**

Department assigned to the subject: Computer Science and Engineering Department

Coordinating teacher: GARCIA GUZMAN, JAVIER

Type: Compulsory ECTS Credits : 3.0

Year : 1 Semester : 2

OBJECTIVES

The objective of this course is that the student learns the organization and structure of basic elements for the design of digitized and connected products. Likewise, students will learn the services that integrate this type of systems based on sensors and actuators and understand the influence that design decisions have on the behavior of a digitized and connected product.

DESCRIPTION OF CONTENTS: PROGRAMME

1. Digitalization of production
2. Information systems in IoT:
a.   Embedded Systems, Sensors and Actuators
b.   Protocols for IoT device cloud management.
c.   Microservices for IoT Device Cloud Management
d.   IoT Microservices Packaging and Deployment
3. Time Series Database Management

LEARNING ACTIVITIES AND METHODOLOGY

TRAINING ACTIVITIES
AF1 - Theoretical class [10.5 hours, 100% attendance].
AF2 - Practical classes [10.5 hours, 100% attendance].
AF3 - Tutorials [2 hours, 25% of attendance] AF4 - Group work [25 hours, 0% of attendance].
AF4 - Group work [25 hours, 0% attendance].

TEACHING METHODOLOGIES
MD1 - Class lectures by the professor 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.
MD2 - Critical reading of texts recommended by the professor of the subject: press articles, reports, manuals and/or academic articles, either for later discussion in class, or to expand and consolidate the knowledge of the subject.
MD3 - Resolution of practical cases, problems, etc. .... posed by the teacher individually or in groups.
MD4 - Presentation and discussion in class, under the moderation of the professor of topics related to the content of the subject, as well as case studies.

ASSESSMENT SYSTEM

% end-of-term-examination/test:	0
% of continuous assessment (assigments, laboratory, practicals…):	100

SE1 [25 %].
Class participation.

SE2 [75 %]
Individual or group work done during the course.

BASIC BIBLIOGRAPHY

- Amita Kapoor Hands-On Artificial Intelligence for IoT: Expert machine learning and deep learning techniques for developing smarter IoT systems, Packt Publishing, 2019

- Dirk Slama, Frank Puhlmann, Jim Morrish, Rishi M Bhatnagar Enterprise IoT: Strategies and Best Practices for Connected Products and Services, O'Reilly Media, 2015

- Giacomo Veneri Hands-On Industrial Internet of Things: Create a powerful Industrial IoT infrastructure using Industry 4.0, Packt Publishing, 2018

- Perry Lea Internet of Things for Architects: Architecting IoT solutions by implementing sensors, communication infrastructure, edge computing, analytics, and security, Packt Publishing, 2018

- Qusay F. Hassan Internet of Things A to Z: Technologies and Applications, Wiley-IEEE Press, 2018