

Course Unit	-	Field of study	-
	-	School	School of Technology and Management
Academic Year	2022/2023	Year of study	1
Type	Semestral	Semester	1
Workload (hours)	54	Contact hours	T - TP - PL - TC - S - E - OT - O -
		Level	ECTS credits 2.0
		Code	5062-717-1104-00-22

T - Lectures; TP - Lectures and problem-solving; PL - Problem-solving, project or laboratory; TC - Fieldwork; S - Seminar; E - Placement; OT - Tutorial; O - Other

Name(s) of lecturer(s) Paulo Jorge Pinto Leitão

Learning outcomes and competences

At the end of the course unit the learner is expected to be able to:

1. Know the importance and role of Internet of Things technologies in the context of the digital transformation.
2. Know communication technologies for the IoT.
3. Use communication protocols for IoT.
4. Know and develop IoT applications using the Node-RED platform.
5. Know the problems associated to the security of IoT devices and platforms, and mechanisms to mitigate them.

Prerequisites

Before the course unit the learner is expected to be able to:
Have basic knowledge of informatics and programming.

Course contents

Basic concepts and applications of the Internet of Things. Technologies and platforms for the Internet of Things. Security in Internet of Things. Development of simple IoT applications.

Course contents (extended version)

1. Introduction to Internet of Things (IoT).
 - Concepts, definitions, history, applications and challenges in IoT.
2. Interface with the physical world.
3. Wireless communication technologies and communication protocols for IoT.
4. Platforms for data manipulation, processing and visualization.
5. Security in Internet of Things.
6. Development of simple applications representative of the use of IoT.

Recommended reading

1. Artigos técnicos diversos sobre diferentes tecnologias digitais.
2. Vídeos diversos sobre as várias tecnologias digitais e suas aplicações.
3. "Designing the Internet of Things", Adrian McEwen and Hakim Cassimally, Wiley, 2014.
4. "The Internet of Things: Key Applications and Protocols, 2nd Edition", Olivier Hersent, David Boswarthick and Omar Elloumi, Wiley, 2012.
5. "Internet das Coisas - Introdução Prática", Pedro Coelho, FCA, 2017.

Teaching and learning methods

Face-to-face hours: Exposition of the proposed topics. Realization of exercises, discussions and watching videos that help to consolidate the expected learning outcomes. Non-face-to-face hours: study of presented topics, realization of application exercises and discussion works.

Assessment methods

- Alternative 1 - (Regular, Student Worker) (Final, Supplementary, Special)
 - Intermediate Written Test - 25% (Related to quiz tests at the end of each 4-hour module.)
 - Experimental Work - 75% (Includes the participation in the classes and the discussion of developed works.)

Language of instruction

Portuguese

Electronic validation

Paulo Jorge Pinto Leitão	João Paulo Ribeiro Pereira	Nuno Adriano Baptista Ribeiro
08-11-2022	08-11-2022	22-11-2022