School of Technology and Management
Course Unit Syllabus

Level of qualification:
Second Cycle (EQF level 7) - Master
Study cycle:
Internet of Things

Course Unit: - **Web of Things**

Year 1 **Semester 2** **ISCED Code: 0613** **ECTS: 6**

Type of Course Unit: Compulsory **Delivery Mode:** Face-to-face / Distance Learning **Language of Instruction:** Portuguese

COURSE COORDINATOR: Luís Carlos Bruno

HOURS OF WORK

TOTAL HOURS	Contact Hours								Hours in autonomous work
	Theory	Theory and practice	Practical and laboratory work	Field work	Seminar	Internship	Tutorial guidance	Other	
150		29							121

Prerequisites (if applicable): n.a.

LEARNING OUTCOMES (knowledge, skills and competence)

O1- Analyze the critical factors in the development of a Web of Things (WoC) system.

O2- Design integrated solutions based on WoT architecture.

O3- Describe sematically the objects of a WoT ecosystem.

O4- Apply binding templates for different protocols to access devices and services.

O5. Program software components supported in WoT Scripting API specifications.

O6. Develop functional prototypes based on the WoT architecture.

O7. Apply rules that ensure security and privacy of transmitted and stored data.

CONTENTS

C1- Application domains and use cases that lead to the Web of Things (WoT) Architecture.

C2- Functional and technical requirements for WoT implementations.

C3- WoT architecture.

C4- WoT building blocks.

C5- Objets description.

C6- Protocols binding templates.

C7- WoT scripting API.

C8- WoT systems implementations.

C9. Data and comunication security and privacy in WoT.

DEMONSTRATION OF THE CONTENTS COHERENCE WITH THE COURSE UNIT'S LEARNING OUTCOMES

For each learning outcome are listed the following contents:

O1: C1, C2, C3

O2: C3, C4, C5, C6, C9

O3: C4, C5

O5: C7

O5: C4, C5

O6: C2, C3, C4, C5, C6, C7, C8, C9

O7: C6, C7, C9

TEACHING METHODOLOGIES

M1 - Presentation and discussion of the different contents in classroom of a theoretical-practical nature up to practical cases.

M2 - Guidance of the evaluation project work.

M3 - Presentation and debate in the classroom of a technical / scientific article within the scope of the subject which will be guided by the teacher, and will also be discussed with the other students in the class.

DEMONSTRATION OF THE COHERENCE BETWEEN THE TEACHING METHODOLOGIES AND THE LEARNING OUTCOMES

For each learning outcome are listed the following teaching methodologies:

O1, O2, O3, O4, O5, O7: M1, M3

O6: M1, M2, M3

EVALUATION METHODS

Report from a critical analysis of a technical / scientific article with public presentation and discussion.

Project of a WoT system prototype to be developed by a group of two or three students, described by a written report and with respective presentation and discussion.

MAIN BIBLIOGRAPHY

D. Guinard, V. Trifa, Building the Web of Things: With examples in Node.js and Raspberry Pi, Manning Publications, 2016.

M. Sheng , Y. Qin , L. Yao , B. Benatallah, Managing the Web of Things : Linking the Real World to the Web, Elsevier Science & Technology, 2017.

P. Mulder, K. Breseman, Node.js for Embedded Systems: Building Web Interfaces for Connected Devices, O'Reilly Media, 2016.

Web of Things (WoT) Architecture, disponível em https://www.w3.org/TR/wot-architecture/#sec-binding-templates/, acedida em 2021/04/23.

Year of implementation: 2021/2022 | Date of approval by the Technical-Scientific Board: 2021-06-23