Goi Eskola Politeknikoa | Mondragon Unibertsitatea
Course: 2023 / 2024 - Course planning

Mondragon
Unibertsitatea
Goi Eskola
Politeknikoa
Escuela Politécnica
Superior

[MNF002] IOT TECHNOLOGIES II

GENERAL INFORMATION

Studies	MASTER DEGREE IN DATA ANALYSIS, CYBERSECURITY AND CLOUD COMPUTING	**Subject**	IoT Technologies
Semester	2	**Course** 1	**Mention / Field of specialisation**
Character	OPTIONAL		
Plan	2019	**Modality** Adapted Face-to-face	**Language** ENGLISH
Credits	3	**Hours/week** 0	**Total hours** 43 class hours + 32 non-class hours = **75 total hours**

PROFESSORS

ALONSO GOMEZ, ARRATE

REQUIRED PREVIOUS KNOWLEDGE

Subjects	Knowledge
IOT TECHNOLOGIES I	*(No previous knowledge required)*

SKILLS

VERIFICA SKILLS

SPECIFIC

MNCE16 - Developing and launching an IoT infrastructure, from the sensor through the control system and up to the cloud, using state-of-the-art communication technologies

BASIC

M_CB10 - To have learning skills and the capacity for self-guided or independent subsequent learning.

LEARNING RESULTS

RA191 **Designs an appropriate approach for solving a use case of remote data acquisition systems, ensuring his/her ability to adapt to situations where new knowledge is required to be learned.**

LEARNING ACTIVITIES	CH	NCH	TH
Conducting tests, giving presentations, presenting defences, taking examinations and/or doing checkpoints	8 h.		8 h.
Presentation by the teacher in the classroom, in participatory classes, of concepts and procedures associated with the subjects	20 h.		20 h.
Carrying out exercises and solving problems individually and/or in teams		12 h.	12 h.

EVALUATION SYSTEM	W	MAKE-UP MECHANISMS
Individual written and/or oral tests or individual coding/programming tests	100%	Individual written and/or oral tests or individual coding/programming tests

Comments: All activities (control points, individual and group work, etc.) must have a minimum grade of 5 and an opportunity for recovery (except the PBL). In unapproved training activities (less than 5) the recovery is compulsory and the final grade will be the grade obtained in the recovery. In the activities carried out it is necessary to obtain a minimum mark of 4 to calculate the average mark of the learning result. Otherwise, the note of the learning result will be that of the suspended activity. The system will calculate the final grade with the RA, applying the percentages defined in IKOF.

CH - Class hours: 28 h.
NCH - Non-class hours: 12 h.
TH - Total hours: 40 h.

RA192 **Implements an infrastructure of remote data acquisition systems cooperating and working individually and in multidisciplinary teams**

LEARNING ACTIVITIES	CH	NCH	TH
Development and writing of records, reports, presentations, audiovisual material, etc. on	15 h.	20 h.	35 h.

Goi Eskola Politeknikoa | Mondragon Unibertsitatea
Course: 2023 / 2024 - Course planning

Mondragon
Unibertsitatea

Goi Eskola
Politeknikoa
Escuela Politécnica
Superior

projects/work experience/challenges/case studies/experimental investigations carried out individually and/or in teams

EVALUATION SYSTEM	W	MAKE-UP MECHANISMS
Reports on the completion of exercises, case studies, computer exercises, simulation exercises, laboratory exercises, term projects, challenges and problems	50%	Individual written and/or oral tests or individual coding/programming tests
Individual written and/or oral tests or individual coding/programming tests	50%	**Comments:** All activities (control points, individual and group work, etc.) must have a minimum grade of 5 and an opportunity for recovery (except the PBL). In unapproved training activities (less than 5) the recovery is compulsory and the final grade will be the grade obtained in the recovery. In the activities carried out it is necessary to obtain a minimum mark of 4 to calculate the average mark of the learning result. Otherwise, the note of the learning result will be that of the suspended activity. The system will calculate the final grade with the RA, applying the percentages defined in IKOF.

CH - Class hours: 15 h.
NCH - Non-class hours: 20 h.
TH - Total hours: 35 h.

CONTENTS

1. Introduction to IoT: **From devices to the cloud**
2. Embedded Systems and **IoT devices**

    1. *Embedded Platforms and communications for IoT*
    2. *Sensor networks*
    3. *Cyberphysical system modelling*
3. Achitecture of IoT Services
    1. *a.   Distributed Systems for IoT*
    2. *b.   Architectures and plataforms for IoT services*
4. Information and knowledge management in IoT: **Cloud**Computing Systems
    1. *Cloud computing system and IoT programming*

LEARNING RESOURCES AND BIBLIOGRAPHY

Learning resources	Bibliography
Technical articles	B. Baesens, "Analytics in a Big Data World", Wiley 2014
Subject notes	G. Perrone et al., "Chapter 1-The Internet of things: a survey and outlook", 2019 (https://digital-library.theiet.org/content/books/10.1049/pbce122e_ch1)
	V. Kartsch et al. "An Energy-Efficient IoT node for HMI applications based on an ultra-low power Multicore Processor", IEEE Instrumentation and Measurement Society, 2019
	L. Lednicki et al. "Industrial IoT with Distributed Cloud Experiments using 5G LTE", 15th IEEE International Workshop on Factory Communication Systems (WFCS), 2019
	T. Madhu Perkin et al. "Assignment of IoT Nodes to Edge Computing Devices in Internet of Things",European Conference on Networks and Communications (EuCNC), 2019
	D. Wang et al. "From IoT to 5G I-IoT:The Next Generation IoT-Based Intelligent Algorithms and 5G Technologies",IEEE Communications Magazine, 2018