[MNF001] IOT TECHNOLOGIES I

GENERAL INFORMATION

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

PROFESSORS

MUXIKA OLASAGASTI, EÑAUT

REQUIRED PREVIOUS KNOWLEDGE

Subjects	Knowledge
(No specific previous subjects required)	*(No previous knowledge required)*

SKILLS

VERIFICA SKILLS

SPECIFIC

MNCE15 - Obtaining physical signals from sensors and designing the adequate conditioning for their transfer to control systems in both industrial and non-industrial contexts.

BASIC

M_CB7 - To know how to apply the acquired knowledge and competencies and the ability to solve problems in new or unfamiliar contexts within wider (or multidisciplinary) environments related to their field of study

LEARNING RESULTS

RA161 Evaluates and chooses sensors for industrial processes and autonomous control 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 projects/work experience/challenges/case studies/experimental investigations carried out individually and/or in teams	4 h.	7 h.	11 h.
Conducting tests, giving presentations, presenting defences, taking examinations and/or doing checkpoints	1 h.	2 h.	3 h.
Presentation by the teacher in the classroom, in participatory classes, of concepts and procedures associated with the subjects	5 h.		5 h.
Carrying out exercises and solving problems individually and/or in teams	4 h.	8 h.	12 h.
Practical work in workshops and/or laboratories, individually and/or in teams	3 h.	6 h.	9 h.

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	75%	Reports on the completion of exercises, case studies, computer exercises, simulation exercises, laboratory exercises, term projects, challenges and problems
Presentation and defence of exercises, case studies, computer practical work, simulation practical work, laboratory practical work, term projects, end of degree project, master's thesis, challenges and problems	25%	Presentation and defence of exercises, case studies, computer practical work, simulation practical work, laboratory practical work, term projects, end of degree project, master's thesis, challenges and problems

CH - Class hours: 17 h.
NCH - Non-class hours: 23 h.
TH - Total hours: 40 h.

RA162 Develops and validates a signal acquisition system for industrial processes and / or autonomous systems solving the problems associated with the proposed solution in new or little-known environments

LEARNING ACTIVITIES	CH	NCH	TH

Development and writing of records, reports, presentations, audiovisual material, etc. on projects/work experience/challenges/case studies/experimental investigations carried out individually and/or in teams	3 h.	5 h.	8 h.
Conducting tests, giving presentations, presenting defences, taking examinations and/or doing checkpoints	1 h.	2 h.	3 h.
Presentation by the teacher in the classroom, in participatory classes, of concepts and procedures associated with the subjects	4 h.		4 h.
Carrying out exercises and solving problems individually and/or in teams	4 h.	7 h.	11 h.
Practical work in workshops and/or laboratories, individually and/or in teams	3 h.	6 h.	9 h.

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	25%	Reports on the completion of exercises, case studies, computer exercises, simulation exercises, laboratory exercises, term projects, challenges and problems
Presentation and defence of exercises, case studies, computer practical work, simulation practical work, laboratory practical work, term projects, end of degree project, master's thesis, challenges and problems	25%	Presentation and defence of exercises, case studies, computer practical work, simulation practical work, laboratory practical work, term projects, end of degree project, master's thesis, challenges and problems
Individual written and/or oral tests or individual coding/programming tests	50%	Individual written and/or oral tests or individual coding/programming tests

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

CONTENTS

* Introduction
* General characteristics of sensors
  - Theoretical foundations
  - Types of transducers
  - Signal conditioning and calibration
  - Sensor analysis and selection
* Sensor communications
  - Introduction to IoT: from devices to the Cloud
  - Communication concepts review
  - Review of sensor communication protocols
  - Wireless networks
* Practical case study of a smart sensor
  - Simulation
  - Real case study

LEARNING RESOURCES AND BIBLIOGRAPHY

Learning resources	Bibliography
Slides of the subject	http://katalogoa.mondragon.edu/janium-bin/janium_login_opac_re_lnk. pl?grupo=MASTERROBOTIKA11&ejecuta=25&_ST
Moodle Platform	
Technical articles	
Specific Master Software	