[MSD103] RAPID PROTOTYPING SYSTEMS

GENERAL INFORMATION

Studies	MASTER DEGREE IN SMART ENERGY SYSTEMS			**Subject**	?
Semester	2	**Course**	1	**Mention / Field of specialisation**	
Character	OPTIONAL				
Plan	2025	**Modality**	Face-to-face	**Language**	EUSKARA/CASTELLANO
Credits	3	**Hours/week**	0	**Total hours**	44 class hours + 31 non-class hours = **75 total hours**

2030 AGENDA GOALS

PROFESSORS

GONZALEZ JIMENEZ, DAVID

REQUIRED PREVIOUS KNOWLEDGE

Subjects	Knowledge
MICROPROCESSORS	*(No previous knowledge required)*

LEARNING RESULTS

LEARNING RESULTS	KC	SK	AB	ECTS
MS101 - Implementing energy management systems through real-time rapid prototyping equipment		x		2,8
MS171 - Ability to work in multidisciplinary teams and in a multilingual environment	x		x	0,04
MS251 - Develops a project in the field of energy systems in a practical application context		x		0,16
			Total:	3

KC: Knowledge or Content / SK: Skills / AB: Abilities

SECONDARY LEARNING RESULTS

RMS117 **[!]** ***Implementar sistemas de gestión de energía a través de equipos de prototipado rápido en tiempo real***

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.	4 h.	8 h.
Presentation by the teacher in the classroom, in participatory classes, of concepts and procedures associated with the subjects	10 h.		10 h.
Practical work in workshops and/or laboratories, individually and/or in teams	30 h.	23 h.	53 h.

EVALUATION SYSTEM	W
Reports on the completion of exercises, case studies, computer exercises, simulation exercises, laboratory exercises, term projects, challenges and problems	45%
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	40%
Prototype / Product	15%

MAKE-UP MECHANISMS

Individual written and/or oral tests or individual coding/programming tests

CH - Class hours: 44 h.
NCH - Non-class hours: 27 h.
TH - Total hours: 71 h.

RMS251 **[!]** ***Desarrolla un proyecto del ámbito de los sistemas energéticos en un contexto de aplicación práctica***

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		4 h.	4 h.

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	100%	Individual written and/or oral tests or individual coding/programming tests

CH - Class hours: 0 h.
NCH - Non-class hours: 4 h.
TH - Total hours: 4 h.

CONTENTS

Introduction

1. Rapid Prototyping in the Life Cycle
    1. Objective
    2. Advantages
2. Types of rapid prototyping
    1. Rapid mechanical prototyping.
    2. Monitoring/measurement systems.
    3. Rapid control prototyping.
3. Use cases.

Rapid control prototyping based on MATLAB & Simulink

1. Tools
    1. MATLAB Embedded Coder
    2. Simulink Real-Time
2. HDL workflow
3. Labwork 1 (DC motor)
4. Labwork 2 (Launchpad 28379D)

Rapid prototyping of monitoring and measurement systems based on Labview

1. Tools
2. Labview (CRio)
3. Labwork 3

LEARNING RESOURCES AND BIBLIOGRAPHY

Learning resources	Bibliography
Moodle Platform	https://labur.eus/ikrTa
Subject notes	
Slides of the subject	