

## [MSG002] Modelling and Simulation

### GENERAL INFORMATION

<b>Studies</b>	MASTER DEGREE IN SMART ENERGY SYSTEMS	<b>Subject</b>	Methodological Research Foundations
<b>Semester</b>	1	<b>Course</b>	2
<b>Character</b>	OPTIONAL	<b>Mention / Field of specialisation</b>	???
<b>Plan</b>	2022	<b>Modality</b>	Face-to-face
<b>Credits</b>	3	<b>Hours/week</b>	0
		<b>Language</b>	CASTELLANO
		<b>Total hours</b>	51 class hours + 24 non-class hours = <b>75 total hours</b>

### PROFESSORS

(No professor appointed)

### REQUIRED PREVIOUS KNOWLEDGE

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

### LEARNING RESULTS

LEARNING RESULTS	KC	SK	AB	ECTS
<b>MSRA19</b> - To demonstrate capacity for the management of technological Research, Development and Innovation		x		1,5
<b>MSR125</b> - To have and understand knowledge which provides a base or opportunity to be original in the development and/or application of ideas, often in an investigation context	x	x		1,5
<b>Total:</b>				<b>3</b>

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

### SECONDARY LEARNING RESULTS

#### **RSM012** [!] *Demostrar capacidad para la gestión de la Investigación, Desarrollo e Innovación tecnológica*

#### LEARNING ACTIVITIES

	CH	NCH	TH
Carrying out/resolving projects/challenges/cases, etc. to provide solutions to problems in interdisciplinary contexts, real and/or simulated, individually and/or in teams	8,5 h.	8 h.	16,5 h.
Presentation by the teacher in the classroom, in participatory classes, of concepts and procedures associated with the subjects	12 h.		12 h.
Carrying out exercises and solving problems individually and/or in teams	5 h.	4 h.	9 h.

#### EVALUATION SYSTEM

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

W

100%

#### MAKE-UP MECHANISMS

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:** 25,5 h.

**NCH - Non-class hours:** 12 h.

**TH - Total hours:** 37,5 h.

#### **RSM013** [!] *Poseer y comprender conocimientos que aporten una base u oportunidad de ser originales en el desarrollo y/o aplicación de ideas, a menudo en un contexto de investigación*

#### LEARNING ACTIVITIES

	CH	NCH	TH
Carrying out/resolving projects/challenges/cases, etc. to provide solutions to problems in interdisciplinary contexts, real and/or simulated, individually and/or in teams	8,5 h.	8 h.	16,5 h.
Presentation by the teacher in the classroom, in participatory classes, of concepts and procedures associated with the subjects	12 h.		12 h.
Carrying out exercises and solving problems individually and/or in teams	5 h.	4 h.	9 h.

#### EVALUATION SYSTEM

Presentation and defence of exercises, case studies, computer practical work, simulation practical work,

W

100%

#### MAKE-UP MECHANISMS

Presentation and defence of exercises, case studies, computer practical work, simulation practical work, laboratory practical work,

laboratory practical work, term projects, end of degree project, master's thesis, challenges and problems

term projects, end of degree project, master's thesis, challenges and problems

**CH - Class hours:** 25,5 h.

**NCH - Non-class hours:** 12 h.

**TH - Total hours:** 37,5 h.

## CONTENTS

1. INTRODUCTION TO DOE2. FULL FACTORIAL DESIGN3. FRACTIONAL FACTORIAL DESIGN4. TAGUCHI METHOD

## LEARNING RESOURCES AND BIBLIOGRAPHY

### Learning resources

Subject notes

### Bibliography

BOX, GEORGE E.P.; HUNTER, WILLIAM G.; HUNTER, J. STUART. Estadística para investigadores. Ed. Reverté, Barcelona, 1988  
 PRAT, ALBERT; TORT-MARTORELL, XAVIER; GRIMA, PERE; POZUETA, LOURDES. Métodos Estadísticos. Control y mejora de la calidad. Ed. UPC, Barcelona, 1997. ISBN 84-8301-222-7  
 PHADKE, MADHAV S. Quality Engineering using robust design. Ed. AT&T Bell Laboratories, 1989. ISBN 0-13-745167-9.  
 TAGUCHI G.; ELSAYED A. E.; HSIANG T. Quality Engineering in Production Systems. Mc Graw Hill, 1989. ISBN 0-07-062830-0.  
 HIRANO, Hiriyuki. Poka Yoke. Mejorando la calidad del producto evitando los defectos. Productivity Press, Inc. ISBN: 84-87022-73-1