

[GJJ206] MECHANICAL SYSTEMS DESIGN AND TESTING

GENERAL INFORMATION

Studies	DEGREE IN MECHATRONICS ENGINEERING	Subject	?
Semester	1	Course	4
Character	COMPULSORY	Mention / Field of specialisation	
Plan	2022	Modality	Face-to-face
Credits	4,5	Language	CASTELLANO/EUSKARA
		Total hours	67.5 class hours + 45 non-class hours = 112.5 total hours

PROFESSORS

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REQUIRED PREVIOUS KNOWLEDGE

Subjects	Knowledge
GRAPHIC EXPRESION	(No previous knowledge required)
PHYSICS	
ELECTROMECHANICAL SYSTEMS	
MATERIAL STRENGTH AND ELASTICITY	

LEARNING RESULTS

LEARNING RESULTS	KC	SK	AB	ECTS
GJR402 - To know and apply principles for the design and testing of machines and mechanical systems			x	4,02
G-RTR1 - To develop interdisciplinary projects specific to their specialty and of gradual complexity, - becoming aware of respect for human rights and fundamental rights, and analyzing and assessing the impact of the proposed solutions on the SDGs - to acquire and/or apply basic, advanced and /or avant-garde, demonstrating the ability to work in multidisciplinary teams and/or undertake further studies with a high degree of autonomy		x		0,24
G-RTR2 - To express information, ideas and the arguments that support them in an orderly, clear and coherent manner, orally and in writing, based on quality information, self-made or obtained from different sources, using inclusive and non-discriminatory language		x		0,24
Total:				4,5

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

CONTENTS

1. MECHANICAL TESTING

1.1. Instrumentation, sensors and estensometry

1.2. Time vs frequency analysis (machine monitoring)

2. MECHANICAL DESIGN

2.1. Bearings

Bearing sizing

Design of bearing-based assemblies

2.2. Couplings

2.3. Fasteners joints

2.4. Shafts

Shaft design

Shaft alignment

LEARNING RESOURCES AND BIBLIOGRAPHY

Learning resources	Bibliography
Class presentations	J. Hamrock, O. Jacobson, R. Schmid. Fundamentals of machine elements. Third edition. Editorial Taylor & Francis Group, LLC. 2014
Programmes	Peter R.N. Childs. Mechanical Design Engineering Handbook. Elsevier Ltd. 2014
Subject notes	John Piotrowski. Shaft Alignment Handbook. CRC Press. 2006.
Topic related web quires	Hung Nguyen-Schäfer. Computational Design of Rolling Bearings. Springer (2016)
	http://katalogoa.mondragon.edu/janium-bin/janium_login_opac_re_in_k.pl?grupo=MECATRONICA41&ejecuta=15&_ST