[MHE301] DESIGN, CALCULATION AND VERIFICATION OF MACHINES

GENERAL INFORMATION

Studies	UNIVERSITY MASTER IN INDUSTRIAL ENGINEERING			**Subject**	?
Semester	2	**Course**	1	**Mention / Field of specialisation**	
Character	COMPULSORY				
Plan	2025	**Modality**	Face-to-face	**Language**	CASTELLANO
Credits	6	**Hours/week**	3.5	**Total hours**	63 class hours + 87 non-class hours = **150 total hours**

2030 AGENDA GOALS

PROFESSORS

ULACIA GARMENDIA, IBAI
ESNAOLA RAMOS, JON ANDER
MCCLOSKEY GOMEZ, ALEX
OYANGUREN GARCIA, AITOR

REQUIRED PREVIOUS KNOWLEDGE

Subjects	Knowledge
(No specific previous subjects required)	[!] *Representación Gráfica* [!] *Física* [!] *Resistencia de Materiales* [!] *Teoría de Mecanísmos* [!] *Diseño Mecánico* [!] *Instrumentación Industrial*

LEARNING RESULTS

LEARNING RESULTS	KC	SK	AB	ECTS
MH2503 - Design and test machines		x		4
MH2522 - Demonstrate knowledge and skills to perform verification and control of facilities, processes and products.		x		0,84
MH2523 - Demonstrate knowledge and skills to perform certifications, audits, verifications, tests and reports.		x		0,68
MH2526 - Apply acquired knowledge and problem-solving skills in new, unfamiliar or changing environments within broader (or multidisciplinary) contexts related to their area of study.		x		0,08
MH2527 - Demonstrate the ability to integrate knowledge and deal with the complexity of formulate judgments based on incomplete or limited information, including reflections on the SDGs, human rights and fundamental rights, and on social, health and safety, environmental, economic and industrial implications and responsibilities.		x		0,08
MH2528 - Communicate its conclusions and the ultimate knowledge and rationale behind them to specialized and non-specialized audiences in a clear and unambiguous manner.		x		0,08
MH2529 - Possess the learning skills that will enable them to continue studying in a manner that will be largely self-directed or autonomous.		x		0,16
MH2530 - Work with people, involving them and leading them in a dynamic directed towards a common objective that includes reflection on their ethical and social responsibility, with a global vision of the work to be carried out and the characteristics required (quality, deadlines, etc.), assuming responsibility for the decisions taken.		x		0,08
			Total:	6

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

SECONDARY LEARNING RESULTS

RMH125 **[!]** ***Diseña, calcula y verifica mecanismos de transmisión, transformación y guiado de movimiento en máquinas partiendo de las especificaciones dadas.***

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.	17 h.	20 h.
Conducting tests, giving presentations, presenting defences, taking examinations and/or doing checkpoints	3 h.		3 h.

Computer simulation exercises, individually and/or in teams	4 h.	8 h.	12 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	2 h.	21 h.	23 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	20%	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	20%	Individual written and/or oral tests or individual coding/programming tests
Individual written and/or oral tests or individual coding/programming tests	60%	

CH - Class hours: 32 h.
NCH - Non-class hours: 46 h.
TH - Total hours: 78 h.

RMH126 **[!]** ***Modeliza, ensaya y verifica máquinas y elementos mecánicos.***

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	2 h.	15 h.	17 h.
Conducting tests, giving presentations, presenting defences, taking examinations and/or doing checkpoints	3 h.		3 h.
Computer simulation exercises, individually and/or in teams	6 h.	10 h.	16 h.
Presentation by the teacher in the classroom, in participatory classes, of concepts and procedures associated with the subjects	18 h.		18 h.
Carrying out exercises and solving problems individually and/or in teams	2 h.	16 h.	18 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%	Individual written and/or oral tests or individual coding/programming tests
Individual written and/or oral tests or individual coding/programming tests	50%	

CH - Class hours: 31 h.
NCH - Non-class hours: 41 h.
TH - Total hours: 72 h.

CONTENTS

LEARNING RESOURCES AND BIBLIOGRAPHY

Learning resources

Subject notes
Moodle Platform
Class presentations
Specific Master Software

Bibliography

"Elementos de máquinas", B. J. hamrock, B. Jacobson, S. R. Schmid, Ed. Mcgraw-Hill

"134 Problemas de teoría de máquinas y mecanismos", P. R. Moliner, CPDA-ETSEIB

"Engranajes", P. R. Moliner, CPDA-ETSEIB

"Cam design handbook", Harold A. Rothbart, Ed, McGraw-Hill

"Cam Design", Clyde H. Moon, Camco

"Elementos de máquinas"; G. Niemann; Editorial LABOR

Norton RL. Diseño de máquinas. Pearson; 1999.

Shigley JE, Mischke CR, Bocanegra FP, Correa CO. Diseño en ingeniería mecánica. México; McGraw-Hill; 2002

Erdman AG, Sandor GN. Mechanism design: analysis and synthesis (Vol. 1). Prentice-Hall, Inc.; 1997

Decker KH, Manual del ingeniero; 13. Elementos de máquinas. Urmo; 1980.

Norma ISO 6336: Calculation of load capacity of spur and helical gears.

Henriot G. Traité théorique et pratique des engrenages. Dunond; 1975

Campabadal J. Engranajes. Primera Editorial Ariel. 1969.

Schrock J. Montaje ajuste y verificación de elementos de máquinas. Reverte; 1965

Tlusty J. Manufacturing processes and equipment. Prentice Hall; 2000.