[GJC203] MACHINE AND MECHANICAL THEORY

GENERAL INFORMATION

Studies	DEGREE IN MECHATRONICS ENGINEERING			**Subject**	?
Semester	2	**Course**	1	**Mention / Field of specialisation**	
Character	BASIC TRAINING				
Plan	2022	**Modality**	Face-to-face	**Language**	EUSKARA/CASTELLANO
Credits	6	**Hours/week**	5.11	**Total hours**	92 class hours + 58 non-class hours = **150 total hours**

2030 AGENDA GOALS

PROFESSORS

AIZPURU NAZABAL, AITZIBER
ARETXABALETA RAMOS, LAURENTZI
EGUIA IBARZABAL, JOSU

REQUIRED PREVIOUS KNOWLEDGE

Subjects	Knowledge
PHYSICS I	*(No previous knowledge required)*
MATHEMATICS I	

LEARNING RESULTS

LEARNING RESULTS	KC	SK	AB	ECTS
GJR102 - To understand and master the principles of mechanical physics and the theory of mechanisms to solve engineering problems			x	5,4
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		0,36
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:	6

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

SECONDARY LEARNING RESULTS

2RGJ193 **(2 sem)**

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	1 h.	2 h.	3 h.

EVALUATION SYSTEM	W
Reports on the completion of exercises, case studies, computer exercises, simulation exercises, laboratory exercises, term projects, challenges and problems	100%

MAKE-UP MECHANISMS

(No mechanisms)

Comments: Revision and correction of the written report of the semester project.

CH - Class hours: 1 h.
NCH - Non-class hours: 2 h.
TH - Total hours: 3 h.

RGJ135 **[!]** ***Analizar el movimiento de un mecanismo y determinar las solicitaciones que rigen su movimiento***

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	12 h.	4 h.	16 h.
Personal study and flexible development of concepts and subjects using active dynamics, to foster more meaningful learning	4 h.	16 h.	20 h.
Computer simulation exercises, individually and/or in teams	8 h.	8 h.	16 h.
Presentation by the teacher in the classroom, in participatory classes, of concepts and procedures associated with the subjects	25 h.		25 h.
Carrying out exercises and solving problems individually and/or in teams	14 h.	12 h.	26 h.
Self-assessment tests in a context of autonomous and continuous learning	2 h.		2 h.

EVALUATION SYSTEM	W
Reports on the completion of exercises, case studies, computer exercises, simulation exercises, laboratory exercises, term projects, 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	20%
Individual written and/or oral tests or individual coding/programming tests	55%

MAKE-UP MECHANISMS

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

Comments: Final mark: written second-chance exam (75%) + exam (25%). Laboratory practices and auto evaluations will be made-up by on-going evaluation. It is compulsory to submit the team-exercise, otherwise the result of the learning outcome will be 0. For marks under 5, there will be a posibility of a retake, with a maximum mark of 5.

CH - Class hours: 65 h.
NCH - Non-class hours: 40 h.
TH - Total hours: 105 h.

2RGJ192 (2 sem)

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	2 h.	1 h.	3 h.

EVALUATION SYSTEM	W
Reports on the completion of exercises, case studies, computer exercises, simulation exercises, laboratory exercises, term projects, challenges and problems	100%

MAKE-UP MECHANISMS

(No mechanisms)

CH - Class hours: 2 h.
NCH - Non-class hours: 1 h.
TH - Total hours: 3 h.

2RGJ190 (2 sem)

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	2 h.	1 h.	3 h.

EVALUATION SYSTEM	W
Reports on the completion of exercises, case studies, computer exercises, simulation exercises, laboratory exercises, term projects, challenges and problems	100%

MAKE-UP MECHANISMS

(No mechanisms)

Comments: Continuous assessment. Retake is not foreseen.

CH - Class hours: 2 h.
NCH - Non-class hours: 1 h.
TH - Total hours: 3 h.

RGJ136 **[!]** ***Conocer los conceptos básicos de la vibraciones mecánicas y analizar el movimiento vibratorio de sistemas con un grado de libertad***

LEARNING ACTIVITIES	CH	NCH	TH
Presentation by the teacher in the classroom, in participatory classes, of concepts and procedures associated with the subjects	10 h.		10 h.
Carrying out exercises and solving problems individually and/or in teams	6 h.	11 h.	17 h.
Practical work in workshops and/or laboratories, individually and/or in teams	2 h.	1 h.	3 h.

EVALUATION SYSTEM	W
Reports on the completion of exercises, case studies, computer exercises, simulation exercises, laboratory exercises, term projects, challenges and problems	100%

MAKE-UP MECHANISMS

Reports on the completion of exercises, case studies, computer exercises, simulation exercises, laboratory exercises, term projects, challenges and problems

Comments: It is compulsory to submit the team-exercise, otherwise the result of the learning outcome will be 0. For marks under 5, there will be a posibility of a retake, with a maximum mark of 5.

CH - Class hours: 18 h.
NCH - Non-class hours: 12 h.
TH - Total hours: 30 h.

2RGJ191 **(2 sem)**

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	2 h.	1 h.	3 h.

EVALUATION SYSTEM	W
Reports on the completion of exercises, case studies, computer exercises, simulation exercises, laboratory exercises, term projects, challenges and problems	100%

MAKE-UP MECHANISMS

(No mechanisms)

Comments: Continuous assessment. Retake is not foreseen.

CH - Class hours: 2 h.
NCH - Non-class hours: 1 h.
TH - Total hours: 3 h.

2RGJ194 **(2 sem)**

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.	1 h.	3 h.

EVALUATION SYSTEM	W
Reports on the completion of exercises, case studies, computer exercises, simulation exercises, laboratory exercises, term projects, challenges and problems	100%

MAKE-UP MECHANISMS

(No mechanisms)

Comments: Continuous assessment. Retake is not foreseen.

CH - Class hours: 2 h.
NCH - Non-class hours: 1 h.
TH - Total hours: 3 h.

CONTENTS

1. Mechanisms analysis - Mechanism model - Mechanism kinematics - Mechanism kinetics2. Mechanical vibrations - Fundamentals - Systems of one degree of freedom

LEARNING RESOURCES AND BIBLIOGRAPHY

Learning resources

[!] *Apuntes de la asignatura*

[!] *Plataforma Moodle*

[!] *Presentaciones en clase*

[!] *Realización de prácticas en laboratorio*

Bibliography

Meriam J.L., Kraige L.G., Mecánica para Ingenieros. Dinámica, 3. argitaraldia, Reverté S.A. argitaletxea, 2014

Beer F.P., Mecánica Vectorial para Ingenieros. Dinámica, 11. argitaraldia, McGraw-Hill argitaletxea, 2017

Riley W. F. & Sturges L. D., Ingeniería Mecánica. Dinámica, Reverté S.A. argitaletxea, 1996

Bedford A. & Fowler W., Mecánica para Ingeniería. Dinámica, Addison-Wesley Iberoamericana argitaletxea, 2008

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