[GFN003] DESIGN AND ANALYSIS OF MECHANICAL SYSTEMS

GENERAL INFORMATION

Studies	DEGREE IN ENGINEERING PHYSICS APPLIED TO INDUSTRY			**Subject**	Biomedical Engineering
Semester	1	**Course**	4	**Mention / Field of specialisation**	???
Character	OPTIONAL				
Plan	2022	**Modality**	Face-to-face	**Language**	CASTELLANO
Credits	5	**Hours/week**	0	**Total hours**	23.22 class hours + 101.78 non-class hours = **125 total hours**

2030 AGENDA GOALS

PROFESSORS

MATEOS HEIS, MODESTO
LAPEIRA AZCUE, ESTELA

REQUIRED PREVIOUS KNOWLEDGE

Subjects	Knowledge
CALCULUS I	*(No previous knowledge required)*
GENERAL PHYSICS I	

LEARNING RESULTS

LEARNING RESULTS	KC	SK	AB	ECTS
GFR307 - Understand and apply principles for the design and analysis of mechanical systems	x	x		5
			Total:	5

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

SECONDARY LEARNING RESULTS

RGF418 **[!]** ***Diseña un conjunto mecánico mediante software CAD***

LEARNING ACTIVITIES	CH	NCH	TH
Carrying out exercises and solving problems individually and/or in teams		23,25 h.	23,25 h.
Tutoring sessions and monitoring of training activities	7,75 h.		7,75 h.

EVALUATION SYSTEM	W	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	100%	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: 7,75 h.
NCH - Non-class hours: 23,25 h.
TH - Total hours: 31 h.

RGF415 **[!]** ***Conoce, comprende y calcula el equilibrio estático de sólidos y las tensiones en sólidos deformables***

LEARNING ACTIVITIES	CH	NCH	TH
Carrying out exercises and solving problems individually and/or in teams		26 h.	26 h.
Tutoring sessions and monitoring of training activities	5 h.		5 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	100%	Reports on the completion of exercises, case studies, computer exercises, simulation exercises, laboratory exercises, term projects, challenges and problems

CH - Class hours: 5 h.
NCH - Non-class hours: 26 h.
TH - Total hours: 31 h.

RGF417 **[!]** ***Representa y acota diferentes tipos de piezas respetando las normas de dibujo técnico***

LEARNING ACTIVITIES	CH	NCH	TH
Carrying out exercises and solving problems individually and/or in teams		25,53 h.	25,53 h.
Tutoring sessions and monitoring of training activities	5,47 h.		5,47 h.

EVALUATION SYSTEM	W	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	100%	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: 5,47 h.
NCH - Non-class hours: 25,53 h.
TH - Total hours: 31 h.

RGF416 **[!]** ***Diseña y analiza sistemas mecánicos aplicando criterios de resistencia y rigidez***

LEARNING ACTIVITIES	CH	NCH	TH
Carrying out exercises and solving problems individually and/or in teams		27 h.	27 h.
Tutoring sessions and monitoring of training activities	5 h.		5 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	100%	Reports on the completion of exercises, case studies, computer exercises, simulation exercises, laboratory exercises, term projects, challenges and problems

CH - Class hours: 5 h.
NCH - Non-class hours: 27 h.
TH - Total hours: 32 h.

CONTENTS

MECHANICAL DESIGN

1. 2D part representation

2. Dimensioning

3. 3D part representation

4. 3D part representation and assembly using CAD tools

BIOMECHANICS

1. Tension and compression

2. Bending

3. Torsion

4. Mechanical properties of human tissues

LEARNING RESOURCES AND BIBLIOGRAPHY

Learning resources

Moodle Platform
Slides of the subject
Video projections

Bibliography

Técnicas Gráficas (FORMACION PROFESIONAL). EDITORIAL DONOSTIARRA

Adierazpen grafikoa ; unitate didaktikoa

Normalización del Dibujo Técnico; Cándido Preciado y Francisco Jesús Moral; EDITORIAL DONOSTIARRA

Meriam, J.L.; Kraige, L.G. Mecánica para Ingenieros; Estática. 3ª ed. Editorial Reverté: España, 1998.

Özkaya, N.; Nordin, M.; Goldsheyder, D.; Leger, D. Fundamentals of Biomechanics; Equilibrium, Motion and Deformation. Third Edition. Springer: New York, 2012.