

[GJJ103] MECHANICAL SYSTEMS

GENERAL INFORMATION

Studies	DEGREE IN MECHATRONICS ENGINEERING		Subject	?
Semester	1	Course	2	Mention / Field of specialisation
Character	OPTIONAL		Language	EUSKARA
Plan	2020	Modality	Face-to-face	Total hours
Credits	6	Hours/week	5	90 class hours + 60 non-class hours = 150 total hours

PROFESSORS

EZPELETA LASCURAIN, IÑIGO
ELGUEZABAL LAZCANO, JON

REQUIRED PREVIOUS KNOWLEDGE

Subjects	Knowledge
GRAPHIC EXPRESION	(No previous knowledge required)

SKILLS

VERIFICA SKILLS

SPECIFIC

GJCE27 - Ability to represent and interpret mechanical assemblies and mechanical elements using computer-aided design tools

GENERAL

GJCG03 - Addressing and optimising activities of assembly, commissioning, assistance and maintenance of facilities, machinery, and industrial mechatronic systems

GJCG05 - Developing and designing products, equipment and mechatronic systems while complying with the technical, economic, quality and safety requirements established in the specifications and required by current legislation

CROSS

GJCTR2 - To be able to understand and apply knowledge to problem solving in complex work situations or specialised and professional environments calling for creative and innovative ideas, using self-developed arguments and procedures;

BASIC

G_CB5 - To have developed learning abilities required to embark on subsequent studies with a high level of autonomy.

LEARNING RESULTS

RG201 They coordinate their work with the other members of the team, contribute in their team to the development of the tasks to be carried out and the creation of a good working climate.

LEARNING ACTIVITIES

	CH	NCH	TH
Development, writing and presentation of memorandums, reports, audiovisual material, etc.	2 h.	2 h.	4 h.
Relating to projects/POPBLs carried out individually or in teams			

EVALUATION SYSTEM

Technical skills, involvement in the project, finished work, obtained results, handed documentation, presentation and technical defence

W

100%

MAKE-UP MECHANISMS

Technical skills, involvement in the project, finished work, obtained results, handed documentation, presentation and technical defence

Comments: With the project of the second semester

CH - Class hours: 2 h.

NCH - Non-class hours: 2 h.

TH - Total hours: 4 h.

RG202 They make decisions and assess the possible consequences of the selected alternative.

LEARNING ACTIVITIES

	CH	NCH	TH
Development, writing and presentation of memorandums, reports, audiovisual material, etc.	2 h.	2 h.	4 h.
Relating to projects/POPBLs carried out individually or in teams			

EVALUATION SYSTEM

Technical skills, involvement in the project, finished work,

W

100%

MAKE-UP MECHANISMS

Technical skills, involvement in the project, finished work, obtained

obtained results, handed documentation, presentation and technical defence

results, handed documentation, presentation and technical defence

Comments: With the project of the second semester

CH - Class hours: 2 h.

NCH - Non-class hours: 2 h.

TH - Total hours: 4 h.

RG204 They define the problem, the development of the solution, as well as the conclusions in an effective way, making a correct use of the language, in writing.

LEARNING ACTIVITIES

Development, writing and presentation of memorandums, reports, audiovisual material, etc.
 Relating to projects/POPBLs carried out individually or in teams

CH

2 h.

NCH

2 h.

TH

4 h.

EVALUATION SYSTEM

W

Technical skills, involvement in the project, finished work, obtained results, handed documentation, presentation and technical defence

100%

MAKE-UP MECHANISMS

Technical skills, involvement in the project, finished work, obtained results, handed documentation, presentation and technical defence

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

CH - Class hours: 2 h.

NCH - Non-class hours: 2 h.

TH - Total hours: 4 h.

RG205 They define the problem, the development of the solution, as well as the conclusions in an effective way, making a correct use of the language, orally.

LEARNING ACTIVITIES

Development, writing and presentation of memorandums, reports, audiovisual material, etc.
 Relating to projects/POPBLs carried out individually or in teams

CH

3 h.

NCH

TH

3 h.

EVALUATION SYSTEM

W

Technical skills, involvement in the project, finished work, obtained results, handed documentation, presentation and technical defence

100%

MAKE-UP MECHANISMS

Technical skills, involvement in the project, finished work, obtained results, handed documentation, presentation and technical defence

Comments: With the oral presentation of the project of the second semester

CH - Class hours: 3 h.

NCH - Non-class hours: 0 h.

TH - Total hours: 3 h.

RGJ209 They correctly interpret and indicate the tolerances on a mechanical component

LEARNING ACTIVITIES

Development, writing and presentation of memorandums, reports, audiovisual material, etc.
 Relating to projects/POPBLs carried out individually or in teams
 Individual study and work, tests and evaluations and check points
 Individual and team exercises
 Individual and/or team computer simulation practice
 Classroom presentations of relevant concepts and procedures in participatory environments

CH

4 h.

NCH

4 h.

TH

8 h.

5 h.

2 h.

7 h.

6 h.

6 h.

12 h.

1 h.

1 h.

2 h.

5 h.

1 h.

6 h.

EVALUATION SYSTEM

W

MAKE-UP MECHANISMS

Individual written and oral tests to assess technical skills of the subject	20%	Individual written and oral tests to assess technical skills of the subject
Reports of solving exercises, case studies, computer practices, simulation practices and laboratory practices	55%	Comments: There won't be a second chance for the submitted exercises There will be a retake exam for the individual test. Final mark: first exam 25% and the retake exam 75%.
Technical skills, involvement in the project, finished work, obtained results, handed documentation, presentation and technical defence	25%	
Comments: A minimum mark of 3 points out of 10 will be necessary to be able to make the average with the rest of the evaluated items		
CH - Class hours: 21 h.		
NCH - Non-class hours: 14 h.		
TH - Total hours: 35 h.		

RGJ210 They represent mechanical parts and identify their applications			
LEARNING ACTIVITIES			
Development, writing and presentation of memorandums, reports, audiovisual material, etc.		<i>CH</i>	<i>TH</i>
Relating to projects/POPBLs carried out individually or in teams			
Individual study and work, tests and evaluations and check points		4 h.	7 h.
Classroom presentations of relevant concepts and procedures in participatory environments		5 h.	7 h.
Individual and team solving of exercises, problems, and practices		4 h.	9 h.
EVALUATION SYSTEM		<i>W</i>	MAKE-UP MECHANISMS
Individual written and oral tests to assess technical skills of the subject	15%		Individual written and oral tests to assess technical skills of the subject
Reports of solving exercises, case studies, computer practices, simulation practices and laboratory practices	10%		Comments: There won't be a second chance for the submitted exercises There will be a retake exam for the individual test. Final mark: first exam 25% and the retake exam 75%.
Technical skills, involvement in the project, finished work, obtained results, handed documentation, presentation and technical defence	75%		
Comments: A minimum mark of 3 points out of 10 will be necessary to be able to make the average with the rest of the evaluated items			
CH - Class hours: 15 h.			
NCH - Non-class hours: 10 h.			
TH - Total hours: 25 h.			

RGJ211 They interpret and draw mechanical assemblies and exploded views, using proper software appropriately.			
LEARNING ACTIVITIES			
Development, writing and presentation of memorandums, reports, audiovisual material, etc.		<i>CH</i>	<i>TH</i>
Relating to projects/POPBLs carried out individually or in teams			
Individual study and work, tests and evaluations and check points		11 h.	18 h.
Individual and team exercises		23 h.	38 h.
EVALUATION SYSTEM		<i>W</i>	MAKE-UP MECHANISMS
Individual written and oral tests to assess technical skills of the subject	25%		Individual written and oral tests to assess technical skills of the subject
Reports of solving exercises, case studies, computer practices, simulation practices and laboratory practices	20%		Comments: There won't be a second chance for the submitted exercises There will be a retake exam for the individual test. Final mark: first exam 25% and the retake exam 75%.
Technical skills, involvement in the project, finished work, obtained results, handed documentation, presentation and technical defence	55%		
Comments: A minimum mark of 3 points out of 10 will be necessary to be able to make the average with the rest of the evaluated items			

CH - Class hours: 45 h.
NCH - Non-class hours: 30 h.
TH - Total hours: 75 h.

CONTENTS

1. TOLERANCES

1.1. Geometrical tolerances

2. REPRESENTATION OF MECHANICAL ASSEMBLYES IN 3D (SOLID WORKS)

2.1. Representation and interpretation of assemblies starting from 2D drawings

2.2. Representation of assemblies starting from real parts

2.3. Representation of detailed drawings for manufacturing and assembly (Solid Works)

3. MECHANICAL ELEMENTS

3.1. Specifications, applications and examples of the most common mechanical elements

3.2. Joint and connection elements

3.3. Rotating guidance elements

3.4. Linear guidance elements

3.5. Sealing elements

LEARNING RESOURCES AND BIBLIOGRAPHY

Learning resources

Subject notes
Topic related web quires
Labs
Moodle Platform
Class presentations
Video projections

Bibliography

C. Preciado and F.J. Moral. “Normalización del Dibujo Técnico”. EDITORIAL DONOSTIARRA
J.M. Auria Apilluelo, P. Ibañez Carabantes and P. Ubieto Artur. “Dibujo Industrial, Conjuntos y Despieces”. Editorial Thomson
Daniel E. Puncochar. “Interpretation of Geometry, Dimensioning and Tolerancing”. Editorial Industrial Press Inc
Cecil Jensen. “Geometric, Dimensioning & Tolerancing”. Editorial Delmar
C.H. Simmons and D.E. Maguire. “Manual of Engineering Drawing: to British and International Standards”. DOI: 10.1016/B978-0-08-096652-6.00001-2
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