

## [GJJ203] MECHANICAL SYSTEMS

### GENERAL INFORMATION

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

### 2030 AGENDA GOALS



### PROFESSORS

ELGUEZABAL LAZCANO, JON  
LASA BASTIDA, MIKEL

### REQUIRED PREVIOUS KNOWLEDGE

Subjects	Knowledge
GRAPHIC EXPRESION	(No previous knowledge required)

### LEARNING RESULTS

LEARNING RESULTS	KC	SK	AB	ECTS
<b>GJR202</b> - To represent mechanical elements, parts and assemblies using computer-aided design tools		x		5,4
<b>G-RTR1</b> - 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
<b>G-RTR2</b> - 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

#### **RGJ206** [!] *Interpreta e indica correctamente las tolerancias sobre un componente mecánico*

#### 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	5 h.	3 h.	8 h.
Conducting tests, giving presentations, presenting defences, taking examinations and/or doing checkpoints	5 h.	2 h.	7 h.
Computer simulation exercises, individually and/or in teams	1 h.	1 h.	2 h.
Presentation by the teacher in the classroom, in participatory classes, of concepts and procedures associated with the subjects	5 h.	1 h.	6 h.
Carrying out exercises and solving problems individually and/or in teams	6 h.	6 h.	12 h.

#### EVALUATION SYSTEM

W

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

25%

20%

**Comments:** A minimum mark of 3 points out of 7 will be necessary to be able to make the average with the rest of the evaluated items

#### MAKE-UP MECHANISMS

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

**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%.

**CH - Class hours:** 22 h.

**NCH - Non-class hours:** 13 h.  
**TH - Total hours:** 35 h.

#### 1RGJ291 (1 sem)

##### LEARNING ACTIVITIES

Carrying out/resolving projects/challenges/cases, etc. to provide solutions to problems in interdisciplinary contexts, real and/or simulated, individually and/or in teams

CH

2 h.

NCH

1 h.

TH

3 h.

##### EVALUATION SYSTEM

W

100%

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

##### MAKE-UP MECHANISMS

(No mechanisms)

**Comments:** With the project of the second semester

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

#### 1RGJ292 (1 sem)

##### LEARNING ACTIVITIES

Carrying out/resolving projects/challenges/cases, etc. to provide solutions to problems in interdisciplinary contexts, real and/or simulated, individually and/or in teams

CH

2 h.

NCH

1 h.

TH

3 h.

##### EVALUATION SYSTEM

W

100%

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

##### MAKE-UP MECHANISMS

(No mechanisms)

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

#### 1RGJ293 (1 sem)

##### LEARNING ACTIVITIES

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

CH

2 h.

NCH

1 h.

TH

3 h.

##### EVALUATION SYSTEM

W

100%

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

##### MAKE-UP MECHANISMS

(No mechanisms)

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

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

**RGJ208** [!] *Interpreta y representa conjuntos y despieces mecánicos empleando las adecuadamente las herramientas informáticas*

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		11 h.	8 h.	19 h.
Conducting tests, giving presentations, presenting defences, taking examinations and/or doing checkpoints		11 h.	7 h.	18 h.
Carrying out exercises and solving problems individually and/or in teams		23 h.	15 h.	38 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%	Individual written and/or oral tests or individual coding/programming tests  <b>Comments:</b> 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%.		
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	55%			
Individual written and/or oral tests or individual coding/programming tests	25%			
<b>Comments:</b> A minimum mark of 3 points out of 7 will be necessary to be able to make the average with the rest of the evaluated items				
<b>CH - Class hours:</b> 45 h. <b>NCH - Non-class hours:</b> 30 h. <b>TH - Total hours:</b> 75 h.				

1RGJ290 (1 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	MAKE-UP MECHANISMS		
Reports on the completion of exercises, case studies, computer exercises, simulation exercises, laboratory exercises, term projects, challenges and problems	100%	(No mechanisms)		
		Comments: With the project of the second semester		
CH - Class hours: 2 h.				
NCH - Non-class hours: 1 h.				
TH - Total hours: 3 h.				

1RGJ294 (1 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	MAKE-UP MECHANISMS		
Reports on the completion of exercises, case studies, computer exercises, simulation exercises, laboratory exercises, term projects, challenges and problems	100%	(No mechanisms)		
		<b>Comments:</b> With the oral presentation of the project of the second semester		
<b>CH - Class hours:</b> 2 h.				
<b>NCH - Non-class hours:</b> 1 h.				
<b>TH - Total hours:</b> 3 h.				

**RGJ207** [!] *Identifica y representa los elementos mecánicos y sus aplicaciones*

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.		2 h.
Conducting tests, giving presentations, presenting defences, taking examinations and/or doing checkpoints	4 h.	3 h.	7 h.
Presentation by the teacher in the classroom, in participatory classes, of concepts and procedures associated with the subjects	5 h.	2 h.	7 h.
Carrying out exercises and solving problems individually and/or in teams	4 h.	5 h.	9 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	10%	Individual written and/or oral tests or individual coding/programming tests	
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	75%	<b>Comments:</b> 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%.	
Individual written and/or oral tests or individual coding/programming tests	15%		
<b>Comments:</b> : A minimum mark of 3 points out of 7 will be necessary to be able to make the average with the rest of the evaluated items			
<b>CH - Class hours:</b> 15 h. <b>NCH - Non-class hours:</b> 10 h. <b>TH - Total hours:</b> 25 h.			

## CONTENTS

1. TOLERANCES1.1. Geometric Tolerances2. REPRESENTATION OF MECHANICAL ASSEMBLIES IN 3D (SOLID WORKS)2.1. Representation and interpretation of assemblies starting from 2D2.2. Representation of assemblies from real assemblies2.3. Representation of exploded views and dimensioning (Solid Works)3. MECHANICAL ELEMENTS3.1. Characteristics, applications, examples of mechanical elements (descriptive)3.2. Connecting and coupling elements3.3. Rotary guiding elements3.4. Linear guiding elements3.5. Sealing elements

## LEARNING RESOURCES AND BIBLIOGRAPHY

Learning resources	Bibliography
[!] <i>Apuntes de la asignatura</i>	C. Preciado and F.J. Moral. &#8220;Normalización del Dibujo Técnico&#8221;. EDITORIAL DONOSTIARRA
[!] <i>Consultas en páginas web relacionadas con el tema</i>	J.M. Auria Apilluelo, P. Ibañez Carabantes and P. Ubieta Artur. &#8220;Dibujo Industrial, Conjuntos y Despieces&#8221;. Editorial Thomson
[!] <i>Laboratorios</i>	Daniel E. Puncochar. &#8220;Interpretation of Geometry, Dimensioning and Tolerancing&#8221;. Editorial Industrial Press Inc
[!] <i>Plataforma Moodle</i>	Cecil Jensen. &#8220;Geometric, Dimensioning & Tolerancing&#8221;. Editorial Delmar
[!] <i>Presentaciones en clase</i>	C.H. Simmons and D.E. Maguire. &#8220;Manual of Engineering Drawing: to British and International Standards&#8221;. DOI: 10.1016/B978-0-08-096652-6.00001-2
[!] <i>Proyección de videos</i>	<a href="http://katalogoa.mondragon.edu/janium-bin/janium_login_opac_re_in.k.pl?grupo=MECATRONICA21&amp;ejecuta=20&amp;_ST">http://katalogoa.mondragon.edu/janium-bin/janium_login_opac_re_in.k.pl?grupo=MECATRONICA21&amp;ejecuta=20&amp;_ST</a>