



## IDENTIFYING DATA

### Mechanical Engineering Design

Subject	Mechanical Engineering Design			
Code	V04M141V01114			
Study programme	(*)Máster Universitario en Enxeñaría Industrial			
Descriptors	ECTS Credits	Type	Year	Quadmester
	3	Mandatory	1st	1st
Teaching language	English			
Department				
Coordinator	Casarejos Ruiz, Enrique			
Lecturers	Casarejos Ruiz, Enrique Segade Robleda, Abraham			
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Web	<a href="http://faitic.uvigo.es">http://faitic.uvigo.es</a>			
General description	Classical and numerical calculation of Mechanical Elements			

## Competencies

Code	Typology
CE14 CT13. Ability to design and test machines.	<ul style="list-style-type: none"> <li>• know</li> <li>• Know How</li> </ul>
CT9 ABET-i. A recognition of the need for, and an ability to engage in life-long learning.	<ul style="list-style-type: none"> <li>• know</li> <li>• Know How</li> </ul>

## Learning outcomes

Learning outcomes	Competences
- Know the most common components of the machines and his use.	CE14
- Know calculate the elements more commonly used in machines.	CT9
- Know the general appearances of the construction and calculation of machines.	

## Contents

Topic	
Presentation of the contents	<ul style="list-style-type: none"> <li>- Introduction</li> <li>- Syllabus</li> </ul>
Shafts	<ul style="list-style-type: none"> <li>- Definition of the element</li> <li>- theoretical Calculation and selection</li> <li>- Software of calculation</li> </ul>
Gears and bearings	<ul style="list-style-type: none"> <li>- Definition of the element</li> <li>- theoretical Calculation and selection</li> <li>- Software of calculation</li> </ul>
Belts, chains and springs. Lead screws.	<ul style="list-style-type: none"> <li>- Definition of the element</li> <li>- theoretical Calculation and selection</li> <li>- Software of calculation</li> </ul>
Joints: - shaft-hub and tolerances - screws	<ul style="list-style-type: none"> <li>- Definition of the element</li> <li>- theoretical Calculation and selection</li> <li>- Software of calculation</li> </ul>
Introduction to FEM	<ul style="list-style-type: none"> <li>- FEM calculation</li> <li>- Definition of a FEM case</li> </ul>

<b>Planning</b>			
	Class hours	Hours outside the classroom	Total hours
Introductory activities	1	0	1
Master Session	9	0	9
Case studies / analysis of situations	5	0	5
Troubleshooting and / or exercises	5	0	5
Group tutoring	2	0	2
Troubleshooting and / or exercises	0	30	30
Practical tests, real task execution and / or simulated.	2	0	2
Jobs and projects	0	21	21

\*The information in the planning table is for guidance only and does not take into account the heterogeneity of the students.

<b>Methodologies</b>	
	Description
Introductory activities	Review of previous contents of design / calculation of machines
Master Session	Presentation of syllabus
Case studies / analysis of situations	Discussion of particular cases.
Troubleshooting and / or exercises	Resolution of exercises
Group tutoring	Discussion and resolution of doubts about the development of works and projects.

<b>Personalized attention</b>	
Tests	Description
Troubleshooting and / or exercises	Individual discussions for the resolution of problems and/or exercises proposed.
Jobs and projects	Individual discussions to solve the doubts related to the works and projects proposed.

<b>Assessment</b>			
	Description	Qualification	Evaluated Competences
Troubleshooting and / or exercises	Resolution of exercises and problems	50	CE14 CT9
Practical tests, real task execution and / or simulated.	Resolution and presentation of problems (examination **)	20	CE14 CT9
Jobs and projects	Resolution of a realistic cases proposed.	30	CE14 CT9

### **Other comments on the Evaluation**

The continuous evaluation will be done considering both the regular exercises and the project to hand in. The quota of the exam will pass to the project.

In anyone gives up (officially) the continuous evaluation, the examination for the evaluation will be done together with the proposed project, and the distribution of the evaluation will be of 50% for the examination.

It is expected an adequate ethical behaviour of the student. In case of detecting unethical behaviour (copying, plagiarism, unauthorized use of electronic devices, etc.) shall be deemed that the student does not meet the requirements for passing the subject. In this case, the overall rating in the current academic year will be Fail (0.0).

The use of any electronic device for the assessment tests is not allowed unless explicitly authorized. The fact of introducing unauthorized electronic device in the examination room will be considered reason for not passing the subject in the current academic year and will hold overall rating (0.0).

### **Sources of information**

#### **Basic Bibliography**

various authors, Shigley's mechanical engineering design, McGraw-Hill,

#### **Complementary Bibliography**

Norton, R., Diseño de Máquinas, Pearson, 2000,

Mott, R.L., Diseño de elementos de máquinas, Pearson, 2006,

Ansys, documentation,

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## Recommendations

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