



IDENTIFYING DATA

(*)Cálculo de Máquinas

Subject	(*)Cálculo de Máquinas			
Code	V04M141V01114			
Study programme	(*)Máster Universitario en Enxeñaría Industrial			
Descriptors	ECTS Credits	Choose	Year	Quadmester
	3	Mandatory	1st	1st
Teaching language				
Department				
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General description				

Competencies

Code	
C14	CTI3. Ability to design and test machines.
D9	ABET-i. A recognition of the need for, and an ability to engage in life-long learning.

Learning outcomes

Expected results from this subject	Training and Learning Results
- Know the most common components of the machines and their use.	C14
- Know how to calculate the elements most commonly used in machines.	D9
- Know the general aspects of the construction and calculating machines.	

Contents

Topic	
Presentation of the matter	<ul style="list-style-type: none"> - Introduction to the matter - Previous knowledges: design of machines; software of modelling, analysis, simulation and validation - Definition of the project to realise: design, analysis, simulation and validation of a machine
Calculation of axes and trees	<ul style="list-style-type: none"> - Definition of the element - Theoretical calculation and selection - Software of calculation
Calculation of gears	<ul style="list-style-type: none"> - Definition of the element - Theoretical calculation and selection - Software of calculation
Calculation of rollings and bearing	<ul style="list-style-type: none"> - Definition of the element - Theoretical calculation and selection - Software of calculation
Calculation of joints:	<ul style="list-style-type: none"> - Definition of the element - Theoretical calculation and selection - Software of calculation
- axis-cube joints and tolerances	
- soldered and hit joints	
- bolted and rivet joints	
Calculation of springs	<ul style="list-style-type: none"> - Definition of the element - Theoretical calculation and selection - Software of calculation

Planning

	Class hours	Hours outside the classroom	Total hours
Introductory activities	1	0	1
Practice in computer rooms	8	0	8
Case studies / analysis of situations	2	0	2
Troubleshooting and / or exercises	7	21	28
Group tutoring	2	0	2
Troubleshooting and / or exercises	2	0	2
Practical tests, real task execution and / or simulated.	2	0	2
Jobs and projects	0	30	30

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

Methodologies

	Description
Introductory activities	I review of previous contents of design / calculation of machines
Practice in computer rooms	Resolution, by part of the professor and of the student body, of the distinct calculation elements of machines, his analysis, simulation and validation, by means of computer programs
Case studies / analysis of situations	Presentation and explanation of particular cases, by part of the students and the professor.
Troubleshooting and / or exercises	Resolution, by part of the professor and of the student body, of the calculation of distinct elements of machines, his analysis, simulation and validation
Group tutoring	Exhibition and resolution of doubts of development of works.

Personalized attention

Methodologies	Description
Troubleshooting and / or exercises	The student will advance in the development of the work supporting in the personalised attention that will help him to solve those problems that pose him .
Practice in computer rooms	The student will advance in the development of the work supporting in the personalised attention that will help him to solve those problems that pose him .
Group tutoring	The student will advance in the development of the work supporting in the personalised attention that will help him to solve those problems that pose him .

Assessment

	Description	Qualification	Training and Learning Results
Troubleshooting and / or exercises	Resolution of exercises and problems, by means of analytical calculation and/or by means of the use of software, consistent in the design, analysis, simulation and validation of the elements of a machine for academic cases.	50	C14 D9
Practical tests, real task execution and / or simulated.	Resolution of exercises and problems, by means of analytical calculation, consistent in the design, analysis, and validation of the elements of a machine	20	C14 D9
Jobs and projects	Resolution of a realistic case proposed by means of the use of technicians of design, analysis and simulation.	30	C14 D9

Other comments on the Evaluation

If the students renounces officially to the continuous evaluation, the final proof of the continuous evaluation will complete with exercises or a work/project of design, analysis, simulation and validation of a machine.

Ethical commitment: 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).

Sources of information

Norton, R., Diseño de Máquinas, Pearson, 2012

Shigley, J.E., Diseño en Ingeniería Mecánica, McGraw-Hill, 2008

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

Lombard, M., Solid Works 2009 bible, Wiley, 2009

Recommendations
