IDENTIFYING DATA
Advanced Mechanical Engineering Design

Subject	Advanced Mechanical Engineering Design
Code	V04M141V01203
Study programme	(*)Máster Universitario en Enxeñaría Industrial

Descriptors	ECTS Credits		Choose	Year	Quadmester
	3		Optional	1st	2nd

Teaching language	English
Department	
Coordinator	Casarejos Ruiz, Enrique
Lecturers	Casarejos Ruiz, Enrique
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Web	http://www.faitic.uvigo.es
General description	Classical and numerical calculation of Mechanical Elements

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 components of the machines, his use and maintenance. - Know calculate the elements more commonly used in machines. - Know the general appearances of the construction and calculation of machines. - Capacity of analytical study of transmissions in machinery	C14 D9

Contents

Topic	
Presentation of the contents	- Introduction - Syllabus
Shafts, gears and bearings	- Definition of the element - theoretical Calculation and selection - Software of calculation
Belts, chains and springs. Lead screws.	- Definition of the element - theoretical Calculation and selection - Software of calculation
Joints - shat-hub and tolerances - screws	- Definition of the element - theoretical Calculation and selection - Software of calculation
Introduction to FEM	- FEM calculation - Definition of a FEM case

Planning

	Class hours	Hours outside the classroom	Total hours

Master Session	10	0	10
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.

Methodologies

	Description
	Description
Master Session	Review of previous contents of design / calculation of machines. 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

Personalized attention

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

Assessment

	Description	Qualification	Training and Learning Results
Troubleshooting and / or exercises	Resolution of exercises and problems	50	C14 D9
Practical tests, real task execution and / or simulated.	Resolution and presentation of problems	20	C14 D9
Jobs and projects	Resolution of a realistic case proposed	30	C14 D9

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,

Recommendations