Universida de Vigo

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
E-mail	e.casarejos@uvigo.es
Web	http://moovi.uvigo.gal/
General description	Standard and Numerical Calculation of Mechanical Elements

Skills

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	
Introduction	- Study Cases & Applications - Previous & Linked Subjects
Shafts, Gears and Bearings	- Element Characterization - Application Details - Theoretical Calculation and Selection
Belts & Chains. Lead screws. Couplings.	- Element Characterization - Application Details - Theoretical Calculation and Selection
Joints: - Shaft-Hub. Tolerances - Bolts& Screws	- Element Characterization - Application Details - Theoretical Calculation and Selection
Integration of complex systems	- Gear-boxes - Analysis Cases: design, evaluation

Planning

	Class hours	Hours outside the classroom	Total hours

Presentation	10	0	10
Problem solving	6	0	6
Case studies	8	0	8
Problem and/or exercise solving	0	21	21
Case studies	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
Presentation	Lectures about the topics. Applications. Study Cases.
Problem solving	Discussion of exercises
Case studies	Discussion of practical cases

Personalized assistance

Tests	Description
Problem and/or exercise solving	Individual discussions for the resolution of problems and/or exercises proposed.
Case studies	Individual discussions to solve the doubts related to the works and projects proposed.

Assessment

	Description	Qualification	Training and Learning Results	
Problem and/or exercise solving	Resolution of exercises and problems	35	C14	D9
Case studies	Resolution of a realistic cases proposed.	65	C14	D9

Other comments on the Evaluation

The evaluation will be done according to the scores in two working blocks: # calculation with standards (35%) # case-study: project (65%). Students must achieve at least 35% of the partial score of each block to pass the evaluation.

The continuous evaluation will be done considering both the regular exercises and the case-studies to hand in. If any student gives up (officially) the continuous evaluation, the evaluation will be done with the exam and the case-studies handed in. The distribution of the evaluation will be of 35% for the exam and 65% for the case-studies.

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
VVAA, **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, **Ansys, documentation**,
VVAA, **SoidWorks documentation**,

Recommendations
Subjects that continue the syllabus
Advanced Mechanical Engineering Design/V04M141V01203

Contingency plan

Description
=== EXCEPTIONAL PLANNING ===
Given the uncertain and unpredictable evolution of the health alert caused by COVID-19, the University of Vigo establishes an extraordinary planning that will be activated when the administrations and the institution itself determine it, considering

safety, health and responsibility criteria both in distance and blended learning. These already planned measures guarantee, at the required time, the development of teaching in a more agile and effective way, as it is known in advance (or well in advance) by the students and teachers through the standardized tool.

=== ADAPTATION OF THE METHODOLOGIES ===
* Teaching methodologies maintained
Planned as it is

* Teaching methodologies modified
Not planned modifications

* Non-attendance mechanisms for student attention (tutoring)
Tutoring will be continued by online meetings

* Modifications (if applicable) of the contents
Not planned modifications

* Additional bibliography to facilitate self-learning
Not changed

* Other modifications

=== ADAPTATION OF THE TESTS ===

No changes planned.

* Additional Information