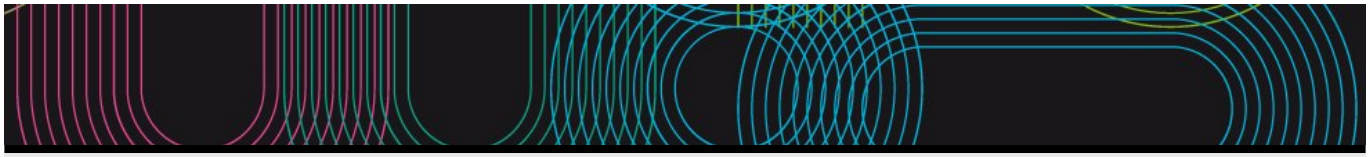
Universidade Vigo

Subject Guide 2019 / 2020



IDENTIFYING DATA				
Mechanical Engineering Design				
Subject	Mechanical Engineering Design			
Code	V04M141V01114			
Study programme	(*)Máster Universitario en Enxeñaría Industrial			
Descriptors	ECTS Credits	Choose	Year	Quadmester
	3	Mandatory	1st	1st
Teaching language	English			
Department				
Coordinator	Casarejos Ruiz, Enrique			
Lecturers	Casarejos Ruiz, Enrique			
E-mail	e.casarejos@uvigo.es			
Web	http://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 most common components of the machines and his use. - Know calculate the elements more commonly used in machines. - Know the general appearances of the construction and calculation of machines.	C14	D9

Contents	
Topic	
Presentation of the contents	- Introduction - Syllabus
Shafts	- Definition of the element - theoretical Calculation and selection - Software of calculation
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: - shaft-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
Introductory activities	1	0	1
Lecturing	9	0	9
Case studies	5	0	5
Problem solving	5	0	5
Seminars	2	0	2
Problem and/or exercise solving	0	30	30
Laboratory practice	2	0	2
Essay	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
Introductory activities	Review of design & calculation of elements concepts.
Lecturing	Lectures about topics
Case studies	Discussion of practical cases
Problem solving	Discussion of exercises
Seminars	Follow-up & discussion of projects

Personalized assistance

Tests	Description
Problem and/or exercise solving	Individual discussions for the resolution of problems and/or exercises proposed.
Essay	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	50	C14	D9
Laboratory practice	Resolution and presentation of problems (examination **)	20	C14	D9
Essay	Resolution of a realistic cases proposed.	30	C14	D9

Other comments on the Evaluation

The evaluation will be done according to the scores in three working blocks: # calculation with standards (3,5 points) # project (3.5 points) # FEM (3 points). For all of the blocks, the student must achieve at least 30% of the partial score to pass 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. If any student 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