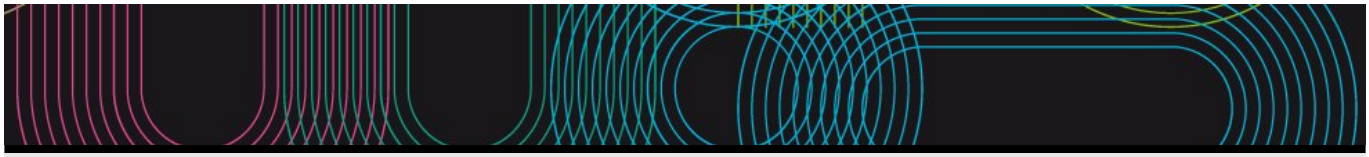

IDENTIFYING DATA				
(*)Resistencia de materiais				
Subject	(*)Resistencia de materiais			
Code	V12G380V01402			
Study programme	(*)Grao en Enxeñaría Mecánica			
Descriptors	ECTS Credits	Choose	Year	Quadmester
	6	Mandatory	2nd	2nd
Teaching language	Spanish English			
Department				
Coordinator	Caamaño Martínez, José Carlos			
Lecturers	Caamaño Martínez, José Carlos Cabaleiro Núñez, Manuel Fernández Abalde, Félix Fuentes Fernández, Eugenio Ignacio Pereira Conde, Manuel Riveiro Rodríguez, Belén			
E-mail	jccaam@uvigo.es			
Web	http://faitic.uvigo.es			
General description	Introduction to linear elastic materials, and analysis of internal loadings, stress and strain relationships. Study of the fundamentals of mechanics of materials and particularization for shafts and beam structures.			

Competencies	
Code	
A3	CG3 Knowledge in basic and technological subjects that will enable students to learn new methods and theories, and provide them the versatility to adapt to new situations.
A4	CG4 Ability to solve problems with initiative, decision making, creativity, critical thinking and the ability to communicate and transmit knowledge and skills in the field of industrial engineering.
A27	RI8 Knowledge and use of the principles of strength of materials.
B2	CT2 Problems resolution.
B3	CT3 Oral and written proficiency in the own language.
B5	CT5 Information Management.
B9	CS1 Apply knowledge.
B10	CS2 Self learning and work.
B16	CP2 Critical thinking.
B17	CP3 Working as a team.

Learning aims		
Expected results from this subject	Training and Learning Results	
(*)RI8, CG3, CG4, CT1, CT2, CT3, CT5, CS1, CS2, CP2, CP3	A3	B2
	A4	B3
	A27	B5
		B9
		B10
		B16
		B17

Contents	
Topic	
1. Introduction	1.1 Introduction 1.2 Review of statics fundamentals and applied concepts for further progress in solid mechanics and stress analysis

2. Axial load	2.0 Stress and strain. Linear elastic materials 2.1. Normal stress in an axially loaded prismatic bar. 2.2. Equilibrium of a deformable body. 2.3. Stress-Strain diagram of ductile materials. Hooke's Law. 2.4. Elastic deformation of an axially loaded member. 2.5. Saint-Venant principle and superposition principle. 2.6. Statically governed problems. 2.7. Statically indeterminate problems. 2.8. Thermal stress and assembly misfits.
3. Bending	3.1 Beams: definition and types. Loads on beams. 3.2 Internal shear forces and bending moments. 3.3 External load, shear force and bending moment relationships. 3.4 Shear and moment diagrams 3.5 Pure bending and non-uniform bending. Hypothesis and limitations. 3.6 Normal stresses in unsymmetric bending. 3.7 Symmetric bending. The flexure formula (Navier's Law). 3.8 Section modulus of a beam. Ideal beam cross-section. 3.9 Deflection of beams and shafts. Rotation and displacement. Mohr's Theorems. 3.10 Hyperstatic bending.
4. Other efforts	4.1. Introduction to shearing force and average shear stress. Shearing connetions. 4.2 Introduction to the concept of buckling 4.3 Introduction to the concept of torsion

Planning

	Class hours	Hours outside the classroom	Total hours
Master Session	32.5	49	81.5
Laboratory practises	16	13	29
Troubleshooting and / or exercises	1	17.5	18.5
Autonomous troubleshooting and / or exercises	1	17	18
Long answer tests and development	3	0	3
*The information in the planning table is for guidance only and does not take into account the heterogeneity of the students.			

Methodologies

	Description
Master Session	(*)Exposición dos contidos da materia, con apoio de pizarra e canón de vídeo.
Laboratory practises	(*) Actividades de aplicación dos coñecementos a situacións concretas e de adquisición de habilidades básicas e procedimentais relacionadas coa materia de estudo.
Troubleshooting and / or exercises	(*)Resolución de problemas y ejercicios
Autonomous troubleshooting and / or exercises	(*)Resolución autónoma polo alumno de boletíns de problemas, a entregar ó seu profesor de prácticas.

Personalized attention

Methodologies	Description
Laboratory practises	
Autonomous troubleshooting and / or exercises	
Master Session	

Assessment

	Description	Qualification
Laboratory practises	A) it will evaluate the attendance and active participation in all the practicals of the semester, as well as the correct delivery (time and form) of all the documentation requested (reports, exercises, etc.). Practical sessions will be held in a fixed date, so it is not possible to attend the practical in a later date. Whether the student does not attend to a practical, he/she must demonstrate that the absence was due to unavoidable reasons (e.g. medical reasons). Practicals will marked with the value indicated, only when the student reaches the minimum mark in the written exam, which is 45%. (See following section: 'Other comments')	2.5

Troubleshooting and / or exercises	C) Written tests to evaluate the individual work delivered by the student in the previous sections (A and B). It will be compulsory the attendance to the 90% of the practicals and the on-time delivery of all the lists of problems explained in section B, to obtain the marks given in section C. The marks obtained in the sections A and B will proportionally affect to the marks of the section C. The section C will be marked with a maximum value of 10% of the total mark, only when the student obtain the minimum mark in the written exam, which is 45%. (See following section: 'Other comments')	10
Autonomous troubleshooting and / or exercises	B) Lists of problems to solve individually by students will be published in the platform FAITIC-TEMA along the course. Each list of problems will have a deadline. All this coursework needs to be delivered to the corresponding lecturer in time and form, so they can be counted for marking. Any defect of form (out of term, absence of name, etc.) will invalidate the exercises and they will not be marked. When all the coursework are correctly submited, they will be marked with the value indicated. These marks will be added to the marks obtained in the written exam, once the student reaches the minimum mark in this exam, which is 45%. (See following section: 'Other comments')	2.5
Long answer tests and development	Written exam in the dates established by the School.	85

Other comments on the Evaluation

Students resigning continuum assessment (after School aproval) will be evaluated only through the written exam which will be graded with 100% of final mark.

Continuum assessment is composed of sections A, B, C. The maximum mark for continuum assessment (NEC) is 15%, which will be computed from the following equation: NEC (%) = (2'5·A) + (2'5·*B) + (C)·A·B ; where A,B: 0-1 and Cmáx= 10% of final mark.

Sources of information

Manuel Vázquez, **Resistencia de materiales**,

Hibbeler, R., **Mecánica de materiales**,

English version of main Bibliography:
Hibbeler, R.; 'Mechanics of materials'. Ed Prentice Hall.

Other books:

Ortiz Berrocal, L. 'Resistencia de materiales'. Ed. McGraw-Hill. TOR 620 ORT res; IND T11 391
González Taboada, J.A. 'Tensiones y deformaciones en materiales elásticos'. Ed. Autor. TOR 620 GON ten; IND T11 18
González Taboada, J.A. 'Fundamentos y problemas de tensiones y deformaciones en materiales elásticos'. Ed. Autor. IND T11

Recommendations