



IDENTIFYING DATA

Materials engineering

Subject	Materials engineering			
Code	V12G360V01502			
Study programme	Degree in Industrial Technologies Engineering			
Descriptors	ECTS Credits	Choose	Year	Quadmester
	6	Mandatory	3rd	1st
Teaching language	Spanish			
Department				
Coordinator	Collazo Fernández, Antonio			
Lecturers	Abreu Fernández, Carmen María Collazo Fernández, Antonio Pérez Vázquez, María Consuelo			
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General description	(*)Nesta materia preténdese axuntar os fundamentos científicos que xustifican a relación entre estrutura, propiedades e comportamento, cos aspectos máis tecnolóxicos da forma en que esas interaccións mutuas ven afectadas polos procesos de elaboración e polas condicións de servizo.			

Competencies

Code	
B3	CG3 Knowledge in basic and technological subjects that will enable them to learn new methods and theories, and equip them with versatility to adapt to new situations.
B4	CG4 Ability to solve problems with initiative, decision making, creativity, critical thinking and to communicate and transmit knowledge, skills and abilities in the field of Industrial Engineering.
B5	CG5 Knowledge to carry out measurements, calculations, assessments, appraisals, surveys, studies, reports, work plans and other similar works.
B6	CG6 Capacity for handling specifications, regulations and mandatory standards.
B11	CG11 Knowledge, understanding and ability to apply the legislation relating to industrial installations.
C19	CE19 Knowledge and skills for engineering materials.
D1	CT1 Analysis and synthesis.
D5	CT5 Information Management.
D7	CT7 Ability to organize and plan.
D9	CT9 Apply knowledge.
D10	CT10 Self learning and work.
D15	CT15 Objectification, identification and organization.
D17	CT17 Working as a team.

Learning outcomes

Expected results from this subject	Training and Learning Results		
New	B3	C19	D1
	B4		D5
	B5		D7
	B6		D9
	B11		D10
			D15
			D17

Contents

Topic

- Mechanical behaviour of the materials. .Materials under tensions
- Answer of the materials subjected to processes of plastic Deformation of conformed by foundry, *moldeo and injection. Conformed of sheet
- Answer of the materials subjected to processes of conformed by plastic deformation, .*Moldeo And defects of *moldeo .*Fractografía
- *viscoelástica and *compactación of dusts.
- Modification of materials by means of thermal treatments, *termoquímicos and *termomecánicos.
- Technologies of the union and *soldabilidad.
- Materials of construction.
- Materials for tools.

Parts of laboratory	Mechanical essays Essays no destructive electrochemical Essays
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Planning

	Class hours	Hours outside the classroom	Total hours
Laboratory practical	10	10	20
Mentored work	0	11	11
Seminars	3	3	6
Problem solving	7	7	14
Lecturing	33	66	99

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

Methodologies

	Description
Laboratory practical	Activities of application of the *conocimientos and concrete situations and of the acquisition of basic skills and *procedimentales related with the matter *objeto of study. They develop in *laboratorios with skilled equipment.
Mentored work	The student, of individual way or in group, elaborates a document on the thematic of the matter or prepares seminars, investigations, memories, essays, summaries of readings, conferences, etc.
Seminars	It pretends do *unseguimiento of the work of the student, as well as resolve the *dificultatades that find in the understanding of the contents of the *asignatura.
Problem solving	Activity in which the professor proposes to the students a series of problems and/or exercises related with the *asignatura, so that it work on them home. The student has to develop the suitable or correct solutions by means of the realisation of routines, the application of formulas or algorithms, the application of procedures of transformation of the available information and the interpretation of the results. The resolution of the problems will do in class, by part of the professor or of some student.
Lecturing	Oral and direct exhibition, by part of the professor, of the corresponding fundamental knowledges to the subjects of the *asignatura in question.

Personalized assistance

Methodologies	Description
Mentored work	
Seminars	

Assessment

	Description	Qualification	Training and Learning Results
Laboratory practical	The formative activities of practical character will evaluate according to the criteria of assistance and degree of participation, reports of development of practices or of visits to companies (individual or by groups)	25	D1 D5 D9 D10 D15 D17
Mentored work	They will evaluate by the reports presented, and the exhibition in class of the works.	15	B3 B4 B11 D1 D9 D10 D15 D17

Lecturing	It will make by means of a proof written (short questions and type test) that collect the knowledges purchased by the student along the course.	60	B3 B4 B5 B6 B11	C19	D5 D7 D9 D10 D15
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Other comments on the Evaluation

The continuous evaluation will make during the period of teaching of the subject according to the criteria established in the previous section. In the first edition to surpass the subject will be necessary to reach a minimum note of 4 on 10 in the proof written made in the previously fixed date by the centre (<http://eei.uvigo.es>). In case of not to reach this minimum the qualification will correspond only with the reached during the continuous evaluation (without adding the obtained in the proof written).

Those students that have renounced officially to the continuous evaluation will be evaluated with a final examination on the contents of the whole of the matter, that will suppose 100% of the note.

SECOND EDITION (examination of July): When the student have requested it inside the term established will be able to renounce to the qualifications of continuous evaluation obtained along the course. In this case the evaluation will make by means of an examination written in which they will evaluate the contents developed in the matter, so much in the classes of theory as in the classes of practices and that will allow to obtain 100% of the evaluation. The examination will make in the previously fixed date by the Centre (<http://eei.uvigo.es>).

EXTRAORDINARY ANNOUNCEMENT: it will make by means of an examination written in which they will tackle the most important appearances of the subject, so much in theoretical questions as through problems of numerical resolution that will allow to obtain 100% of the evaluation.

Ethical commitment: it expects that the present student a suitable ethical behaviour. In the case to detect a no ethical behaviour (copy, plagiarism, utilisation of unauthorised electronic devices, and others will consider that the student does not gather the necessary requirements to surpass the matter. In this case the global qualification in the present academic course will be of suspense (0.0)

Sources of information

Basic Bibliography

Kalpakjian, S. y Schmid, S. R., **Manufactura, Ingeniería y Tecnología**, Pearson Educación,
Mikell P. Groover, **Fundamentos de Manufactura Moderna: Materiales, Procesos y Sistemas**, Prentice Hall, Hispanoamericana, S.A,
G. E. DIETER, **MECHANICAL METALURGY**, McGraw-Hill Book Company,

Complementary Bibliography

Manuel Reina Gómez, **Soldadura de los aceros, aplicaciones.**, Gráficas Lormo,
Sindo Kou, **Welding Metallurgy**, John Wiley & Sons,
GEORGE KRAUSS, **STEELS: Heat Treatment and Processing Principles**, ASM International,
BROOKS, CH., **Principles of the Surface Treatment of Steels.**, Inc. Lancaster,
M. G. RANDALL, **Sintering: Theory and Practice**, John Wiley & Sons,
P. Beeley, **Foundry Technology**, Butterworth-Heineman, Ltd.,

Recommendations

Subjects that continue the syllabus

Materials and technologies in mechanical manufacturing/V12G380V01912
Materials selection, tools and manufacturing resources/V12G380V01932
Fluidmechanic systems and advanced materials for transportation/V12G380V01942

Subjects that it is recommended to have taken before

Materials science and technology/V12G380V01301

Contingency plan

Description

=== EXCEPTIONAL MEASURES SCHEDULED ===

In front of the uncertain and unpredictable evolution of the sanitary alert caused by the *COVID-19, the University of Vigo establishes an extraordinary planning that will activate in the moment in that the administrations and the own institution

determine it attending to criteria of security, health and responsibility, and guaranteeing the teaching in a no face-to-face stage or partially face-to-face. These already scheduled measures guarantee, in the moment that was prescriptive, the development of the teaching of a more agile and effective way when being known in advance (or with a wide *antelación) by the students and the *profesorado through the tool normalised and institutionalised of the educational guides.

=== ADAPTATION OF THE METHODOLOGIES ===

* Methodologies

will adapt to the telematic means that put to disposal of the *profesorado, in addition to the documentation facilitated through *FAITIC, email and Remote Campus.

* Mechanism no face-to-face of attention to the students (*tutorías)

The *tutorías will be able to develop of face-to-face form (whenever it was possible to guarantee the sanitary measures) or telematic (email, remote campus or forums *faitic) under the modality of *concertación previous. It will do a *adecuación methodological to the students of risk, facilitating him additional specific information, to accredit that it can not have access to the contents given of conventional form.

=== ADAPTATION OF THE EVALUATION ===

will keep those proofs that already come making of telematic form and, in the measure of the possible, will keep the face-to-face proofs adapting them to the valid sanitary rule. The proofs will develop of face-to-face form except Resolution *Rectoral that indicate that they have to do of form no face-to-face, making of this form through the distinct tools put to disposal of the *profesorado. Those no attainable proofs of telematic form *suplirán by other (deliveries of autonomous work guided, etc.)

* Modification of the weight of continuous evaluation.

Continuous evaluation [previous Weight 40%] [Weight Proposed 60%]
