



Teaching Guide

Identifying Data					2013/14
Subject (*)	Propiedades termomecánicas de materiais. Métodos Fundamentais		Code	730495003	
Study programme	Mestrado Universitario en Materiais Complexos: Análise Térmica e Reoloxía (plan 2012)				
Descriptors					
Cycle	Period	Year	Type	Credits	
Official Master's Degree	2nd four-month period	First	Obligatoria	4	
Language	English				
Prerequisites					
Department	Enxeñaría Industrial 2				
Coordinador	Artiaga Díaz, Ramon Pedro		E-mail	ramon.artiaga@udc.es	
Lecturers	Artiaga Díaz, Ramon Pedro López Beceiro, Jorge José		E-mail	ramon.artiaga@udc.es jorge.lopez.beceiro@udc.es	
Web					
General description					

Study programme competences

Code	Study programme competences
A1	Configurar e realizar ensaios mediante as técnicas de análise térmica e reoloxía máis adecuadas en cada caso, dentro do ámbito dos materiais complexos
A2	Identificar e valorar os distintos tipos de materiais complexos
B1	Posuír e comprender coñecementos que acheguen unha base ou oportunidade de ser orixinais no desenvolvemento e/ou aplicación de ideas, a miúdo nun contexto de investigación
B2	Que os estudantes saiban aplicar os coñecementos adquiridos e a súa capacidade de resolución de problemas en ámbitos novos ou pouco coñecidos dentro de contextos máis amplos (ou multidisciplinares) relacionados coa súa área de estudo
B4	Que os estudantes saiban comunicar as súas conclusións e os coñecementos e razóns últimas que as sustentan a públicos especializados e non especializados dun modo claro e sen ambigüidades
B5	Que os estudantes posúan as habilidades de aprendizaxe que lles permitan continuar estudando dun modo que haberá de ser en boa medida autodirixido ou autónoma.
B6	Aprender a aprender
B8	Aplicar un pensamento crítico, lóxico e creativo
B13	Actitude orientada á análise
B15	Capacidade de comunicación oral e escrita
B21	Valorar a importancia que ten a investigación, a innovación e o desenvolvemento tecnolóxico no avance socioeconómico e cultural da sociedade
C1	Expresarse correctamente, tanto de forma oral coma escrita, nas linguas oficiais da comunidade autónoma.
C2	Dominar a expresión e a comprensión de forma oral e escrita dun idioma estranxeiro.
C3	Utilizar as ferramentas básicas das tecnoloxías da información e as comunicacións (TIC) necesarias para o exercicio da súa profesión e para a aprendizaxe ao longo da súa vida.
C6	Valorar criticamente o coñecemento, a tecnoloxía e a información dispoñible para resolver os problemas cos que deben enfrontarse.
C7	Asumir como profesional e cidadán a importancia da aprendizaxe ao longo da vida.
C8	Valorar a importancia que ten a investigación, a innovación e o desenvolvemento tecnolóxico no avance socioeconómico e cultural da sociedade.
C9	Valorar a importancia que ten a investigación na protección do medio ambiente

Learning outcomes

Subject competencies (Learning outcomes)	Study programme competences



To know the different thermal transformations may experience a material	AR2	BR1 BR2 BR5 BR6 BR8 BR15 BR21	CR1 CR2 CR3 CR7 CR8 CR9
To identify different thermal transformations using different experimental techniques	AR1 AR2	BR1 BR2 BR4 BR5 BR6 BR8 BR13 BR21	CR1 CR2 CR3 CR6 CR7 CR8

Contents	
Topic	Sub-topic
The glass transition and other relaxation processes	Transitions of first and second order. Relaxation processes in polymers. The complexity of the glass transition.
Melting and softening observed by DSC, DEA and rheology	Amorphous and crystalline polymers. Melting and softening. Differential scanning calorimetry Dielectric analysis Thermomechanical analysis Observed by DSC, DEA and TMA
Curing processes	Curing: Chemical Crosslinking Observation of cure by DSC, DEA and DMA.
Thermal stability by TG	Thermogravimetric analysis. Methods for evaluating the thermal stability Applications

Planning			
Methodologies / tests	Ordinary class hours	Student?s personal work hours	Total hours
Guest lecture / keynote speech	14.5	14.5	29
Laboratory practice	25	15	40
Supervised projects	2.5	22.5	25
Objective test	1	0	1
Personalized attention	5	0	5

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

Methodologies	
Methodologies	Description
Guest lecture / keynote speech	Presentation given by the professor, on a schematic basis, focusing on the main topics, covering both theoretical and practical issues.
Laboratory practice	Performance of practical activities such as demonstrations, exercises, experiments, etc..



Supervised projects	Activities whose purpose is that the students enlarge the study of the topics presented in the program and consolidate their acquired knowledge and capabilities. These activities should also help the students learn and improve their capabilities in literature survey.
Objective test	Exam that will help to evaluate the knowledge and competencies acquired by the students.

Personalized attention

Methodologies	Description
Supervised projects Guest lecture / keynote speech Laboratory practice Objective test	The personalized attention to students, understood as a support in the teaching-learning process, will take place in the hours of tutoring of the teacher.

Assessment

Methodologies	Description	Qualification
Supervised projects	Presentation (oral and written) of the supervised work.	60
Guest lecture / keynote speech	Continuous assessment through monitoring of student work in the classroom, laboratory and / or tutorials.	10
Laboratory practice	Continuous assessment through monitoring of student work in the classroom, laboratory and / or tutorials.	10
Objective test	Examination or objective test.	20

Assessment comments

--

Sources of information

Basic	
Complementary	

Recommendations

Subjects that it is recommended to have taken before

--

Subjects that are recommended to be taken simultaneously

Propiedades termomecánicas de materiais. Métodos Avanzados/730495004
--

Subjects that continue the syllabus

--

Other comments

--

(*)The teaching guide is the document in which the URV publishes the information about all its courses. It is a public document and cannot be modified. Only in exceptional cases can it be revised by the competent agent or duly revised so that it is in line with current legislation.