Teaching Guide					
Identifying Data					2023/24
Subject (*)	Mechanics of continuous media			Code	730495014
Study programme	Mestrado Universitario en Materiais Complexos: Análise Térmica e Reoloxía (plan 2012)				
Descriptors					
Cycle	Period	Year		Type	Credits
Official Master's Degree	1st four-month period	First		Optional	4
Language	English				
Teaching method	Face-to-face				
Prerequisites					
Department	Enxeñaría Naval e Industrial				
Coordinador	López Beceiro, Jorge José		E-mail	jorge.lopez.beceiro@udc.es	
Lecturers	Callan Jones, Andrew López Beceiro, Jorge José		E-mail	andrew.callan-jones@uni-paris-diderot.fr jorge.lopez.beceiro@udc.es	
Web					
General description	The course provides a thorough treatment of the continuum mechanics for liquids and solids. It is to present the different mechanical behavior of matter in the continuum limit by applying Newton's laws of motion to the solid materials (elasticity) and fluid behavior.				

Study programme competences	
Code	Study programme competences
A5	Understanding the relationships between structure and properties of materials
A7	Knowing the different types of thermal thermo-mechanical behaviors in materials subjected to fatigue
B1	Knowledge and understanding to provide a basis or opportunity for originality in developing and / or applying ideas, often in a research context
B2	The students have the skill to apply their knowledge and their ability to solve problems in new or unfamiliar contexts within broader (or multidisciplinary) contexts related to their field of study
B4	That the students can communicate their conclusions and the knowledge and last reasons behind that conclusions to specialized and non specialized audience in a clear and unambiguous way
B8	Applying a critical, logical and creative way of thinking
B9	To work autonomously with initiative
B13	Analysis-oriented attitude
B14	Ability to find and manage the information
B21	To assess the importance of research, innovation and technological developments in the socio-economic and cultural progress of society
C2	Have a good command of spoken and writing expression and understanding of a foreign language.
C6	Critically assessing the knowledge, technology and information available to solve the problems they face with.
C7	To assume as a professional and citizen the importance of learning throughout life.
C8	To assess the importance of research, innovation and technological development in the socio-economic and cultural progress of society.

Learning outcomes			
Learning outcomes	Study programme competences		
The course provides a thorough treatment of the mechanics of continuous media for fluids and solids. The aim is to present the different mechanical behavior of matter in the continuous limit. Newton's laws of motion in media with strong performance (elasticity) and / or fluid is applied.	AR5 AR7	BR1 BR2 BR4 BR8 BR9 BR13 BR14 BR21	CR2 CR6 CR7 CR8

Contents	
Topic	Sub-topic
1. Introduction to elastic modulus (Young's modulus, shear modulus, bulk modulus, ...) of a solid and a fluid viscosities	
2. Description of the displacement field in an elastic body, and velocity field in a fluid	
3. Expression of elastic energy in linear elasticity, and the rate of viscous fluid in dedisipación	
4. Description of the different apparatus for measuring or viscous elastic properties (or both) of a medium.	

Planning				
Methodologies / tests	Competencies	Ordinary class hours	Student?s personal work hours	Total hours
Guest lecture / keynote speech	A5 A7 B1 B9 B14 B21	10	18	28
Laboratory practice	B2 B4 B8 B13 C8	20	20	40
Supervised projects	B9 B13 B14 C2 C6 C7 C8	5	25	30
Personalized attention		2	0	2
(*)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 pesented 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.

Personalized attention	
Methodologies	Description
Guest lecture / keynote speech	The personalized attention to students, understood as a support in the teaching-learning process, will take place in the hours of tutoring of the professor. No academic dispensation is accepted.

Assessment			
Methodologies	Competencies	Description	**Qualification**
Guest lecture / keynote speech	A5 A7 B1 B9 B14 B21	Examination or objective test.	50
Laboratory practice	B2 B4 B8 B13 C8	Continuous assessment through monitoring of student work in the classroom, laboratory and / or tutorials.	20
Supervised projects	B9 B13 B14 C2 C6 C7 C8	Presentation (oral and written) of the supervised work.	30

Assessment comments

No academic dispensation is accepted.
The evaluation criteria for the second opportunity and the extraordinary opportunity are the same as for the first opportunity.
The fraudulent completion of exams or evaluation activities, once confirmed, will directly result in a failing grade in the session in which it occurs: the student will be awarded a 'fail' (numerical grade of 0) in the corresponding academic year session, whether the offense is committed during the first opportunity or the second. To this end, their grade will be modified in the first opportunity transcript, if necessary.

Sources of information	
Basic	Apuntes e documentación facilitada en clase ou a través do correo electrónico.
Complementary	- David J. Raymond (1999). Introduction to Continuum Mechanics. http://kestrel.nmt.edu/~raymond/classes/ph536/continuum.pdf - Basile Audoly, Yves Pomeau (2010). Elasticity and Geometry: From hair curls to the nonlinear response of shells. Osford University Press - GK Batchelor (2012). An Introduction to Fluid Dynamics. Cambridge University Press

Recommendations
Subjects that it is recommended to have taken before
Subjects that are recommended to be taken simultaneously
Subjects that continue the syllabus
Other comments
To help achieve a sustained immediate environment and meet the objective of action number 5: "Healthy and sustainable environmental and social teaching and research" of the "Green Campus Ferrol Action Plan:The delivery of the documentary work carried out in this subject:They will be requested in virtual format and/or computer supportIt will be done through Moodle, in digital format without the need to print them.If it is necessary to make them on paper:Plastics shall not be usedDouble-sided printing shall be carried out.Recycled paper will be used.Printing of drafts shall be avoided.- A sustainable use of resources and the prevention of negative impacts on the natural environment must be made.- It will work to identify and change gender biases and attitudes, and influence the environment to change them and promote values of respect and equality.- Situations of discrimination should be identified and actions and measures proposed to correct them.

(*)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.