



Teaching Guide				
Identifying Data				2021/22
Subject (*)	Computational fluid dynamics I		Code	632844205
Study programme	Mestrado Universitario en Enxeñaría da Auga (plan 2012)			
Descriptors				
Cycle	Period	Year	Type	Credits
Official Master's Degree	1st four-month period	First	Optional	6
Language	English			
Teaching method	Face-to-face			
Prerequisites				
Department	Enxeñaría Civil Matemáticas			
Coordinador	Rodríguez-Vellando Fernández-Carvajal, Pablo	E-mail	pablo.rodriguez-vellando@udc.es	
Lecturers	Cea Gomez, Luis Naves García-Rendueles, Acacia Rodríguez-Vellando Fernández-Carvajal, Pablo	E-mail	luis.cea@udc.es acacia.naves@udc.es pablo.rodriguez-vellando@udc.es	
Web	camino.udc.es/hosting/masteragua/			
General description	Fundamentals of open channel flow and computational fluid dynamics. Fundamental equations: Saint-Venant, Navier-Stokes, potential flow, stream-vorticity, Stokes flow, shallow water, convection-diffusion, Darcy,... Fundamentals of Matlab programming. Finite element programming of hydrodynamic, porous media and geochemical models. Introduction to Finite Volumes.			
Contingency plan	<p>1 Modifications to contents WITHOUT CHANGES</p> <p>2 Methodologies ? Teaching methodologies that are maintained ANY NOT SPECIFIED BELOW ? Teaching methodologies that are modified THE CLASSES WILL BE TAUGHT IN ?TEAMS? WITH SUPPORT IN MOODLE AND PVELLANDO@UDC.ES.</p> <p>3 Mechanisms for personalized attention to or students</p> <p>TEAMS: REGULAR HOURS OF CLASS AND PERSONALIZED TUTORIALS ON DEMAND MOODLE: ADDITIONAL DOCUMENTATION AND WEEKLY REVIEWS OF THE EXPOSED CONTENTS IN TEAMS PVELLANDO@UDC.ES: ON DEMAND</p> <p>4. Modifications under evaluation The weighting of the final grade and the submission of courseworks would be done electronically and would not have any modifications.</p> <p>5 Modifications of the bibliography or webgraphy WITHOUT MODIFICATIONS</p>			

Study programme competences	
Code	Study programme competences

Learning outcomes	
Learning outcomes	Study programme competences



Guest lecture / keynote speech	A1 A2 A3 A17 B8 B9 B10 B11 B12 B13 B14 B15 B1 B2 B3 B4 B5 B6 B7 B16 B17 B18 B19 C1 C2 C3 C4 C5 C6 C7 C8	30	30	60
Personalized attention		30	0	30
(*)The information in the planning table is for guidance only and does not take into account the heterogeneity of the students.				

Methodologies	
Methodologies	Description
Seminar	Practical lectures related to the theoretical aspects regarded at the magistral lectures
Guest lecture / keynote speech	Regular lectures where the main theoretical contents of the subjects are regarded

Personalized attention	
Methodologies	Description
Seminar	Personalized attention to be provided for the seminars

Assessment			
Methodologies	Competencies	Description	Qualification
Guest lecture / keynote speech	A1 A2 A3 A17 B8 B9 B10 B11 B12 B13 B14 B15 B1 B2 B3 B4 B5 B6 B7 B16 B17 B18 B19 C1 C2 C3 C4 C5 C6 C7 C8	The knowledge of the concepts developed at the magistral lectures will be assessed and considered for the final mark	50
Seminar	A1 A2 A3 A17 B8 B9 B10 B11 B12 B13 B14 B15 B1 B2 B3 B4 B5 B6 B7 B16 B17 B18 B19 C1 C2 C3 C4 C5 C6 C7 C8	The attendance to the seminars and the work being developed at the seminars will be considered for the final mark	50

Assessment comments

Sources of information	
Basic	<ul style="list-style-type: none"> - G. Carey, J. Oden (1984). Finite Elements. Prentice-Hall - A. Chadwick (1986). Hydraulics in Civil Engineering. Allen&Unwin - J. Donea (2003). Finite Element Methods for Flow Problems. Wiley - P. Gresho, R Sani (2000). Incompressible flow and the finite element method. Wiley - O. Pironneau (1989). Finite Element Methods for Fluids. Wiley - J. Puertas Agudo (2000). Apuntes de Hidráulica de Canales. Nino - Singiresu Rao (2005). The Finite Element Method in Engineering. Elsevier - O. C. Zienkiewicz, R.L. Taylor (1982). The Finite Element Method. Vol 3, Fluid dynamics. Mc Graw Hill
Complementary	

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

(*)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.