

		Teachin	g Guide		
	Identifying	g Data			2020/21
Subject (*)	Experimental hydraulics I			Code	632844204
Study programme	Mestrado Universitario en Enxeña	ría da Auga (p	olan 2012)		<u>'</u>
		Descr	riptors		
Cycle	Period	Ye	ear	Туре	Credits
Official Master's Degree	e 1st four-month period	Fi	rst	Optional	6
Language	English				
Teaching method	Face-to-face				
Prerequisites					
Department	Ciencias da Computación e Tecnoloxías da InformaciónComputaciónEnxeñaría Civil				
Coordinador	Rabuñal Dopico, Juan Ramon E-mail juan.rabunal@udc.es			udc.es	
Lecturers	Rabuñal Dopico, Juan Ramon E-mail juan.rabunal@udc.es		udc.es		
	Vázquez González, Ana María			ana.maria.vazq	uez@udc.es
Web	caminos.udc.es/hosting/masteragua/				
General description	Introduction to experimental hydra	ulics. Scale m	odels. Hydrometry.	Continuous of contro	ol crosssections. Experimental field
	techniques. Instrumentation and c	ontrol of water	treatment processe	es. Tests to obtain de	sign parameters. Know and
understand the design and construction of scale models of hydraulic structures. Understand the different techniques measurements of physical parameters (pressure, temperature, speed, etc). Knowledge and practices with constructions of the construction of scale models of hydraulic structures.				and the different techniques of	
				and practices with computer	
	systems, electronic devices and h	ydraulic data a	acquisition systems	(monitoring and cont	rol of a river basin, hydraulic
	experiments).				

Contingency plan

1. Modifications to the contents

No changes are made

2. Methodologies

*Teaching methodologies that are maintained

The same methodologies are maintained except the evaluation mechanism and the teaching that would change face-to-face by telematics through teams software

*Teaching methodologies that are modified

The written exam and practical tests are exchanged for telematic assessment tests using Moodle and Teams. This final test is necessary to carry out an individualized evaluation of each student.

3. Mechanisms for personalized attention to students

Use of Moodle to provide the material to the students. Use of the Moodle forum to communicate all the events of the subject (modifications, deliveries of practices, etc.). Synchronous teaching in class time and asynchronous through teams. Tutoring through Team chat and through email.

4. Modifications in the evaluation

*Evaluation observations:

In the case of evaluation mechanisms, with the aforementioned change of the written test, it becomes non-presential through tests on the Moodle platform

5. Modifications to the bibliography or webgraphy

No changes are made

	Study programme competences
Code	Study programme competences
A13	Knowledge of the experimental technics applied to the water engineering. Capacity to design experiments. Capacity to develop reduced
	models in the laboratory. Capacity to use different types of experimental instrumentation, including flowmeter, depth probes,
	three-dimensional speedometer, limnimeter, windlass
A14	Knowledge and understanding for design and construction of scale-models of hydraulic structures. Understanding of different technics that
	exist in the measurement of physical conditions (pressure, temperature, speed?) in the field of hydraulic knowledge of computing systems
	and electronic control and the acquisition of hydraulic data (monitoring and control of the river basin, hydraulic circuit, etc)
A20	Use and management of measuring equipment in the field and in the laboratory. Knowledge of the methodology of control process and the
	determination of design parameters for water treatment processes
B1	To resolve problems effectively
B2	To apply critical thinking, logic and creativity
В3	To work individually with initiative
B4	To communicate effectively in work surroundings
B5	Continuous recycling of knowledge in a general perspective in a global situation of water engineering
B6	Understanding of the need to analyse history to understand the present
B7	Facility to integrate in multidiscipline teams
B8	Capacity to organize and plan

В9	Capacity for analysis, synthesis and structure of information and ideas
C1	To understand the importance of the enterprising culture and to know the means at the reach of the enterprising people
C2	To value knowledge critically, technology and available information to resolve problems that they will face
C3	To assume as a professional and citizen the importance of learning throughout life
C4	To value the importance of the investigation, innovation and technology development in the social ?economic advance and cultural in society
C5	To posses and understand knowledge that gives a base or oportunity to be original in the development and for applications of ideas, often in the context of investigation
C6	The students must be able to apply the acquired knowledge and their capacity to resolve problems in new surrandings or not well known within wider contexts (or multidiscipline) related with the study area
C7	The students must be able to integrate knowledge and to affront the complexity to formulate judgements from information that, been incomplete or limited, include reflexions about social responsabilities and ethics related to the application of the knowledge and judments
C8	The students must be able to comunicate their conclusions, knowledge and the last reasons that support them, to spezialated publics and not spezialated in a clear and unambiguous way.
C9	The student must possess the learning ability with permits them to continues to study in a manner wich will be in a great measure self directed and individual

Learning outcomes			
Learning outcomes	Study	y progra	amme
	COI	mpeten	ces
Be able to perform tests and experimentation in the field of hydraulics and water quality	AC13	BC1	CC1
	AC14	BC2	CC2
	AC20	BC3	CC3
		BC4	CC4
		BC5	CC5
		BC6	CC6
		BC7	CC7
		BC8	CC8
		BC9	CC9

Contents		
Topic	Sub-topic	
1. Introduction	1.1 Introduction to testing and experimentation in hydraulics	
2. Continuous of control crosssections	2.1 Experimental field techniques.	
3. Hydrometry. Techniques for measuring and recording water	3.1 Instrumentation Systems (sensors, actuators)	
parameters (level, flow, speed, etc).	3.2 Control Modules (PLCs, data acquisition)	
	3.3 Data Transmission Systems	

	Planning			
Methodologies / tests	Competencies	Ordinary class	Student?s personal	Total hours
		hours	work hours	
Guest lecture / keynote speech	A14 B1 B2 B4 B5 B6	20	20	40
	B8 B9 C1 C2 C3 C4			
	C5 C6 C7 C8 C9			
Laboratory practice	A13 A14 A20 B1 B2	20	20	40
	B3 B4 B7 B8 B9 C2			
Objective test	A13 A14 B1 B2 B5 B6	2	8	10
	В9			
Seminar	A13 A14 A20 B1 B2	15	15	30
	B3 B5			



Personalized attention		30	0	30
(*) The information in the planning table is for guidance only and does not take into account the beterogeneity of the students.				

	Methodologies		
Methodologies	Description		
Guest lecture /	Regular lectures where the main theoretical contents of the subjects are regarded		
keynote speech			
Laboratory practice	Practical experiments related to the theoretical aspects regarded at the magistral lectures		
Objective test	Final Exam		
Seminar	Personalized attention to be provided for the semminars		
	It may be through TEAMS software program		

	Personalized attention				
Methodologies	Description				
Guest lecture /	Personalized attention to be provided for the semminars				
keynote speech					
Objective test					
Seminar					
Laboratory practice					

Assessment			
Methodologies	Competencies	Description	Qualification
Guest lecture /	A14 B1 B2 B4 B5 B6	Attendance	10
keynote speech	B8 B9 C1 C2 C3 C4		
	C5 C6 C7 C8 C9		
Objective test	A13 A14 B1 B2 B5 B6	The knowledge of the concepts developed at the magistral lectures will be assesed	30
	В9	and considered for the final mark	
Seminar	A13 A14 A20 B1 B2	Optional	10
	B3 B5		
Laboratory practice	A13 A14 A20 B1 B2	The attendance to the seminars and the work developed will be considered for the	50
	B3 B4 B7 B8 B9 C2	final mark	

Assessment comments	

	Sources of information		
Basic	- Reginald W Herschy (1999). Hydrometry : principles and practices John Wiley & Don't Sons		
	- Jacob Millman, Arvin Grabel (1998). Microelectronics: Digital and Analog Circuits and Systems. McGraw Hill Higher		
	Education		
	- Puertas Agudo, Jerónimo, Sánchez Juny, Martí (2006). Hidráulica. Universidade da Coruña		
	- Pallás, R. (1998). Sensores y acondicionadores de señal. Barcelona. Marcombo		
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.