

SUBJECT TEACHING GUIDE

G1970 - Hydraulics

Degree in Civil Engineering First Degree in Civil Engineering

Academic year 2024-2025

1. IDENTIFYING DATA					
Degree	Degree in Civil Engineering First Degree in Civil Engineering			Type and Year	Compulsory. Year 2 Compulsory. Year 2
Faculty	School of civil Engineering				
Discipline	FUNDAMENTALS OF HYDRAULIC ENGINEERING				
Course unit title and code	G1970 - Hydraulics				
Number of ECTS credits allocated	6	Term	Semester based (2)		
Web					
Language of instruction	Spanish	English Friendly	No	Mode of delivery	Face-to-face

Department	DPTO. CIENCIAS Y TECNICAS DEL AGUA Y DEL MEDIO AMBIENTE				
Name of lecturer	CESAR ALVAREZ DIAZ				
E-mail	cesar.alvarez@unican.es				
Office	E.T.S. de Ingenieros de Caminos, Canales y Puertos. Planta: + 0. DESPACHO DE CESAR ALVAREZ DIAZ (0027)				
Other lecturers	ANDRES GARCIA GOMEZ				

3.1 LEARNING OUTCOMES

- Identify the properties of fluids related to their mechanical behavior.
- Calculate the forces over a solid submerged in a static fluid.
- Calculate the efforts caused by a fluid in motion in steady state on the contours or on bodies totally or partially submerged .
- Design a piping system including hydraulic pumps and/or turbines.
- Design an open channel system.

4. OBJECTIVES

The fundamental objective of the subject is to ensure that the student is able to apply all the learning outcomes in the design, project, operation and maintenance of hydraulic structures and infrastructures, in a context of interdisciplinary work with a universal scope.

6. SUBJECT PROGRAM

CONTENTS	
1	1. Fundamental concepts on fluid properties
2	2. Fluid statics
3	3. Introduction to differential analysis of fluid motion
4	4. External flows
5	5. Pipe flow
6	6. Open channel flow

7. ASSESSMENT METHODS AND CRITERIA

Description	Type	Final Eval.	Reassessn	%
Exam 1	Written exam	No	Yes	35,00
Exam 2	Written exam	Yes	Yes	35,00
Practical application of hydraulic models	Work	No	Yes	30,00
TOTAL				100,00
Observations				
<p>As accorded by the relevant committess, as a general rule, and unless stated otherwise anywhere in this guide:</p> <ul style="list-style-type: none"> - A studente cannot request reexamination if the original grade obtained in the evaluation was not a fail . - The reexamination activity will take the same form than the original evaluation activity. <p>Grades are measured on a numerical scale going from 0 to 10, where values smaller than 5 are a Fail.</p> <p>Marks obtained in the course evaluation activities will be kept until the re-sit examination period.</p> <p>Only for duty justified reasons (e.g. sanitary restrictions) the evaluation tests may be organized remotely, with prior authorization form the Center’s Administration.</p>				
Observations for part-time students				
Part-time students will need to assist to the final exam of the subject and complete the course work activities.				

8. BIBLIOGRAPHY AND TEACHING MATERIALS

BASIC
FRANZINI, J.B.; FINNEMORE, E.J. MECÁNICA DE FLUIDOS CON APLICACIONES EN INGENIERÍA. Mc GRAW HILL. 1999
GERHART, P.; GROSS, R.; HOCHSTEIN, J. FUNDAMENTOS DE MECÁNICA DE FLUIDOS. ADDISON-WESLEY. 1995

