

SUBJECT TEACHING GUIDE

612 - Hydraulic Engineering

Master's Degree in civil Engineering, Canal and Port Engineering

Academic year 2023-2024

1. IDENTIFYING DATA					
Degree	Master's Degree in civil Engineering, Canal and Port Engineering		Type and Year	Optional. Year 2	
Faculty	School of civil Engineering				
Discipline	SPECIALITY IN WATER, ENERGY AND THE ENVIRONMENT				
Course unit title and code	612 - Hydraulic Engineering				
Number of ECTS credits allocated	3	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	ANDRES GARCIA GOMEZ			
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Other lecturers				

3.1 LEARNING OUTCOMES
- To describe and design diversion dams for water supply.
- To describe and design the main elements of a bottom intake.
- To analyze the hydraulic behavior and design the hydraulic structures needed for channel operation.
- To design erodible channels.
- To design pumping stations.
- To design the water distribution system for a sprinkler or drip irrigation system.
- To determine the type and dimensions of the main elements of a hydroelectric plant.

4. OBJECTIVES

To get students to acquire specialization in the field of hydraulic engineering to carry out the project and exploitation of hydraulic works.

6. COURSE ORGANIZATION

CONTENTS

1	RIVER DIVERSION. River intake structures. Diversion dams: types, dam design, intake design. Bottom intakes.
2	CHANNEL DESIGN: General aspects. Design of special structures: gates, side weirs, desanders, falls and rapids, flow control structures. Erodible channel design.
3	PRESSURE PIPELINES AND PUMPING STATIONS. General aspects. Air release. Water hammer protection. Design of pumping stations.
4	HYDRAULIC APPLICATIONS. Hydroelectric plants: conveyance channel and forebay, pressure tunnel, surge tank, penstock. Irrigation systems: sprinkler and drip systems, hydraulic design of laterals and mainlines.

7. ASSESSMENT METHODS AND CRITERIA

Description	Type	Final Eval.	Reassessn	%
Final exam	Written exam	Yes	Yes	40,00
Course work	Work	No	Yes	50,00
Classroom activities	Activity evaluation with Virtual Media	No	No	10,00
TOTAL				100,00

Observations

As accorded by the relevant committees, as a general rule, and unless stated otherwise anywhere in this guide:

- A student cannot request a 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.

Grades are measured on a numeric scale going from 0 to 10, where values smaller than 5 are a Fail.

Marks obtained in the course evaluation activities will be kept until the re-sit examination period.

Only for duly justified reasons (eg sanitary restrictions) the evaluation tests may be organized remotely, with prior authorization from the Center's Administration.

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

- Chow, V.T. (1982). Hidráulica de los canales abiertos. Editorial Diana.
- Cuesta, L. y Vallarino, E. (2000). Aprovechamientos Hidroeléctricos. Ed. Colegio de Ingenieros de Caminos, Canales y Puertos. Colección Senior. Madrid.
- Escribá, D. (1988). Hidráulica para ingenieros. Editorial Bellisco.
- Grupo Mecánica de Fluidos (1999). Análisis de sistemas hidráulicos aplicados al riego. Universidad Politécnica de Valencia.
- Martínez Marín, E. (trad). (2007). Diseño de pequeñas presas. Bureau of Reclamation. USA.

