

SUBJECT TEACHING GUIDE

G1572 - Water Supply and Wastewater Systems (Hydrology)

Degree in Civil Engineering

Academic year 2022-2023

1. IDENTIFYING DATA					
Degree	Degree in Civil Engineering			Type and Year	Optional. Year 4
Faculty	School of civil Engineering				
Discipline	Subject Area: Water Engineering Technology (Hydrology)				
Course unit title and code	G1572 - Water Supply and Wastewater Systems (Hydrology)				
Number of ECTS credits allocated	6	Term	Semester based (2)		
Web	http://moodle.unican.es/moodle2/course/view.php?id=908				
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	CARLOS RICO DE LA HERA				
E-mail	carlos.rico@unican.es				
Office	E.T.S. de Ingenieros de Caminos, Canales y Puertos. Planta: + 2. DESPACHO (2032)				
Other lecturers					

3.1 LEARNING OUTCOMES
- Understand and interpret the enunciation of environmental problems terminologically.
- Estimate the water demand of a population and the design flows of different water works.
- Estimate the water demand of a population and the design flows of different water works.
- Understand the operation of an WTP and design any element of it
- Know the operation of the urban water cycle.
- Design any element of the supply and sanitation systems of a population.
- Perform basic laboratory measurements of quality parameters and water pollution.

4. OBJECTIVES

Know the operation of the urban water cycle.
Calculate the demand and consumption of water in a population.
Master the concepts of quality and water pollution.
Know the operation of an WTP and design any element of it
Know the operation of an WTP and design any element of it.
Design and calculate any element of a system of supply and sanitation of a population.

6. COURSE ORGANIZATION

CONTENTS

1	Water cycle in the urban environment. Demands and consumption. Data for the design. Water captations. Conductions: Types, materials and elements. Design programs. Drives Pump technology. Pumping stations.
2	Drinking water treatment. Free Decantation Coagulation. Flocculation Special decantations Filtration. Rapid filtration Disinfection. Chlorination. Ozonization. UV
3	Storage of waters. Flow meters and other parameters. Distribution systems. Elements. Design programs. Sewer systems. Elements. Design programs. Quality and pollution in networks. Normative. Tests. Conservation and exploitation.
4	Sanitary Engineering Laboratory, visits and computer classroom.

7. ASSESSMENT METHODS AND CRITERIA

Description	Type	Final Eval.	Reassessn	%
Written exam	Written exam	No	Yes	20,00
Written exam	Written exam	Yes	Yes	40,00
Written exam	Written exam	No	Yes	30,00
Laboratoty evaluation	Others	No	No	10,00
TOTAL				100,00

Observations

In relation to the resolutions adopted at the regular session of the School Board held on June 10, 2010, it is established that, with respect to evaluation activities that have the character of recoverable:

- As a general criterion and unless otherwise specified in this guide , a student may only apply to the recovery of those activities that have not exceeded, that is, in those that have not obtained a qualification minimum of five out of ten.
- As a general criterion and unless otherwise specified in this guide , in the recovery period the procedure of evaluation of an activity will be the same as that of the activity that originates it.

Note: According to the royal decree RD 1125/2003 on the European system of credits and the system of qualifications in the university degrees of an official nature and valid throughout the national territory , the results obtained by the student in each of the subjects of the curriculum will be graded according to the following numerical scale from 0 to 10, with expression of a decimal, to which may be added the corresponding qualitative qualification:

0.0-4.9: Suspense (SS). 5.0-6.9: Approved (AP). 7.0-8.9: Notable (NT). 9.0-10: Outstanding (SB).

Observations for part-time students

In order to facilitate the evaluation systems for part-time students, given their situation, the following is proposed:

- * The possibility of attending partial evaluations if they can do so.
- * For those partial evaluations that they have not been able to attend, they will be examined at the final exam dates, both June and September, established by the School's Studies Department.

Regarding the evaluation of the practices, which represent 10% of the final grade, the following is proposed:

- * For laboratory and Epanet practices, attendance is considered mandatory, being able to attend on the scheduled dates or reaching an agreement with the faculty on other dates.
- * For the practice of visiting the WTP, the attendance is not obligatory, and you can either attend and present the report, or in agreement with the professor present the report about a specific WTP.

8. BIBLIOGRAPHY AND TEACHING MATERIALS

BASIC

- TEJERO, I.; SUAREZ, J.; JÁCOME, A.; TEMPRANO, J. (2004). "Introducción a la Ingeniería Sanitaria y Ambiental". Vol. 1 y 2. ISBN:84-89627-68-1. E.T.S.I.C.C.P., Universidad Cantabria.
- TEJERO; SUAREZ; TEMPRANO; JÁCOME; GARCÍA. (2000). Problemas de Ingeniería Sanitaria y Ambiental. ISBN: 84-607-0983-3. E.T.S.I.C.C.P. Universidad Cantabria. Universidad Coruña.
- LARRY MAYS. Manual de sistemas de distribución de agua. Mc Graw- Hill.
- PÜRSCHEL., W. (1978). El transporte y la distribución del agua. Ed. Urmo. S.A. Bilbao.
- PÜRSCHEL., W. (1976). La captación y el almacenamiento del agua potable. Ed. Urmo. S.A. Bilbao.
- PÜRSCHEL., W. (1976). Las redes urbanas de saneamiento. Ed. Urmo. S.A. Bilbao

