

SUBJECT TEACHING GUIDE

G1159 - HEALTHCARE ENGINEERING

Degree in Civil Engineering

Academic year 2021-2022

1. IDENTIFYING DATA					
Degree	Degree in Civil Engineering			Type and Year	Optional. Year 3
Faculty	School of civil Engineering				
Discipline	Subject Area: Environmental Engineering Optional Subjects: Other Specialities 1 Optional Subjects: Other Specialities 3				
Course unit title and code	G1159 - HEALTHCARE ENGINEERING				
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	JAVIER TEMPRANO GONZALEZ
E-mail	javier.temprano@unican.es
Office	E.T.S. de Ingenieros de Caminos, Canales y Puertos. Planta: + 2. DESPACHO - Area de Tecnologías del Medio Ambiente (2033)
Other lecturers	JUAN JOSE AMIEVA DEL VAL AMAYA LOBO GARCIA DE CORTAZAR

3.1 LEARNING OUTCOMES

- Understand and terminological interpret the statement of environmental problems.
- Understand and interpret a water quality analysis and evaluate it in light of the legislation.
- Estimate the water demand of a population and design flows of different works .
- Estimate the flow and contamination of a discharge of wastewater
- To evaluate the effect of contamination of a spill in a river .
- Make basic laboratory measurements of quality parameters and water pollution.
- Design and Dimensioning, with the help of all kinds of material, basic processes of wastewater treatment or sludge produced.
- Evaluate the operation, with the help of all kinds of material, basic processes of wastewater treatment or sludge

4. OBJECTIVES

The student must be able to:

- Mastering the concepts of environmental engineering: sanitary engineering, environmental management, demography, public health, toxicology, risk prevention, waste management, contaminated soils, air pollution, noise.
- Mastering the concepts of quality and water pollution, waste water, water bodies, management and control of water quality, legislation.
- Analyze and diagnose problems of water pollution and self-purification of rivers.
- Design and diagnose basic conventional systems of sewage treatment and management of sludge.
- Measuring parameters and phenomena of water pollution.

6. COURSE ORGANIZATION

CONTENTS

1	Environmental Engineering Fundamentals. Introduction to Sanitary and Environmental Engineering. Environmental Management. Demography Public health. Toxicology. Risk prevention. Introduction to Waste Management and Contaminates Soils . Noise and air pollution
2	Quality and Water Pollution. Water bodies. Water Management Natural water Water pollution. Wastewater. Water quality, his control. Water quality in rivers. Self-purification.
3	Wastewater Treatment. Introduction Pretreatments. Primary treatments. Biological treatments. Fundamentals. Trickling filters. Activated Sludge. Sludge treatment and disposal. Thickening. Sludge Stabilization Dewatering and sludge disposal. Introduction to small communities wastewater treatment.
4	Sanitary Engineering Laboratory, visits and computer classroom.

7. ASSESSMENT METHODS AND CRITERIA

Description	Type	Final Eval.	Reassessn	%
Evaluation method Description Partial Exam 2	Written exam	No	Yes	30,00
Evaluation method Description Partial Exam 1	Written exam	No	Yes	20,00
Evaluation method Description Partial Exam 3	Written exam	Yes	Yes	40,00
Evaluation method Description Laboratory	Laboratory evaluation	No	No	10,00
TOTAL				100,00
Observations				
<p>In connection with the resolutions adopted at the regular meeting of the School Board held on June 10, 2010, it states that, with respect to evaluation activities having the character of recoverable,</p> <ul style="list-style-type: none"> • As a general and except criterion in this guide is a different thing , a student may be submitted only to the recovery of those activities that has not passed, ie, which has not obtained a minimum score of five out of ten specified. • As a general and except criterion in this guide a different thing specified in the recovery period the assessment procedure of an activity shall be the same as the activity that originates. <p>Note: According to the Royal Decree RD 1125/2003 on the European credit system and the grading system in official university qualifications and valid throughout the national territory, the results obtained by the student in each of the subjects of the plan studies were graded according to the following numerical scale from 0 to 10, with one decimal, which may be added corresponding qualitative rating: 0.0 to 4.9: Suspense (SS). 5.0 to 6.9: Approved (AP). 7.0 to 8.9: Notable (NT). 9.0 to 10: Outstanding (SB).</p>				
Observations for part-time students				
Part-time students must attend the lab and get over it and will be assessed by final exam.				

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,

