

## SUBJECT TEACHING GUIDE

### 522 - Risk Analysis of Contamination of Surface Waters

#### Master's Degree in Coasts and Ports

Academic year 2023-2024

1. IDENTIFYING DATA					
Degree	Master's Degree in Coasts and Ports			Type and Year	Optional. Year 1
Faculty	School of civil Engineering				
Discipline					
Course unit title and code	522 - Risk Analysis of Contamination of Surface Waters				
Number of ECTS credits allocated	3	Term	Semester based (2)		
Web					
Language of instruction	Spanish	English Friendly	Yes	Mode of delivery	Face-to-face

Department	DPTO. CIENCIAS Y TECNICAS DEL AGUA Y DEL MEDIO AMBIENTE
Name of lecturer	MARIA SONIA CASTANEDO BARCENA
E-mail	sonia.castanedo@unican.es
Office	E.T.S. de Ingenieros de Caminos, Canales y Puertos. Planta: + 0. DESPACHO MARIA SONIA CASTANEDO BARCENA (0048)
Other lecturers	ALBA RICONDO CUEVA

### 3.1 LEARNING OUTCOMES

- The student will know the different types of natural and anthropic hazards to which aquatic systems are exposed.
- The student will know the main impacts derived from geological processes, hydrometeorological processes and the contamination of surface waters.
- The student will understand and will be able to assess the risk components: hazard, exposure and vulnerability.
- The student will know the main hazards related to surface waters pollution and the existing tools to assess the associated risk
- The student will be able to propose mitigation and adaptation measures to different types of risks related to water systems.
- The student will be able to synthesize, present in public, discuss and defend ideas and / or results on topics proposed by the teacher in relation to risk management.

### 4. OBJECTIVES

- The general objective of the subject is to know the different types of risk of contamination of surface waters , both of natural origin and those derived from human activities, as well as the methodologies for risk assessment.
- To be able to identify and analyze threats
  - To be able to assess vulnerability, exposure, and risk
  - To be able to analyze the outputs of hazard modeling, vulnerability assessment and risk estimation, in order to be able to design risk reduction measures.

### 6. COURSE ORGANIZATION

CONTENTS	
1	Introduction; Methodologies; Data and tools; Risk reduction measures.
2	Presenting the case study. Hazard assessment.
3	Vulnerability and risk assessment. Presentation of the results.

7. ASSESSMENT METHODS AND CRITERIA				
Description	Type	Final Eval.	Reassessn	%
Presentation of the results of the case study	Work	No	Yes	100,00
TOTAL				100,00
Observations				
<p>Only for duly justified causes (eg health restrictions) the evaluation may be organized remotely, with prior authorization from the Direction of the School.</p> <p>In relation to the agreements adopted at the ordinary session of the School Board held on June 10, 2010, it is established that, with respect to evaluation activities that are recoverable,</p> <ul style="list-style-type: none"> <li>- As a general criterion and unless a different thing is specified in this guide , a student may only recover those activities that he/she has not passed, that is, in which he/she has not obtained a minimum grade of 5/10.</li> <li>- As a general criterion and unless a different thing is specified in this guide , in the recovery period the evaluation procedure of an activity will be the same as that of the activity that originates it.</li> </ul> <p>Note: according to R.D 1125/2003 on the European credit system and the grading system for official university degrees and valid throughout the national territory, the results obtained by the student in each of the subjects of the Studies Plan will be graded according to the following numerical scale from 0 to 10, with the expression of a decimal, to which their corresponding qualitative qualification may be added: 0,0 - 4,9: Suspenso (SS). 5,0-6,9: Aprobado (AP). 7,0-8,9; Notable (NT). 9,0-10: Sobresaliente (SB)</p>				
Observations for part-time students				
Part-time students will apply the same assessment criteria as full-time students. The temporary distribution of activities will be adapted to the particular conditions of each student when deemed necessary.				

8. BIBLIOGRAPHY AND TEACHING MATERIALS
BASIC
Schneiderbauer, S. and Ehrlich, D. (2004) Risk, hazard and people's vulnerability to natural hazards . A review of definitions, concepts and data. European Commission. Joint Research Centre. Luxemburgo. ISBN 92-894-8732-1.
Castanedo, S., Juanes J.A., Medina R., Puente, A., Fernández F., Olabarrieta, M., Pombo, C. (2009) Oil spill vulnerability assessment integrating physical, biological and socio-economical aspects: application to the Cantabrian coast (Bay of Biscay, Spain). Journal of Environmental Management, Vol 91, pp. 149-159.
Abascal, A.J., Castanedo,S., Medina, R. y Liste, M. (2010) Analysis of the reliability of a statistical oil spill response model. Marine Pollution Bulletin, 60, pp. 2099–2110.
Handbook of Environmental Risk Assessment and Management. Peter P. Calow (Editor) ISBN: 978-0-86542-732-7. 600 pages. November 1997, Wiley-Blackwell