

SUBJECT TEACHING GUIDE

540 - Tools for Risk Assessment

Master's Degree in Coasts and Ports

Academic year 2024-2025

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	540 - Tools for Risk Assessment				
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	JAVIER MARIA SANCHEZ ESPESO				
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Office	E.T.S. de Ingenieros de Caminos, Canales y Puertos. Planta: + 2. DESPACHO PROFESOR (2037)				
Other lecturers					

3.1 LEARNING OUTCOMES
- Terminology and basic concepts about Geographic information systems.
- Analysis tools in vector and raster environments
- Management and modeling digital terrain models.
- Practical cases of risk assessment: flood, environmental, or surface water contamination.
- To know the main tools and methodologies to assess the risk generated, both on human resources and on the economy and aquatic ecosystems.
- Knowledge of the main spatial and thematic data repositories of interest in the discipline. (SDI)

4. OBJECTIVES

Know and know how to manage spatial information using GIS tools and methodologies.
From the available spatial and thematic information, be able to manage it adequately to obtain appropriate exposure, vulnerability and risk indicators.
Design, develop and interpret spatial information analysis using GIS methodologies oriented to risk assessment in the coastal and port environment.

6. SUBJECT PROGRAM

CONTENTS

1	Vector GIS. Concepts. Components. Digital cartography. Alphanumeric databases. Introduction to the work environment: basic functionalities. Preparation of the GIS data model. Editing. Topology. Catalog of basic analysis tools. Reference systems. Automation.
2	Raster GIS. Basic concepts. Basic analysis tools: queries, classifications, map algebra, functions. Three-dimensional terrain models. Analysis and spatial modeling of continuous variables.
3	Case studies in the risk assessment.

7. ASSESSMENT METHODS AND CRITERIA

Description	Type	Final Eval.	Reassessn	%
Vector GIS projects	Work	No	No	20,00
Raster GIS projects	Work	No	No	20,00
Final Project	Work	Yes	Yes	50,00
Final exam	Activity evaluation with Virtual Media	Yes	No	10,00
TOTAL				100,00
Observations				
Attendance to 75% of the classes will be mandatory for the presentation of the work. Only for duly justified causes (eg sanitary restrictions), the evaluations may be organized remotely, with prior authorization from the Center's Directorate.				
Observations for part-time students				
The same evaluation criteria will be applied to part-time students as to full-time students. The time distribution of activities will be adapted to the particular conditions of each student when deemed necessary.				

8. BIBLIOGRAPHY AND TEACHING MATERIALS

BASIC

HARMON, J.E. y ANDERSON, S. 2003. The design and Implementation of Geographic Information Systems. John Wiley & Sons, Hoboken, New Jersey.

BERNHARDSEN, T. 2002. Geographic Information Systems. John Wiley & Sons, New York.

BOSQUE SENDRA, J. 2000. Sistemas de Información Geográfica. 3ª Ed. Rialp, Madrid.

BURROUGH, P.A y MCDONNELL, R. 1998. Principles of Geographical Information Systems (Spatial Information Systems and Geostatistics). Oxford University Press. Oxford.

LONGLEY, P.A., GOODCHILD, M.F., MAGUIRE, D.J. y RHIND, D.W. 2005. Geographic Information Systems and Science. 2ª Ed. John Wiley & Sons. Chichester.