SUBJECT TEACHING GUIDE

M1865 - Tools for Risk Assessment

Master's degree in coast and port engineering

Academic year 2016-2017

1. IDENTIFYING DATA					
Degree	Master's degree in coast and port engineering			Type and Year	Optional. Year 1
Faculty	School of civil Engineering				
Discipline					
Course unit title and code	M1865 - Tools for Risk Assessment				
Number of ECTS credits allocated	3	Term	Term based (3)		
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. Ingenieros de Caminos, C.P.. 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.
- Using models of spatial interpolation
- Case studies risk assessment: geological, hydrometeorological and surface water contamination.
- Be able to evaluate the different components of risk: hazard, vulnerability, exposure, etc.
- Know the main tools and methodologies for assessing the risk generated both on human resources, as on the economy and aquatic ecosystems.

4. OBJECTIVES

Know and manage spatial information using the tools and methodologies of GIS.

Design, develop and interpret spatial information analysis using GIS methodologies oriented risk assessment in the Coastal and Port Engineering.

6. COURSE ORGANIZATION

	CONTENTS
1	Vector GIS. Concepts. Components. Digital mapping. Alphanumeric databases. Introduction to the working environment: basic functionality. Preparation of GIS data model. Edition. Topology. Catalog of basic analysis tools. Reference systems. Automation.
2	Raster GIS. Basic concepts. Basic analysis tools: queries, classification, map algebra functions. Three-dimensional terrain models. Spatial analysis and modeling of continuous variables. Interpolation models
3	Case studies in the risk assessment.

7. ASSESSMENT METHODS AND CRITERIA

Description	Type	Final Eval.	Reassessn	%
Vector GIS projects	Work	No	No	15,00
Vector GIS test	Activity evaluation with Virtual Media	No	No	5,00
Raster GIS projects	Work	No	No	15,00
Raster GIS test	Activity evaluation with Virtual Media	No	No	5,00
Final Project	Work	Yes	Yes	50,00
Final exam	Activity evaluation with Virtual Media	Yes	No	10,00
TOTAL				100,00

Observations

For the presentation of the work will be compulsory to attend 70% of classes

Observations for part-time students

The evaluation will consist of two types of activities:
1.- Final work, corresponding to the characteristics applications. Percentage: 40%. minimum grade: 4.
2.- Final exam. Consisting of the following tests:
- Theoretical exam - laboratory, vector. Percentage: 30%. minimum grade: 4.
- Theoretical exam - laboratory, raster. Percentage: 30%. minimum grade: 4.

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.