SUBJECT TEACHING GUIDE

M1469 - Geographic Information Systems for Civil Engineering

Master's Degree in Civil Engineering

Academic year 2019-2020

1. IDENTIFYING DATA					
Degree	Master's Degree in Civil Engineering			Type and Year	Optional. Year 2
Faculty	School of civil Engineering				
Discipline	Optional Training				
Course unit title and code	M1469 - Geographic Information Systems for Civil Engineering				
Number of ECTS credits allocated	3	Term		Semester based (1)	
Web					
Language of instruction	Spanish	English Friendly	No	Mode of delivery	Face-to-face

Department	DPTO. INGENIERIA GEOGRAFICA Y TECNICAS DE EXPRESION GRAFICA
Name of lecturer	CRISTINA MANCHADO DEL VAL
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Other lecturers	JAVIER MARIA SANCHEZ ESPESO

3.1 LEARNING OUTCOMES
- Terminology and basic concepts about Geographic information systems.
- Analysis tools in vector and raster environments.
- Application to Environment impact assessment studies
- Application to territorial organization.
- Application to visibility analysis
- Application to hydraulic characterization

4. OBJECTIVES

Ability to manage spatial information through GIS tools and methodologies used.

Design and develop particular engineering problems.

6. COURSE ORGANIZATION

CONTENTS	
1	Geographic information systems (vector format). Concepts and basic tools of analysis. Typical methodologies of analysis.
2	Geographic information systems (raster format). Concepts and basic tools of analysis. Typical methodologies of analysis.
3	Case studies. Multi-criteria analysis for site selection. Viewshed analysis. Hydrological analysis. Analysis of optimal paths.

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 test	Activity evaluation with Virtual Media	Yes	No	10,00
TOTAL				100,00

Observations

Control of attendance and performance in class

Observations for part-time students

The evaluation will consist of two types of activities:
1. Final work, corresponding to the vector and raster blocks. 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

Bernhardsen, T. (2002). Geographic Information Systems. John Wiley & Sons, New York.

Burrough, P.A; Mcdonnell, R. (1998). Principles of Geographical Information Systems (Spatial Information Systems and Geostatistics). Oxford University Press. Oxford.

HarmoN, J.E.; Anderson, S. (2003). The design and Implementation of Geographic Information Systems. John Wiley & Sons, Hoboken, New Jersey.

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.