SUBJECT TEACHING GUIDE

5199 - Geographical Information Systems I (Raster)

Degree in Geography and Land Planning

Academic year 2024-2025

1. IDENTIFYING DATA					
Degree	Degree in Geography and Land Planning			Type and Year	Compulsory. Year 3
Faculty	Faculty of Humanities				
Discipline	Technical Fundamentals in Geography and Land Use Planning Technical Subjects in Geography				
Course unit title and code	5199 - Geographical Information Systems I (Raster)				
Number of ECTS credits allocated	6	Term		Semester based (1)	
Web	https://aulavirtual.unican.es/				
Language of instruction	Spanish	English Friendly	Yes	Mode of delivery	Face-to-face

Department	DPTO. GEOGRAFIA, URBANISMO Y ORDENACION DEL TERRITORIO
Name of lecturer	OLGA DE COS GUERRA
E-mail	olga.decos@unican.es
Office	E.T.S. de Ingenieros de Caminos, Canales y Puertos. Planta: + 2. DESPACHO PROFESORES (2008)
Other lecturers	

3.1 LEARNING OUTCOMES
- To understand concepts, techniques and GIS methods, especially spatial analysis methodologies based on raster model.
- To know technical concepts about the GIS software that we use in the practical classes.
- To know fundamentals of raster model to work with different GIS softwares.
- To apply raster spatial analysis to solve complex problems.
- To develop cartographic models to solve spatial problems with many criteria.
- To represent and to interpret maps obtained using GIS technologies.

4. OBJECTIVES

To approach students to GIS, especially in raster model, in a technical and instrumental way.

To provide students basics concepts of "GIS philosophy", which is necessary to design, model and develop applied GIS works.

To train students to solve spatial problems using GIS, when several criteria are necessary in spatial analysis operations.

6. SUBJECT PROGRAM

CONTENTS	
1	GEOGRAPHICAL INFORMATION SYSTEMS NOWADAYS: MAIN TRENDS
2	GEOGRAPHICAL INFORMATION: ACCESS TO SOURCES, FILES AND RASTER DATA STRUCTURES
3	GIS AND DIGITAL ELEVATION MODELS: GENERATION AND ANALYSIS OPERATIONS
4	MANAGEMENT GEOGRAPHICAL INFORMATION USING GIS
5	CALCULATE AREA, PERIMETER AND SPATIAL STATISTICS USING GIS RASTER
6	DISTANCE ANALYSIS AND MINIMUM COST ROUTES, USING GIS RASTER
7	CARTOGRAPHIC MODELS: CONCEPTS AND METHODS
8	MULTICRITERIA EVALUATION AND FUZZY LOGIC
9	SOLVING COMPLEX SPATIAL PROBLEMS USING GIS

7. ASSESSMENT METHODS AND CRITERIA

Description	Type	Final Eval.	Reassessn	%
Continuous assessment activities in theoretical classes to understand GIS philosophy.	Others	No	Yes	20,00
Continuous practical assessment. It refers not only to the implementation of practical exercises in the computer lab classes, but also non-classroom work.	Others	No	No	5,00
Theoretical exam. A minimum score of 4 points is required to calculate the final average in the subject.	Written exam	Yes	Yes	30,00
Practical exam. To solve spatial problems using GIS. A minimum score of 4 points is required to calculate the final average in the subject.	Laboratory evaluation	Yes	Yes	30,00
Workshop on spatial problem solving using GIS	Work	No	Yes	15,00
TOTAL				100,00

Observations

To calculate the final grade in the subject is necessary that students get at least 4 points of 10 in theoretical and practical exams.
Continuous assessment activities can not be retrieved, therefore in de extraordinary convocatory the mark obtained in the course will be kept if the student past. If not, the extraordinary exam will include additional exercises to complete the mark.

Observations for part-time students

Part-time students will be attended according to the internal regulations of the UC

8. BIBLIOGRAPHY AND TEACHING MATERIALS
BASIC
BOSQUE SENDRA, J. et al. (1994): Sistemas de Información Geográfica. Madrid, Rama.
GUTIERREZ PUEBLA, J. y GOULD, M. (1994): SIG: Los Sistemas de Información Geográfica. Madrid, Síntesis.
GvSIG Asociación. Manual de usuario 2.3. Versión accesible on line: http://downloads.gvsig.org/download/web/es/build/html/user_manual/2.3/index.html
LONGLEY, P., GOODCHILD M.F., MAGUIRRE, D.J., RHIND, D.W. (2011): Geographic Information Systems and Science. Chichester: John Wiley & Sons.
OLAYA, V. (2020): Sistemas de Información Geográfica. Licencia Creative Common Atribución. 642 p. Disponible en: https://volaya.github.io/libro-sig/index.html