

**Modelling and Analysing Geographical Information**

Code: 102829  
ECTS Credits: 6

Degree	Type	Year	Semester
2501915 Environmental Sciences	OT	4	0

### Contact

Name: Lluís Pesquer Mayos  
Email: Lluís.Pesquer@uab.cat

### Use of languages

Principal working language: catalan (cat)  
Some groups entirely in English: No  
Some groups entirely in Catalan: Yes  
Some groups entirely in Spanish: No

### Other comments on languages

The presentations and explanations of the theory part are in English.

### Prerequisites

The previous matter "Cartografia i Fotointerpretació" (Cartography and Fotointerpretation) is strongly recommended, but not absolutely needed.

A minimum English level is needed, reading and listening. Most of Bibliography and the Theory part are in English.

### Objectives and Contextualisation

The purpose of teaching Geographic Information Systems (GIS) is to achieve solid knowledge based on the methodological foundations. This subject is an introduction to the domain of GIS and the general level of geographic information. It is not intended to train in a specific software. The aim is the understanding of fundamental aspects related to how to handle and analyze the data located on the territory. At the end of this course, it is necessary to know how to apply the skills achieved, through the consolidation of both theoretical and practical aspects developed, to the application needs raised from other subjects. This implies not only how to use GIS, but also understand what is done when using them and why they are used.

With this aim, a dual purpose is considered associated with the **theoretical-practical content** of the subject. On the one hand, the conceptual context that revolves around the GIS, and, on the other, the set of skills that require the use of GIS. On a global approach, it is intended that you know and understand what the GIS is, how they work and when they are to be used.

At the conceptual level the following objectives are formulated:

- Understanding the nature of geographic information systems (definition and characteristics)
- Knowledge and understanding of the two data structures used to model reality (vector and raster data structures)
- Knowledge and understanding about how to introduce, structure and store geographical information
- Knowledge and understanding of the main functionalities of GIS handling and analysis carried out to solve different questions

- Knowledge about the main sources of data from GIS
- Knowledge and skills on the main GIS applications

In the second case, the acquisition of skills for being able to use a GIS, is not intended to show technique for the technique, but to raise awareness of what can be done, how to do it and what to apply it. The objectives we can specify them in the following way:

- Understanding and knowledge about how to take advantage of information systems as an instrument to obtain answers to certain types of questions
- Knowledge about what types of operations are appropriate in each case to solve certain needs
- Acquisition of practical expertise in the resolution of characteristic problems of this discipline

From the objectives defined above, it is intended that there is a continuous interaction between theory and practice.

## **Content**

Block 1: The geographical information

- Unit 1: Information about the territory and located phenomena in the territory
- Unit 2: Geographic and non-geographic entities
- Unit 3: The value of geographic information

Block 2: Georeferencing

- Unit 1: Localization as a factor of relationship
- Unit 2: The basic methods on georeferencing
- Unit 3: Main reference systems

Block 3: GIS data models

- Unit 1: The map as a model of the real world
- Unit 2: The raster model
- Unit 3: The vector model

Block 4: The use of GIS. Spatial analysis

- Unit 1: Geoprocessing
- Unit 2: Spatial analysis
- Unit 3: Introduction to Remote Sensing