Universidad Zaragoza

Academic Year/course: 2023/24

28317 - Geographical information systems

Syllabus Information

Academic year: 2023/24
Subject: 28317 - Geographical information systems
Faculty / School: 103 - Facultad de Filosofía y Letras
Degree: 419 - Degree in Geography and Land Management
ECTS: 9.0
Year: 2
Semester: Annual
Subject type: Compulsory
Module:

1. General information

The goals of this subject is to provide the conceptual foundations of geographic information and the methods and techniques for its modeling with geographic information systems (GIS). The focus is on the connection between the structure of geographic information and GIS data models. The objectives include that students acquire a intermediate level of GIS software. The contents of this subject are transversal to all the Objectives of Sustainable Development.

This subject, which forms part of the "Tools and techniques" module of the degree syllabus, provides an in-depth knowledge and handling of technologies for the assessment, modelling and spatial analysis of geographic information, which is a crucial aspect of the geographer's comprehensive training.

2. Learning results

1. Describe the geographic space through the concepts and terms used to build operational models in the GIS.

2. Elaborate a conceptual model of a portion of the Earth's surface and express it through text and graphics and conventions of the scientific modeling area.

3. Apply the principles of database construction to the organization and structuring of geographic data.

4. Use a GIS program to model a problem of a territorial nature, using the principles and elements of the data models in the field of GIS and that can be implemented using a GIS program.

5. Apply basic spatial analysis techniques in a manner appropriate to the context of their use.

6. Manage a GIS software to carry out spatial analysis of GIS data, with a medium degree of difficulty.

7. Produce documents of medium complexity, composed of text, maps, graphs and tables, to communicate clearly and unambiguously the design specifications of a GIS application data model, as well as its results.

8. Participate in a team to develop a work project focused on the use of geographic information systems.

3. Syllabus

Subject area I: Introduction. Data models. Data management and organization

1.Context, components, definition, and applications of geographic information systems

2. The representation of geographic space in GIS: Data models

3. Obtaining and organizing information. Creation and maintenance of geographic databases

Thematic area II: Spatial analysis and visualization functions

4. GIS and geographic analysis: basic concepts

5. Introduction to vector data analysis

6. Basic modeling and analysis with raster data

7. Visualization of geographic data in GIS

4. Academic activities

The program offers the students help to achieve the expected results and comprises the following activities:

1. Theoretical and practical sessions in the classroom.

2. Individual practical activities in the classroom with a GIS program. They are carried out in two groups.

3. Supervised internship work (preferably done in a team).

4. Field work. Visit to the facilities of the Geographic Institute of Aragon (IGEAR). Didactic visit with the purpose of that students learn about the facilities and work organization in a public service in charge of elaborating, structuring and publishing geographic information

5. Personal study.

6. Assessment tests.

5. Assessment system

A) Continuous assessment

-Written tests 1 and 2 (written test of the first block: 20%; written test of the second block: 30%): consist of questions of different types on the contents of each block. Minimum qualification to pass each of the tests: 4.

-Evaluation tests of the practical classes (50% of the final grade). They consist of four tests with practical exercises on the contents developed in the practical classes and a group work. Weighting of each test: 10%. Minimum average grade of the five practical tests: 4.

B) Global evaluation test

1. A written test of the theoretical and practical contents of the course, consisting of questions of different types and exercises (90% of the final grade). Minimum qualification to pass this test: 5

2. Individual practical work (10% of the final grade) Minimum grade to pass this test: 4.

C) Evaluation criteria. Written tests: correctness of answers, relevance and rigor of concepts, logical order of contents, accuracy of terminology. Practical work: correctness of the structure; accuracy in the definition of the objectives; adequacy and correctness of the methodology; relevance of the data model used and of the functions applied.