

# 66714 - Applied to the Resolution of Environmental Problems Cartography

## Syllabus Information

**Academic year:** 2023/24

**Subject:** 66714 - Applied to the Resolution of Environmental Problems Cartography

**Faculty / School:** 103 - Facultad de Filosofía y Letras

**Degree:** 328 - Master's in Land and Environmental Planning

**ECTS:** 6.0

**Year:** 1

**Semester:** Annual

**Subject type:**

**Module:**

### 1. General information

This subject is supported by the subject "Cartography and new technologies for territorial and environmental management", in which the basic instrumental knowledge of Cartography and Geographic Information Systems is acquired. The subject "Cartography applied to the resolution of environmental problems" moves forward in the use of these tools and applies them to the analysis and resolution of more specific environmental issues.

Specifically, the fundamental objectives of this subject are:

- To provide the fundamental concepts and principles of cartography and environmental mapping.
- To manage the methods and techniques necessary for the creation of environmental cartography through the use of Geographic Information Systems.
- To manage and build models for territorial analysis based on environmental cartography.

These approaches and goals are aligned with the following Sustainable Development Goals (SDGs):

Goal 8: Decent Work and Economic Growth

Goal 13: Climate Action

Goal 15: Life of Terrestrial Ecosystems

### 2. Learning results

Upon completion of this subject, the student will be able to:

- Master the advanced techniques for the creation of cartography applied to the resolution of environmental problems.
- Correctly manage the necessary information for the creation of cartography on environmental problems.
- Work in multidisciplinary teams to solve environmental problems through the use of cartographic tools.
- Adequately prepare reports integrating cartography with diagnosis and proposed solutions to specific environmental problems.
- Commit themselves with a permanent training that allows them to correctly assimilate the rapid innovations that occur in this field.

### 3. Syllabus

#### 1. Cartography

1.1. Introduction: context, components, definition and types

1.2. Cartographic fundamentals

1.3. Environmental mapping: definition and characteristics

#### 2. Principles, instruments and methods for collecting spatial information

2.1. Direct methods: measurement and accuracies of satellite navigation systems

2.2. Indirect methods: georeferencing of historical cartography and orthophotographs

2.3. Indirect methods: Web Services

#### 3. Analysis and raster modelling of environmental information

3.1. Construction of digital elevation models

3.2. Main analysis and modelling tools

3.3. Map algebra

4. Cartographic edition

5. Cartographic publication

6. Preparation of reports and projects

### 4. Academic activities

Given the fully applied nature of the subject, the proposed learning process is supported by eminently practical training activities. The theoretical sessions are used to present the basic concepts of the subject and to approach the search and consultation of cartographic information servers. In the practical sessions, case studies are presented whose solution requires the application of different methodologies and tools.

In addition, project-based learning is proposed as an essential activity in order to achieve several of the fundamental competencies both in this subject and in the master's program. Part of this activity will be developed within the classroom sessions, and another part as an academically directed activity.

## 5. Assessment system

The assessment of the subject is of a global nature and consists of the following tests:

a. Test 1: Cartography applied to the resolution of an environmental problem.

The cartography will be done individually or in groups and will be presented in digital support. The weight of this activity in the final grade will be 70%.

The assessment criteria will be: a) in relation to environmental cartography: correct application of the proposed methodology, b) in relation to cartographic design: the inclusion and correctness of all the elements that should accompany a map and the suitability in the choice of symbols, frames and/or colours; c) the final composition of the map (maps, photographs, etc. that help to situate or complement the main map, and the correct distribution of all cartographic elements).

b. Test 2: Report.

This report, carried out individually or as part of a group, will present the problems raised, the methodology used to prepare the cartography, the diagnosis derived from the analysis of the cartography, and a proposal for land use in accordance with the results obtained.

The report will be presented in digital format and its weight in the final grade will be 30%. Among the evaluation criteria considered are the ability to synthesize, clarity of exposition and writing, precision in the handling of the concepts of the subject matter, and the correctness and timeliness of the proposals made.