Universidad Zaragoza

**Academic Year/course: 2023/24**

# 28914 - Topography, cartography and photogrammetry

## Syllabus Information

**Academic year:** 2023/24
**Subject:** 28914 - Topography, cartography and photogrammetry
**Faculty / School:** 201 - Escuela Politécnica Superior
**Degree:** 583 - Degree in Rural and Agri-Food Engineering
**ECTS:** 6.0
**Year:** 2
**Semester:** First semester
**Subject type:** Compulsory
**Module:**

## 1. General information

In the subject of topography, cartography and photogrammetry the student will learn how to take data from the terrain to manage and execute engineering projects. The student will learn to know the forms of representation of the territory and how to obtain the information necessary for its management and the methods and instruments that can be used to acquire this information. With this information, you will learn how to process and manage terrain data to develop civil engineering projects and how these projects are planned and materialized in the field.

These approaches and objectives are aligned with the Sustainable Development Goals (SDGs) of the 2030 Agenda of United Nations , to the extent that topography, mapping and photogrammetry is a tool that allows projecting and visualizing information and spatial distribution of different phenomena that can reflect and analyze the degree of achievement of all SDG targets, specifically SDG Goal 4, which ensures inclusive and equitable and quality education and promotes lifelong and lifewide learning opportunities for all.

## 2. Learning results

- Knowledge of the different cartographic systems
- Perform cartographic analysis using Geographic Information Systems
- Elaborate and interpret the graphic documentation of a project, referring to the topography of the terrain.
- Work with the different types of surveying instruments.
- To carry out the graphic survey of the terrain, as well as for the staking out of civil works projects.
- Handle specific computer applications for topography and computer-aided civil works design.
- Use of photogrammetric techniques by means of drones to obtain cartography.

## 3. Syllabus

Unit 1: Graphic expression and Topography

Unit 2: Geodesy and cartographic systems: Coordinate System.

Unit 3: Geographic Information Systems.

Unit 4: Computer tools for civil works design

Unit 5: Topographic instruments and measuring elements in surveying and stakeout. The Total Station and Level Unit 6: Topographic methods in surveys and stakeout.

Unit 7: GNSS satellite surveying and stakeout systems.

Unit 8: Topography with airborne sensors. Photogrammetry with Drones (UAV)

## 4. Academic activities

**Lectures 5.00 hours**

Theoretical-practical sessions in which the contents of the subject will be explained.

**Laboratory practice 10.00 hours**

Students will practice with the assistance of computers.

**Special practices 45.00 hours**

Sessions in the field taking data with different topographic instruments.

**Academic works: 20,00 hours.**

**Study 65.00 hours**

**Assessment tests 5.00 hours**

## 5. Assessment system

At the beginning of the subject the student will choose one of the following two assessment methodologies:

Continuous assessment system: characterized by the obligation to perform and pass the practical tests, partial exams and academic work proposed in the subject, within the deadlines established for this purpose. To be eligible for the Continuous Assessment system, at least 80% of the classroom activities must be attended.

In the continuous assessment model, the teacher will assess the student's participation in the theoretical classes, the demonstration of the knowledge acquired and the ability to solve problems that the teacher will observe in the practical classes. Likewise, will also evaluate the work/projects carried out by the student. Finally, the student will have to take several written or practical tests for each of the parts of the subject.

The weights of the parts as a guideline in the continuous assessment process are as follows:

- Oral tests in theory classes 5%
- Oral tests in practical classes 5%
- Theoretical exams 45%
- Practical work 20%
- Practical test 25%

The student's grade will be the weighted average of these parts and the subject will be passed if a grade higher than 5 out of 10 points is achieved.

Any student, who does not pass the minimum requirements of the practical tests, exams or academic work or voluntarily renounces to the continuous assessment model, will automatically pass to the non-continuous assessment mode.

Non-continuous assessment system: The student has to take a global test. The overall test will consist of a written test of theoretical questions and problems. In order to pass the subject, this global test must be passed with a grade of 5 out of 10 points.

The success rates of the subject in the last 3 years are as follows: 2019/20 100,00%, 2020/2021 96,77%, 2021/22 100,00%