Universidad Zaragoza

Year : 2019/20

28716 - Topography

Syllabus Information

Academic Year: 2019/20
Subject: 28716 - Topography
Faculty / School: 175 -

Degree: 423 - Bachelor's Degree in Civil Engineering

ECTS: 6.0
Year: 2
Semester: First semester
Subject Type: Compulsory
Module: ---

1.General information

1.1.Aims of the course

- The subject and its expected results respond to the following approaches and objectives:
- The topography allows us to know and manage the land on which the civil engineering projects are executed. It is an essential tool to be able to design and manage the activities that the civil engineer must undertake in relation to the terrain.
- This subject must ensure that the student is able to know:
- The forms of representation of our planet.
- How to obtain the necessary information to manage a territory.
- What methodology and equipment can we use to acquire this information.
- How to process and manage the terrain data to elaborate civil engineering projects.
- How to rethink such projects on the ground.

1.2.Context and importance of this course in the degree

The degree of Civil Engineering works on the territory. That is why you need an instrumental subject that allows you to take data from that territory, as well as graphically represent them for their proper use, or for their use through spreadsheets and databases. It must also achieve the skills of the definition and design of the works that the engineer designs on the territory and rethink them, at the same time as managing the territory.

The Topography signature takes place in the third semester, after having acquired the competences provided by subjects from the area of ??knowledge of graphic expression and other basic subjects.

Likewise, the Topography must be considered as an essential tool for the acquisition of a significant number of competences that the Civil Engineering student must acquire through other subjects of this degree, which the student must take in the following semesters. We must consider that this subject will provide the student with the necessary skills to represent our planet, obtain information from the territory using the most appropriate methodologies and

equipment to be able to process this information in the elaboration of projects and their subsequent execution, by means of a correct rethinking.

1.3.Recommendations to take this course

To take this subject with use, it is recommended to have previous knowledge of:

Methods and systems of environment representation, bounded systems and level curves.
Trigonometry.
Concept and management of scales.
CAD application.

2.Learning goals

2.1.Competences

2.2.Learning goals

2.3.Importance of learning goals

3.Assessment (1st and 2nd call)

3.1.Assessment tasks (description of tasks, marking system and assessment criteria)

4.Methodology, learning tasks, syllabus and resources

4.1.Methodological overview

The learning process that has been designed for this subject is based on the following:

The subject consists of 6 ECTS credits, which represents 150 hours of student work in the subject during the semester. 40% of this work (60 h.) Will be face-to-face activities, supervised by the teachers of the subject, and the rest will be autonomous. One semester will consist of 15 academic weeks, so that 4 hours / week of face-to-face classes (theory, practical exercises and field practices) are programmed for each group.

To make the temporary distribution, the teaching week is used as a measure, in which the student must dedicate 10 hours to the study of the subject.

A summary of the orientative time distribution of a teaching week can be seen in the following table. These values ?? are obtained from the tab of the subject of the Verification Report of the degree.

Degree of Experimentality: High

- Theoretical classes 2 hours
- Practical classes 2 hours
- Autonomous activities 6 hours

4.2.Learning tasks

The teaching methodology is based on a strong teacher / student interaction. This interaction is materialized through a distribution of work / responsibilities between students and teachers.

A.- Face-to-face activities:

1. Theoretical classes: The theoretical concepts of the subject will be explained and problems and practical examples will be developed.

2. Practical exercises: Students will develop examples and perform practical cases in the classroom referring to the theoretical concepts studied.

3. Field practices: Students, organized in working groups, will make data collection with the teams in the field, processing the data with the software and later writing the report and / or transposing the results to the field.

B.- Autonomous supervised activities:

1. These activities will be supervised by the teachers of the subject through individual or group physical tutorials and open forums on the Moodle platform.

C.- Reinforcement activities:

1. Through a virtual teaching portal (Moodle) will be directed various activities that reinforce the basic contents of the subject, as well as the provision of the corresponding forum of the subject moderated by the teacher. These activities will be personalized and their realization controlled through the virtual portal system.

ORGANIZATION OF TEACHING

? Expository classes: Theoretical activities and / or practices taught in a fundamentally expository manner by the teacher.

? Classroom practices and seminars: theoretical discussion activities or preferably practices carried out in the classroom and which require high student participation.

? Field practices and computer classroom: Practical activities carried out in the field and in the computer classroom directed by the internship teacher.

? Group tutorials: Programmed learning follow-up activities in which the teacher meets with a group of students to guide their autonomous learning tasks and guardianship of work directed or requiring a very high degree of advice from the teacher.

? Individual tutorials: they can be face-to-face or virtual through the Moodle platform.

4.3.Syllabus

The program that the student is offered to help you achieve the expected results includes the following activities

Content

Item 1: The graphic expression and Topography
Practice 1: Topographic maps, interpretation.
Item 2: Notions of geodesy: Coordinates.
Practice 2: Geodesic Network, guidance and coordinate transfer.
Practice 3: Cartographic Resources. IDEs
Practice 4: Identification of surveying equipment
Theoretical evaluation test. (Items 1 and 2)
Practice 5: Initiation parking and guidance
Item 3: Instruments and measuring elements in the surveys and stakeout.
Practices 6, 7 and 8: Handling equipment (uprising)
Item 4: Methods topographic surveys
Practice 9: Digital Terrain Models I
Item 4: Topographical Methods: Itineraries
Practice 10: Digital Terrain Models II
Item 4: Topographical Methods: altimetry
Practice 11: Digital Terrain Models III
Item 5: GNSS surveying equipment applications.
Practice 12: altimetry
Item 6: Setting out in Civil Engineering
Practice 13: Stakeout
Evaluation testing practices.

4.4.Course planning and calendar

Calendar of face-to-face sessions and presentation of work:

Week	Content
1 and 2	Topic 1: Graphic expression and topography
	Practice 1: topographic maps, interpretation.
3, 4 and 5	Topic 2: Geodesy notions: Coordinates.
	Practice 2: Geodetic network, orientation and transfer of coordinates.
	Practice 3: Cartographic resources. IDEs
	Practice 4: Identification of topographic equipment
6	Theoretical evaluation test. (topics 1 and 2)
	Practice 5: Initiation in parking and orientation
7, 8 and 9	Topic 3: Instruments and measuring elements in surveys and stakeouts.
	Practices 6, 7 and 8: Handling equipment (lifting)
10	Topic 4: Topographic methods in surveys
	Practice 9: Digital terrain models I
11	Topic 4: Topographical Methods: Itineraries
	Practice 10: Digital terrain models II
12	Topic 4: Topographic methods: Altimetry

	Practice 11: Digital models of terrain III
13	Topic 5: Topographic applications with GNSS equipment.
	Practice 12: Altimetry
14	Topic 6: Rethinking in Civil Engineering
	Practice 13: Rethink
15	Practical evaluation tests.

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- Practical exercises: Students will develop examples and perform practical cases in the classroom referring to the theoretical concepts studied.
- Field practices: The students, organized in working groups, will make data collection with the teams in the field, processing the data with the software and later writing the report and / or transposing the results to the field.

2.- Autonomous supervised activities: These activities will be supervised by the teachers of the subject through individual or group physical tutorials and open forums on the Moodle platform.

3.- Reinforcement activities: Through a virtual teaching portal (Moodle) various activities will be directed to reinforce the basic contents of the subject, as well as the disposition of the corresponding forum of the subject moderated by the teacher. These activities will be personalized and their realization will be controlled through it.

4.5.Bibliography and recommended resources

http://biblos.unizar.es/br/br_citas.php?codigo=28716&year=2019