

## 28611 - Topography and Layout

### Syllabus Information

**Academic Year:** 2021/22

**Subject:** 28611 - Topography and Layout

**Faculty / School:** 175 - Escuela Universitaria Politécnica de La Almunia

**Degree:** 422 - Bachelor's Degree in Building 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:

Show the basic concepts of Topography theory and Stakeouts.

Use different equipment used to measure topographic variables and use of specific computer systems.

Solve the different types of topographic itineraries, both planimetric and altimetric, including atypical sites.

Show the general principles of the Staking out of works.

### 1.2. Context and importance of this course in the degree

The Subject of Topography and Replanting, is part of the Degree in Technical Architecture, taught by EU

This subject implies a more than discrete impact in the acquisition of the skills of the degree, in addition to

The need for the subject within the curriculum of the present degree is more than justified and it is understood

### 1.3. Recommendations to take this course

The development of the subject of Topography and Replanting requires putting into play knowledge and

- Technical drawing: Graphic resources, expression techniques, views and plans are commonly used in Topography.

- Mathematics: The realization of all the calculations that are carried out in Topography makes use of calculation methods that come from these subjects.

In relation to the above, in the first course of the degree the subjects of: Mathematics applied to

building I, Graphic expression applied to building, Mathematics applied to construction II and

Descriptive geometry are studied, providing basic knowledge to be able to continue without any type of problem the evolution of the subject.

This course does not have any regulatory prerequisite nor does it require specific complementary knowledge. Therefore, the aforementioned is understood from a formal point of view, although it is necessary to be clear that an adequate training base is required in the disciplines indicated above

## 2. Learning goals

## 2.1. Competences

Upon passing the subject, the student will be more competent to ...

- Solve problems of land surveying and topographic rethinking of works, as well as making decisions with
- Communicate and transmit knowledge, abilities and skills in Spanish.
- Apply the principles of topography and methods to carry out stakeouts.

## 2.2. Learning goals

The student, to pass this subject, must demonstrate the following results ...

Know the fundamentals of Geodesy and Topography and of the representation of the terrain in the plans.

Determine the different types of errors that are made in the measurement of physical quantities used. Understand

Choose and properly use the distance and angle measuring devices, assessing their degree of precision.

Know the performance of elementary planimetric surveys, choice of coordinate systems and data transportation

Know the itinerary survey, station link and methods of checking and compensating errors.

Choose and use appropriately different surveying methods.

Know the leveling methods and methods of checking and compensating for errors in altimetry.

Select and interpret adequate information to propose and assess solutions, in the field of topography, to carry out

Propose solutions to problems in the field of topography with a level of precision consistent with that of the

Carry out topographic studies in the work projects, as well as analyze the potential of the stakeout methods

Know how to use the general methodology and the appropriate tools to work in applied topography and surveying

## 2.3. Importance of learning goals

This subject has a marked engineering character, that is, it offers training with application content and importance

In the recognition of the place for its analysis and proper survey.

In the study of plans and projects for their later rethinking.

In the organization and planning, problem solving and decision-making regarding the appropriate method

In the interpretation and elaboration of the graphic documentation of a project, carrying out data collection

In working with topographic instrumentation and proceeding with the graphic survey of lots and building

For stakeout on the ground of a work and monitoring or control of it.

## 3. Assessment (1st and 2nd call)

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

The student must demonstrate that they have achieved the expected learning outcomes through the following

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

? Continuous Assessment System: characterized by the obligation to take and pass practical tests, partial

? Non-continuous evaluation system: The student must compulsorily take a global test, being able to voluntarily

The deadline and mode of delivery of practical tests and academic work will be indicated in the planning

#### **Continuous evaluation system:**

In the continuous assessment model, the teacher will evaluate the student's participation in the theoretical

Likewise, the work / projects carried out by the student will be evaluated.

Finally, the student must take several written or practical tests (? Continuous assessment exams?) For each. The following table summarizes the indicative weights of the parts mentioned in the evaluation process.

Oral tests in theory classes	5%
Oral tests in practical classes	5%
Practices	25%
Continuous assessment exams	40%
Practical exam	25%

All students, who do not exceed the necessary minimum required of the practical tests, exams or academic. However, the student will always be able to present themselves to improve their grade by taking the global.

### Non-continuous evaluation system:

The student must opt for this modality when, due to their personal situation, they cannot adapt to the practical. The student may choose one of the two non-continuous assessment models, the general characteristics of which are: ? Absolutely non-continuous evaluation, in which the evaluation consists of a global test of theory and practical; ? quasi-continuous evaluation in which the student will carry out the individual works proposed in the course. Throughout the course, the evaluation system may be varied, depending on the evolution of your personal situation. The following table summarizes the maximum indicative weights of the parts mentioned in the evaluation process.

Oral tests in class	0%
Jobs	0% (30%)
Continuous assessment exams	0%
Global Test	100% (70%)

Absolutely non-continuous (quasi-continuous) evaluation process weights.

Note: In any case, the evaluation method must comply with what is regulated in the Regulation of Learning.

### Assessment schedule:

The tests of the continuous evaluation mode, according to programming presented on the Moodle virtual platform. The global exam dates will be the official dates published at <http://eupla.unizar.es>.

Continuous evaluation system.

Following the spirit of Bologna, regarding the degree of involvement and continued work of the student throughout the course. The continuous evaluation system will have the following group of qualifying activities:

- **Individual activities in class:** Active participation in the entire teaching-learning process, the public presentation of the student's work.
- **Practices:** Practices corresponding to each of the topics considered susceptible to it will be carried out, with a weight of 25%.

- **Written evaluation tests:** They will be carried out in order to regulate learning, stimulate the distribution of knowledge and assess the student's learning. As a summary of the aforementioned, the following weighting table of the grading process of the different activities is shown.

Evaluation activity Weighting

Individual activities in practical classes	10%
Practices	40%
Written assessment tests	50%

Prior to the first call, the teacher of the subject will notify each student whether or not they have passed the

**The evaluation criteria to be followed for the activities of the continuous evaluation system are:**

**Individual activities in class:** The active participation of the student will be taken into account, answered

- **Field practices:** In each of the practices the dynamics followed for its correct execution and operation will

- **Written evaluative tests:** They will consist of the typical written exam scored from 0 to 10 points. The

**Global final evaluation test:**

The student must opt for this modality when, due to their personal situation, they cannot adapt to the rhythm suspended or want to increase their grade having participated in said evaluation methodology.

As in the previous evaluation methodology, the global final evaluation test must be aimed at verifying whether

The global final evaluation test will have the following group of qualifying activities:

- **Practices:** They will contribute 50% to the final grade of the evaluation.

- **Written exam:** Due to the type of subject, with problems of medium complexity and reasonable resolution

As a summary of the above, the following weighting table for the grading process of the different activities

**Evaluation activity Weighting**

Practices	50%
Written exam	50%

The course will have been passed based on the sum of the scores obtained in the different activities carried

For those students who have suspended the continuous evaluation system, but some of their activities, will

All the activities included in the global final evaluation test, with the exception of the written exam, may

## 4. Methodology, learning tasks, syllabus and resources

### 4.1. Methodological overview

The methodology followed in this course is oriented towards the achievement of the learning objectives. A wide range of teaching and learning tasks are implemented, such as theory sessions, practice sessions, workshops and tutorials.

A strong interaction between the teacher and student is promoted. This interaction is brought into being through a division of work and responsibilities between the students and the teacher. Nevertheless, it must be taken into account that, to a certain degree, students can set their learning pace based on their own needs and availability, following the guidelines set by the teacher.

The present subject of Topography and Stakeouts is conceived as a unique set of contents, but worked un

The organization of teaching will be carried out following the following guidelines:

- Theoretical classes: Theoretical activities taught in a fundamentally expository way by the teacher, in su

- Practical classes: The teacher solves problems or practical cases for illustrative purposes. This type of te

- Seminars: The total group of theoretical classes or practical classes may or may not be divided into sma

- Field and cabinet practices: The total group of students will be divided into several, according to the nu

- Group tutoring: Scheduled learning follow-up activities in which the teacher meets with a group of stud

- Individual tutorials: These are carried out through personalized attention, individually, from the teacher.

**If this teaching could not be done in person for health reasons, it would be done online.**

## 4.2. Learning tasks

These activities involve the active participation of the students, in such a way that, in order to achieve the

- Generic face-to-face activities:

Theoretical classes: The theoretical concepts of the subject will be explained and illustrative practical exa

Practical classes: Problems and practical cases will be carried out as a complement to the theoretical conc

Practices: The students will be divided into several groups of no more than 20 students, being tutored by

- Non-contact generic activities:

Study and assimilation of the theory exposed in the master classes.

Understanding and assimilation of problems and practical cases solved in practical classes.

Preparation of seminars, resolution of proposed problems, etc.

Preparation of the practices, preparation of the scripts and corresponding reports.

Preparation of written tests for continuous evaluation and final exams.

- Autonomous tutored activities: Although they will rather have a face-to-face character, they have been t

- Reinforcement activities: Of marked non-presential nature, various activities that reinforce the basic cor

The course consists of 6 ECTS credits, which represents 150 hours of student work in the course during t

## 4.3. Syllabus

Topic 1: The graphic expression and Topography

Practice 1: Sketching

Topic 1: The graphic expression and Topography

Practice 2: Guidance from the National Geodetic Network

Practice 3: cartographic resources IDEs

Topic 2: Notions of geodesy: Coordinates.

Practice 4: Identification of surveying equipment

Topic 2: Notions of geodesy: Coordinates.

Practice 5: Managing teams: Parking

Examination Topics 1 and 2

Practice 6: Managing teams: Establishing local reference system

Topic 3: Instruments and measuring elements in the surveys and stakeout.

Practice 7: Handling equipment: Lift ET

Topic 3: Instruments and measuring elements in the surveys and stakeout. problems

Practice 8: Importing data for digital terrain modeling.

Topic 4: Methods in topographic surveys and stakeout.

Practice 9: Generation of surfaces with survey data.

Topic 4: Methods in topographic surveys and stakeout. Examples and problems

Practice 10: Generation and export stakeout files from modified digital model.

Topic 5: topographical applications in building works with GNSS systems.

Practice 11: Leveling.

Topic 5: topographical applications in building works. GNSS systems.

Practice 12: stakeout ET

Topic 6: Stakeout

Practice 13: stakeout Level

Topic 6: Stake: problems

Practice 14: Survey and stakeout with GNSS

Practical tests evaluation.

Notwithstanding the above table it may be more detailed, taking into account the global distribution following:

- 26 hours of lectures, with 40% of theoretical presentation and 60% resolution of such problems.

- 30 hours of practice sessions 2 hours.
- 4 hours of written tests, two-hour test.
- 6 Hours seminars and group tutorials.
- 32 hours of exercises and tutored projects, spread over the 15-week semester.
- 50 hours of personal study, spread over the 15-week semester.

#### 4.4. Course planning and calendar

The following table shows the indicative schedule that shows the development of the activities presented

Week	Content
1	Topic 1: Graphic expression and Topography Practice 1: Sketching
2	Topic 1: Graphic expression and Topography Practice 2: Orientation from the national geodesic network
3	Executions topic 1 Practice 3: Cartographic resources in IDEs
4	Topic 2: Notions of geodesy: Coordinates. Practice 4: Identification of topographic equipment
5	Topic 2: Notions of geodesy: Coordinates. Practice 5: Equipment management: Parking
6	Exam topics 1 and 2 Practice 6: Equipment management: Establishment of a local reference system
7	Unit 3: Instruments and measurement elements in surveys and stakeouts. Practice 7: Equipment management: Lifting with ET
8	Unit 3: Instruments and measurement elements in surveys and stakeouts. Problems Practice 8: Importing data for digital terrain modeling.
9	Unit 4: Topographical methods in surveys and stakeouts. Practice 9: Generation of surfaces with su
10	Unit 4: Topographical methods in surveys and stakeouts. Examples and problems Practice 10: Generation and export of stakeout files from a modified digital model.
11	Topic 4: Topographical applications in building works with GNSS systems. Practice 11: Leveling.
12	Unit 4: Topographic applications in building works. GNSS systems. Practice 12: Staking with ET
13	Topic 5: Stakeouts Practice 13: Stakeouts with Level
14	Topic 5: Stakes: Problems Practice 14: Survey and stakeout with GNSS
15	practical evaluation tests.

The dates of the continuous assessment partial exams will be published in the Notices forum of the subject <http://www.eupla.es/secretaria/academica/examenes.html>.

The weekly schedule of the subject will be delivered to the students in the presentation of the subject and

#### 4.5. Bibliography and recommended resources

<http://psfunizar10.unizar.es/br13/egAsignaturas.php?codigo=28611>