Universitat de Lleida

DEGREE CURRICULUM

TOPOGRAPHY AND RESTATED

Coordination: LLORENS CALVERAS, JORDI

Academic year 2023-24

TOPOGRAPHY AND RESTATED 2023-24

Subject's general information

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<tr><td>Subject name</td><td>TOPOGRAPHY AND RESTATED</td></tr>
<tr><td>Code</td><td>101411</td></tr>
<tr><td>Semester</td><td>1st Q(SEMESTER) CONTINUED EVALUATION</td></tr>
<tr><td>Typology</td><td>
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<tr><th>Degree</th><th>Course</th><th>Character</th><th>Modality</th></tr>
<tr><td>Bachelor's Degree in Architectural Technology and Building Construction</td><td>3</td><td>COMPULSORY</td><td>Attendance-based</td></tr>
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<tr><td>Course number of credits (ECTS)</td><td>6</td></tr>
<tr><td>Type of activity, credits, and groups</td><td>
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<tr><th>Activity type</th><td>PRAULA</td><td>TEORIA</td></tr>
<tr><th>Number of credits</th><td>3</td><td>3</td></tr>
<tr><th>Number of groups</th><td>1</td><td>1</td></tr>
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<tr><td>Coordination</td><td>LLORENS CALVERAS, JORDI</td></tr>
<tr><td>Department</td><td>AGRICULTURAL AND FOREST SCIENCES AND ENGINEERING</td></tr>
<tr><td>Teaching load distribution between lectures and independent student work</td><td>Each ECTS credit is assigned 25 hours of student work. 10 hours per ECTS are devoted for in-person student work attending the different academic activities and 15 hours per ECTS are devoted to independent student work.</td></tr>
<tr><td>Important information on data processing</td><td>Consult this link for more information.</td></tr>
<tr><td>Language</td><td>Catalan</td></tr>
<tr><td>Distribution of credits</td><td>Theory: 48%
Practice in computer room: 40%
Practice in the field: 12%</td></tr>
</table>

TOPOGRAPHY AND RESTATED 2023-24

Teaching staff	E-mail addresses	Credits taught by teacher	Office and hour of attention
ESCOLA AGUSTI, ALEXANDRE	alex.escola@udl.cat	1	
LLORENS CALVERAS, JORDI	jordi.llorens@udl.cat	5	

Subject's extra information

Topography is the science that studies the set of principles and procedures for the graphic representation of the surface of the earth, with its natural and artificial forms and details (planimetry and altimetry). This topography representation takes place on flat surfaces, limited to small tracts of land, using the name Geodesy for larger areas. You will learn how to take these forms and details to reality through the Stakeout. Currently, Topography is based on the management of equipment, technologies and specific software. The use of these technologies has great interest and application in other subjects of the degree.

Finally, it is **COMPULSORY** that the students bring the following elements of individual protection (EPI) to the field practices:

- Reflective vest

This item can be purchased at the shop Údels of the UdL:

C/ Jaume II, 67 baixos
Centre the Cultures i Cooperació Transfronterera

http://www.publicacions.udl.cat/

Not bringing the EPI's described imply that the student can not access to the laboratories or have to go out of them. The no realisation of the practices for this reason imply the **consequences in the evaluation** of the subject that are described in this course guide.

For further information, you can check the following document of the *Servei de Prevenció de Riscos Laborals de la UdL*: http://www.sprl.udl.cat/alumnes/index.html

Learning objectives

The objectives of the subject Topografia i Replantejaments are the following:

- Present the foundations of topography and digital terrain models, as well as their applications in works and building.
- Present the concepts, methods and technologies for the realization of planimetric and altimetric surveys, setting up, leveling and calculation of surfaces.
- Obtain, process and analyze the information of the territory in order to create and build the elements

designed in the office.
- Unveil Geographic Information Systems which allow for territorial studies.

Competences

EPS-transversal competences

- **EPS8**.Ability to plan and organize personal work.

Degree-specific competences according to ORDEN ECI/3855/2007

- **GEE9.** Ability to interpret and elaborate the graphic documentation of a project, perform data collection, plan surveys and geometric control of work units.
- **GEE10.** Knowledge of infographic and cartographic procedures and methods in the building field.
- **GEE11**. Ability to work with topographic instrumentation and to proceed to the graphic survey of plots and buildings, and their stakeout on the ground.

Subject contents

The content of the course is structured in the following topics:

Theoretical sessions:

- Topic 1: General notions of topography: concepts, units of measurement, errors, representation systems.
- Topic 2: Cartography: the concept of cartography and Geographic Information Systems (GIS).
- Topic 3. Topographic instruments. Surveying and topographic stakeout
- Topic 4. Planimetric and altimetric methods.
- Topic 5. Creation of Digital Terrain Models (DTMs)
- Topic 6. Global Navigation Satellite Systems (GNSS) for Surveying and Stakeout.
- Topic 7. LiDAR in topography.
- Topic 8. Photogrammetry.

Practical sessions:

Practice 1 (Computer Classroom): Working with digital cartography: overlaying and geo-referencing of images. Presentation of digital cartographic platforms as a source of information.

Practice 2 (Computer Classroom): Digital terrain model (DTM). Design and calculation of a simple road (first part).

Practice 3 (Computer Classroom): Digital Terrain Model (DTM). Design and calculation of a simple road (second part).

Practice 4 (Field): Stationing of topographic devices. First steps with the total station.

Practice 5 (Field): Topographic survey of a campus area with a total station. It will emphasize the importance of planning and order in the realization of a topographic work.

Practice 6 (Computer Classroom): Digital terrain model (DTM). Design and calculation of a complex road (first part).

Practice 7 (Computer Classroom): Digital terrain model (DTM). Design and calculation of a complex road (second part).

Practice 8 (Computer Classroom): Digital Terrain Model (DTM). Design and calculation of a complex road (third part).

Practice 9 (Field): Practical example of a stakeout of points with SSNG RTK.

Methodology

The methodology used in the subject is as follows:

- Master class (48%): the objective is to present the basic concepts in topography and cartography, as well as the principles for the development of digital terrain models. Most part of this master class could be in a

virtual mode if the health situation it requires.
- Computer room (40%): practical exercises will be carried out in order to consolidate the concepts acquired in the theoretical part, learn to process geographic information from different sources, and use informatic programs to deal with geographic data.
- Field practices (12%): the objective is to obtain the necessary skills for the acquisition of field data through the total station and GNSS RTK systems.

Software used:

- Autocad.
- Tcp MDT.
- QGIS.

Development plan

A detailed planning of the subject will be loaded in the Resources section of the Virtual Campus at the beginning of the course. The planning will contain the distribution of the credits in the different activities and the dates, places and professors of each one.

Also you can download the planning using this link: https://unidisc.csuc.cat/index.php/s/xnQuYxSg14TrDae

Evaluation

The course will be evaluated according to the Evaluation Regulations approved by the UdL. This regulation establishes that the standard evaluation is continuous evaluation. The grades that will be considered in this continuous evaluation are composed of these three blocks:

- Block 1: Theoretical exam 1st partial (30% of the final grade): written test in which will be asked about the theoretical and practical concepts explained during the classes given before the exam. This exam could be recovered at the final recovery exam.
- Block 2: Theoretical exam 2nd partial (30 % of the final grade): written test in which the theoretical and practical concepts explained during the classes given since the exam of the 1st partial will be asked about. This exam could be recovered at the final recovery exam.
- Block 3: Exercises and other materials worked in the computer classroom and field practices (40 % of the final grade): in each one of the practices a script will be distributed that will include practical exercises and/or questions that will have to be completed individually. The questionnaire or script will include questions on the practical applications of the topics taught and their execution. The grade will be obtained from the weighted average of the grade obtained in the exercises.

Observations

- The course is approved with a grade equal to or higher than 5 points out of 10 calculated from the previous weightings.
- In order to pass the course, it is necessary to obtain a minimum of 4 points out of 10 in each of the 3 block grades mentioned above.
- In case of not reaching the minimum grade in any of the parts, although the mean is higher than 5, at the final Acta suspense will be considered (4,9).
- If a student cannot follow the continuous evaluation, he/she must inform the Studies Coordinator and proceed with the request for the alternative evaluation procedure officially within the established period.
- The attendance at the practical classes is compulsory (it will be allowed to miss a maximum of 10% of the practical classes, as long as they are of computer classroom, except in those of SSNG).
- Only the recovery of the exams is contemplated, in case of failing them. Field practices are not recoverable due to the infrastructure that requires them to be repeated. The rest of the practices or assignments can be recovered by handing in the document again, within the deadline set by the professor.
- In order to make a fair evaluation to all students, plagiarism in the activities will be meticulously pursued

following the indications explained in the Evaluation Regulations approved by the UdL.

ALTERNATIVE ASSESSMENT:

In order to facilitate work or family reconciliation, the student who wishes to do so has the right to waive the continuous assessment at the beginning of each semester and to carry out an alternative assessment in the terms established by the assessment regulations from the University of Lleida.

The alternative assessment will consist of the following rules:

- Theoretical and practical evaluation EXAM of all the subjects of the course to be held at the end of the teaching calendar. During the week of the last midterm exams.
- CLASSROOM PRACTICAL CLASSES REPORTS: The student will have to hand in the internship dossiers in relation to the work proposed in this internship. The deadlines will be the same as for students who are able to attend these classes.
- FIELD PRACTICAL CLASSES: It will be mandatory to attend the 3 field practical classes planned in the course organization. These are field practices with surveying equipment that cannot modify the date foreseen in the planning.

All these items of the alternative assessment are essential to pass the subject, having to obtain a minimum grade of 5 in each part to pass the subject overall.

Bibliography

Recommended bibliography

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