



Universitat de Lleida

DEGREE CURRICULUM

# TOPOGRAPHY AND RESTATED

Coordination: ESCOLÀ AGUSTÍ, ALEXANDRE

Academic year 2019-20

**Subject's general information**

<b>Subject name</b>	TOPOGRAPHY AND RESTATED			
<b>Code</b>	101411			
<b>Semester</b>	1st Q(SEMESTER) CONTINUED EVALUATION			
<b>Typology</b>	<b>Degree</b>	<b>Course</b>	<b>Character</b>	<b>Modality</b>
	Bachelor's Degree in Architectural Technology and Building Construction	3	COMPULSORY	Attendance-based
<b>Course number of credits (ECTS)</b>	6			
<b>Type of activity, credits, and groups</b>	<b>Activity type</b>	PRAULA		TEORIA
	<b>Number of credits</b>	3		3
	<b>Number of groups</b>	1		1
<b>Coordination</b>	ESCOLÀ AGUSTÍ, ALEXANDRE			
<b>Department</b>	AGRICULTURAL AND FOREST ENGINEERING			
<b>Teaching load distribution between lectures and independent student work</b>	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.			
<b>Important information on data processing</b>	Consult <a href="#">this link</a> for more information.			
<b>Language</b>	Catalan: 45% English: 10% Spanish: 45%			
<b>Distribution of credits</b>	Theory: 48% Practice in computer room: 40% Practice in the field: 12%			
<b>Office and hour of attention</b>	Shall be schedule with the students CREA building ( Edificació laboratory)			

Teaching staff	E-mail addresses	Credits taught by teacher	Office and hour of attention
ESCOLÀ AGUSTÍ, ALEXANDRE	alex.escola@udl.cat	1	
MARTINEZ PASCUAL, NURIA	nuria.martinezpascual@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 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

### University of Lleida strategic competences

- Correctness in oral and written language.
- Master a foreign language.

### Degree-specific competences

- Ability to apply the systems of spatial representation, the development of sketches, the promotion, the language and the techniques of graphic representation of the constructive elements and processes.
- Aptitude to work with topographical instrumentation and proceed to the graphical construction of sites and buildings and their implementation in the field .
- Ability to interpret and elaborate the graphical documentation of a project, perform data collection, plan preparation and geometrical control of work units.
- Knowledge of the computer graphics and cartographic methods in the field of building.

### Degree-transversal competences

- Ability to reunite and interpret relevant data, inside an area of study, to express reasons which include reflecting upon relevant subjects of a social, scientific or ethical nature.
- Ability for abstraction and critical, logical and mathematical reasoning.
- Ability to analyse and synthesise.
- Ability to plan and organise the personal work.
- Ability to resolve problems and elaborate and defend arguments inside an area of study.
- Possess the necessary learning abilities to undertake further studies or improve training with a certain degree of autonomy.
- Be motivated to pursue quality and continued improvement.

### Specific competences of the subject

The student who passes the 6 credits of this subject will have to be able to:

- Perform planimetric and altimetric topographical surveys, setting outs and levelings with total station and with global navigation satellite systems (GNSS).
- Use the new methodologies in the field of topography that streamline topographic work such as the use of CAD programs and associated applications as well as Geographic Information Systems.

## 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.
- 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 the Autocad, TcPMDT and QGIS programs.
- 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.

## 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.

## Bibliography

### Recommended bibliography

- [1] Buill-Pozuelo,F.,Gili,J.A., Núñez-Andrés,A., Regot,J., y Talaya,J., “Aplicación del Láser escáner terrestre para levantamientos arquitectónicos, cartográficos e industriales,”Barcelona: 2003.
- [2] Xiqués-Llitjós,J. y Xiqués-Triuell,J., Topografia i replantejaments, Barcelona: Edicions UPC, 1998.
- [3] Fomento, “Norma 3.1 - I.C. Trazado, de la Instrucción de Carreteras,” Dic. 1999.
- [4] de-Sanjosé-Blasco,J.J., Martínez-García,E., y López-González,M., Topografía para estudios de grado, Madrid: Bellisco, ediciones técnicas y científicas, 2004.
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- [7] Ruiz-Morales,M., Nociones de Topografía y Fotogrametría Aérea, Granada: Universidad de Granada, 2003.
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- [9] Neubauer,W., “Laser Scanning and Archaeology,” GIM, págs.14-17.
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- [11] Martín-Morejón,L., Topografía y replanteos, Barcelona: 1987.
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- [16] Lemmon,T.y Biddiscombe,P., “Adapting 3D laser Scanning for the Surveyor,” GIM, Sep. 2006,págs. 13-15.
- [17] Lemmens,M., “Terrestrial Laser Scanners,” GIM, Ago. 2007.
- [18] Leica\_Geosystems, “Introducción al sistema GPS (Sistema de posicionamientoglobal),” 1999.
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- [20] Herráez-Boquera,J., Navarro-Esteve,P., y Denia-Ríos,J.L., “Aplicaciones del equipo de láser en la generación de cartografía para proyecto de restauración en el instituto de Patrimonio de la Universidad Politécnica de Valencia.”
- [21] Dominguez-Garcia-Tejero,F., Topografía general y aplicada,Ediciones Mundi-Prensa, 1998.
- [22] de-Corral,I., Topografía de obras, Barcelona: Edicions UPC, 1996.
- [23] Chueca-Pazos,M., Baselga-Moreno,S., y Anquela-Julian,A.B., Microgeodesia y redes locales: complementos docentes, Valencia: SPUPV, 2003.
- [24]Chueca-Pazos,M., Berné-Valero,J.L., y Herráez-Boquera,J., Teoría de errores e instrumentación, Valencia: 1996.

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