

# Course guide 310603 - 310603 - Geographic Information and Cartography

### Last modified: 06/03/2025

Unit in charge: Teaching unit:	Barcelona School of Buildir 751 - DECA - Department	ng Construction of Civil and Environmental Engineering.
Degree:	BACHELOR'S DEGREE IN GEOINFORMATION AND GEOMATICS ENGINEERING (Syllabus 2016). (Compulsory subject).	
Academic year: 2024	ECTS Credits: 6.0	Languages: Spanish

LECTURER				
Coordinating lecturer:	ROGELIO LOPEZ BRAVO			
Others:	ROGELIO LOPEZ BRAVO ALEJANDRO OUIROGA PÉREZ			

# **DEGREE COMPETENCES TO WHICH THE SUBJECT CONTRIBUTES**

#### Specific:

CE16EGG. Knowledge and application of methods and geometric techniques inside the scope of the different engineerings CE9EGG. (ENG) Coneixement, utilització i aplicació de les tècniques de tractament. Anàlisi de dades espacials. Estudi de models aplicats a l'enginyeria i arquitectura. (Mòdul común a la branca Topografia)

CE7EGG. Knowledge, using and application of instruments and appropiate topographic methods in order to carry out raisings and surveyings.

### Generical:

CG6EGG. Reunite and interpret information of the ground and all of this geographic and economically related with the ground. CG5EGG. Determine, measure, evaluate and represent the ground, tridimensional objects, points and trajectories.

### Transversal:

CT3. TEAMWORK: Being able to work in an interdisciplinary team, whether as a member or as a leader, with the aim of contributing to projects pragmatically and responsibly and making commitments in view of the resources that are available.

06 URI. EFFECTIVE USE OF INFORMATION RESOURCES. Managing the acquisition, structure, analysis and display of information from the own field of specialization. Taking a critical stance with regard to the results obtained.

#### **Basic:**

CB2EGG. The students must know how to apply their knowledge to the work or vocation in a professional way and possess the competences that are used to be demonstrated by the elaboration and defense of arguments and the resolution of problems inside their own field of study.

CB1EGG. The students have demonstrated possess and comprehend knowledge in a field of study that comes from high school, and is used to a level that, while is supported in advanced textbooks, it also includes some aspects that involve knowledge from the field of study in the vanguard.

# **TEACHING METHODOLOGY**

Combination of masterful class, participatory along with practices of individual and cooperative character. It also includes a part of self-sufficent learning. In the medium groups exercises related to the subject will be carried out.



# LEARNING OBJECTIVES OF THE SUBJECT

Know the fundamental concepts in Cartography. Discern the main topographic surfaces and their presentation as well as the different geographical elements. Know the processes of Cartographic Generalization Regulations and quality in Cartography Dissemination of Cartography

# **STUDY LOAD**

Туре	Hours	Percentage
Hours large group	24,0	16.00
Hours medium group	36,0	24.00
Self study	90,0	60.00

### Total learning time: 150 h

# **CONTENTS**

# **C1 FUNDAMENTAL CONCEPTS**

# **Description:**

Introduction to basic concepts in cartography and its relationship with the rest of the subjects of the Geomatics and Surveying major.

# Specific objectives:

Knowledge of the basics of cartography ( scale , map, plan... )

### **Related activities:**

Exercises and related scales, slopes, profiles and practical reference systems

**Full-or-part-time:** 21h Theory classes: 3h Practical classes: 6h Self study : 12h

### **C2 GEOGRAPHIC ELEMENTS.**

# Description:

Determination of the main reference systems on the Earth's surface.

#### Specific objectives:

Learn the use of concepts related to geographic coordinates Basic knowledge of the need of the most representative cartographic projections

### **Related activities:**

Laboratory practices in developing some map projections in its graphical representation. Exercises related to geographic coordinates

### Full-or-part-time: 23h

Theory classes: 4h Practical classes: 5h Laboratory classes: 2h Self study : 12h



# **C3 GRAPHIC SEMIOLOGY**

### **Description:**

Cartography as a means of communication through the cartographic design. Study of visual perception and visual mapping variables used.

**Specific objectives:** Correct use of the cartographic language

**Related activities:** Laboratory practices using visual variables

**Full-or-part-time:** 23h Theory classes: 4h Practical classes: 2h Laboratory classes: 3h Guided activities: 1h Self study : 13h

### **C4 THE MAPPING PROCESS**

#### Description:

Exposure of the different phases comprising the mapping process

Specific objectives: The student knows the tasks within each phase of the mapping process

**Related activities:** Cartographic project planning

**Full-or-part-time:** 19h Theory classes: 3h

Practical classes: 1h Laboratory classes: 2h Guided activities: 1h Self study : 12h

### **C5 CARTOGRAPHIC GENERALIZATION.**

# **Description:** Study of all processes performed when changing graphic scale or purpose of the map

**Specific objectives:** Knowledge of the sequence of operations performed in the process of generalization.

**Related activities:** Directed laboratory practices

Full-or-part-time: 22h Theory classes: 4h Practical classes: 1h Laboratory classes: 3h Guided activities: 1h Self study : 13h



# **C6 THEMATIC CARTOGRAPHY**

### **Description:**

Study of data sources and application. Creation of thematic maps

Specific objectives:

Development of thematic mapping and linking with visual variables

**Related activities:** Laboratory practices aimed at creating thematic maps

Full-or-part-time: 23h Theory classes: 4h Laboratory classes: 4h Guided activities: 1h Self study : 14h

# **C7 LAWS AND REGULATIONS. BROADCAST QUALITY AND MAPPING**

**Description:** Different cartographic standardization regulations

**Specific objectives:** Study of different regulations affecting the cartographic product

**Related activities:** Research and presentation of different regulations

**Full-or-part-time:** 19h Theory classes: 2h

Laboratory classes: 1h Guided activities: 2h Self study : 14h

# ACTIVITIES

### **A1 FUNDAMENTAL CONCEPTS**

# **Description:** Realitzation of exercises over scales, slopes, equidistances, etc. It will be done individually

**Specific objectives:** The student must be capable of resolving basic Cartography exercises

Material: The documentation of the students will be done across Atenea

**Delivery:** It will be delivered on the date fixed by the teacher

**Full-or-part-time:** 8h Self study: 2h Practical classes: 6h



# **A2 GEOGRAPHIC ELEMENTS**

# **Description:**

Realization of exercises over geographic coordinates.

### Specific objectives:

The student must be capable of resolving basic exercises of cartography coordinates

#### Material:

The documentation of the students will be done across Atenea

### **Delivery:** It will be delivered on the date fixed by the teacher

**Full-or-part-time:** 5h Self study: 2h Practical classes: 3h

# A3 CARTOGRAPHIC PROJECTIONS

### **Description:**

Graphic development of some cartographic projections. Individual project

### **Specific objectives:**

Know and develop cartographic projections of geometric character and its drawing in CAD

### Material:

The practice will be developed in the computer lab

### **Delivery:**

The delivery of the practice won't be necessary but its development and assistance is mandatory

# **Full-or-part-time:** 6h Self study: 2h Practical classes: 2h Laboratory classes: 2h

# **A7 THEMATIC CARTOGRAPHIC**

### **Description:**

Carrying out different theme maps using ArcGis. Individual work

### Specific objectives:

Knowledge and application of the different products of thematic cartography and the application software.

### Material:

The practice will be carried out in the computer lab with different software

### **Delivery:**

The last day of class. A previous delivery for its evaluation will be carried out in case it is necessary.

# **Full-or-part-time:** 12h Self study: 7h Guided activities: 1h Laboratory classes: 4h



# **A8 LEGISLATION AND REGULATIONS**

**Description:** 

Oral exposition in class of the regulations of official institutions. Group project.

Specific objectives: Knowledge of official institutions, web pages and regulations.

Material: The student will look for information in the bibliography and the institutions.

**Delivery:** A brief exposition in class will be carried out

**Full-or-part-time:** 13h Self study: 10h Guided activities: 2h Laboratory classes: 1h

# **GRADING SYSTEM**

There will be two partial tests, one in the middle of the course and another at the end whose assessment will be 40% of the final grade each.

Laboratory activities and individual work: 20% of the final grade.

The student must take all the tests to pass the course.

They will not be able to access the re-evaluation with a grade lower than a 3.5, nor those who have not presented all the practices. The re-evaluation exam will cover the entire subject. The final grade will be the one obtained in this exam for students who go for re-evaluation.

Attendance and class work will be valued.

# **EXAMINATION RULES.**

Continuous class attendance. All the evaluation activites will be mandatory.

# BIBLIOGRAPHY

#### **Basic:**

- Robinson, Arthur H. Elementos de cartografía. Barcelona: Omega, 1987. ISBN 8428207682.

- Martín López, José. Cartografía. Madrid: Colegio Oficial de Ingenieros Técnicos en Topografía, 1999. ISBN 849235111X.

- Raisz, E. Cartografía general. 7a ed. Barcelona: Omega, 1985. ISBN 8428200076.
- Dent, Borden D. Cartography: thematic map design. 6a ed. Boston [etc.]: McGraw-Hill, 2009. ISBN 9780072943825.

- Snyder, John Parr. An album of map projections. Washington, D.C.: Geological Survey, 1989.

- Ariza López, Fco. Javier. Reproducción cartográfica. Jaén: Universidad de Jaén, 1999. ISBN 8489869561.

- Cartographica [on line]. Toronto: University of Toronto Press, 1971- [Consultation: 22/07/2013]. Available on: <a href="http://www.swetswise.com/link/access\_db?issn=0317-7173">http://www.swetswise.com/link/access\_db?issn=0317-7173</a>.