Course guide
310603 - 310603 - Geographic Information and Cartography

Last modified: 23/06/2023

Unit in charge: Barcelona School of Building Construction
Teaching unit: 751 - DECA - Department of Civil and Environmental Engineering.

Degree: BACHELOR'S DEGREE IN GEOINFORMATION AND GEOMATICS ENGINEERING (Syllabus 2016). (Compulsory subject).

Academic year: 2023 **ECTS Credits:** 6.0 **Languages:** Spanish

LECTURER

Coordinating lecturer: ROGELIO LOPEZ BRAVO

Others: ROGELIO LOPEZ BRAVO
MERCEDES SANZ CONDE

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 with practices of individual and cooperative character. It also includes a part of self-sufficent learning. In the medium groups it will be done exercises related with the subject.

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

Type	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 Degree in Geomatics and Surveying

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 language mapping

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:
Mapping project approach

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. Creating 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 regulations cartographic standardization

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 about scales, slopes, equidistances, etc. It will be done individually

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

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
Practical classes: 6h
Self study: 2h

A2 GEOGRAPHIC ELEMENTS

Description:
Realization of exercises about 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
Practical classes: 3h
Self study: 2h

A3 CARTOGRAPHIC PROJECTIONS

Description:
Graphic developement of some cartographic projections. Individual project

Specific objectives:
Know and develope cartographic projections of geometric character and its drawing in CAD

Material:
The practice will be developed in the computing room

Delivery:
The delivery of the practice won't be necessary but it's mandatory its development and assistance

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

A7 THEME CARTOGRAPHIC

Description:
Carrying out different theme maps using ArcGis. Individual project

Specific objectives:
Knowledge and application of the different products of theme cartography and the application software.

Material:
The practice will be carried out in the computing room 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
Laboratory classes: 4h
Guided activities: 1h
Self study: 7h

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
Laboratory classes: 1h
Guided activities: 2h
Self study: 10h

GRADING SYSTEM

There will be two partial tests, one in the middle of the course and another at the end whose assessment will be 35% of the final grade each.
Laboratory activities and individual work: 20% of the final grade.
Group work: exposition and contents: 10% of the final mark.
The student must take all the tests to pass the course.
You will not be able to access the re-evaluation with a grade lower than 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 attendance to class. 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: http://www.swetswise.com/link/access_db?issn=0317-7173.