Course guide
310614 - 310614 - Digital Cartography

Last modified: 14/11/2023

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: Mercedes Sanz Conde

Others: Mercedes Sanz Conde

PRIOR SKILLS

Solid Knowledge in Cartography and Geoinformation. Knowledege in ArcGIS.

DEGREE COMPETENCES TO WHICH THE SUBJECT CONTRIBUTES

Specific:
6. (ENG) Determinar, mesurar, avaluar i representar el terreny, objectes tridimensionals, punts i trajectòries.
7. Design and develope geomatic and topographic projects.
8. (ENG) Planificació, projecte, direcció, execució i gestió de processos de mesura, sistemes d'informació, explotació d'imatges, posicionament i navegació; modelització, representació i visualització de la informació territorial en, sota i sobre la superfície terrestre.
9. (ENG) Planificació, projecte, direcció, execució i gestió de processos i productes d'aplicació a la societat de l'informació dins l'àmbit geomàtic.
10. (ENG) Planificació, projecte, direcció, execució i gestió de processos i productes d'aplicació a l'enginyeria medioambiental, agronòmica, forestal i minera, dins l'àmbit geomàtic.
12. (ENG) Reunir i interpretar informació del terreny i tota aquella relacionada geogràficament i econòmicament amb ell.
11. Knowledge, use and application of the treatment techinques. Analysis of special data. Study of models applied to the engineering and architecture.
13. Knowledge about application of the geomatic methods and techniques in the the scope of the different enginneries.
14. Design, production and difusion of the basic cartographic; implementation, management and explotation of Geographic Information Systems (SIG).

Transversal:
1. SELF-DIRECTED LEARNING - Level 3. Applying the knowledge gained in completing a task according to its relevance and importance. Deciding how to carry out a task, the amount of time to be devoted to it and the most suitable information sources.
2. EFFICIENT ORAL AND WRITTEN COMMUNICATION - Level 3. Communicating clearly and efficiently in oral and written presentations. Adapting to audiences and communication aims by using suitable strategies and means.
3. SUSTAINABILITY AND SOCIAL COMMITMENT - Level 1. Analyzing the world¿s situation critically and systemically, while taking an interdisciplinary approach to sustainability and adhering to the principles of sustainable human development. Recognizing the social and environmental implications of a particular professional activity.
4. TEAMWORK - Level 2. Contributing to the consolidation of a team by planning targets and working efficiently to favor communication, task assignment and cohesion.
5. EFFECTIVE USE OF INFORMATI0N RESOURCES - Level 2. Designing and executing a good strategy for advanced searches using specialized information resources, once the various parts of an academic document have been identified and bibliographical references provided. Choosing suitable information based on its relevance and quality.

TEACHING METHODOLOGY

Master classes.
Participative exhibition classes.
Laboratory practices.
Autonomous work.
Cooperative work.

LEARNING OBJECTIVES OF THE SUBJECT

When the subject ends, the student should be able:
- Interpret and make cartographics documents.
- Know and apply the mapping rules.
- Analyze data vector data

STUDY LOAD

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

Total learning time: 150 h

CONTENTS

Introduction to GIS.

Description:
Introduction to GIS.

Specific objectives:
Use of GIS for mapping. Basic analysis of a spatial database.

Related activities:
Activity 2 and 3.

Full-or-part-time: 3h
Theory classes: 2h
Self study : 1h

Cartographic edition with SIG.

Description:
Mapping with a GIS.

Related activities:
Activity 4

Full-or-part-time: 30h
Theory classes: 15h
Self study : 15h

Vector analysis with GIS.

Description:
Basic tools for analyzing vector data with GIS.

Related activities:
Activity 5.

Full-or-part-time: 32h
Theory classes: 16h
Self study : 16h

ACTIVITIES

ACTIVITY 1: INTRODUCTION TO ARCGIS

Description:
Introduction to software ArcGIS

Material:
Software ESRI

Full-or-part-time: 2h
Laboratory classes: 2h

ACTIVITY 2

Description:
Practice of Geodatabase

Specific objectives:
Development of a Geodatabase.

Material:
ArcGIS

Delivery:
Before week 7

Full-or-part-time: 4h
Self study: 4h

ACTIVITY 3

Description:
Topological structure a map data

Material:
ArcGIS

Full-or-part-time: 2h
Self study: 2h

ACTIVITY 4

Description:
Preparation of the plan of Can Mates

Full-or-part-time: 15h 30m
Theory classes: 0h 30m
Self study: 15h

ACTIVITY 5

Description:
Practical vector analysis.

Full-or-part-time: 10h 30m
Theory classes: 0h 30m
Self study: 10h

GRADING SYSTEM

Week 5: practical exam 20%
Week 8: practical exam 20% 27th October
Week 15: Theoretical and practical exam 30% 12th January
Week 15 : Map of Can Mates. 30%
Revaluation: date 25th January
It will not be possible to access the revaluation exam with a grade lower than 3.5, nor those who have not presented all the practices.
The revaluation exam will cover the entire subject.
Attendance and work in class will be assessed.

EXAMINATION RULES.

All the tests are mandatory

BIBLIOGRAPHY

Basic:
- Cañada Torrecillas, Rosa ; [et al.]. Sistemas y análisis de la información geográfica: manual de autoaprendizaje con ArcGIS. 2ª ed. Madrid: RA-MA, 2008. ISBN 9788478978380.
- Olaya, Víctor. Sistemas de información geográfica [on line]. OsGeo, 2012 [Consultation: 04/07/2022]. Available on: https://volaya.github.io/libro-sig/.

Complementary:
- Alcázar González, Adela;Azcárate Luxán, Margarita.. "Toponimia. Normas para el MTN25. Conceptos básicos y terminología.". Publicaciones técnicas del IGN [on line]. Available on: http://www.ucm.es/info/toponim/conceptos.pdf.

RESOURCES

Computer material:
- ARCGIS. Resource