Course guide
310602 - 310602 - Computer Assisted Design

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: 2022 ECTS Credits: 6.0 Languages: Spanish

LECTURER

Coordinating lecturer: Rogelio López Bravo

Others: Rogelio López Bravo Francisco Javier Muñoz Capilla

DEGREE COMPETENCES TO WHICH THE SUBJECT CONTRIBUTES

Specific:
CE4EGG. Capacity of spatial vision and knowledge of the graphic representation techniques, for the traditional methods of metric geometry and descriptive geometry, an in addition for the applications of assisted design by computer.

General:
CG6EGG. Reunite and interpret information of the ground and all of this geographic and economically related with the ground.
CG8EGG. Planification, project, direction, execution and management of measurements processes, information systems, image exploitaiton, positioning and navegation; modeling, representation and visualization of the territorial information in, under and above the ground surface.

Transversal:
CT5. FOREIGN LANGUAGE: Achieving a level of spoken and written proficiency in a foreign language, preferably English, that meets the needs of the profession and the labour market.

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:
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

Expositive clases, sessions with guided exercises, in theoretical and practical in the computer’s room.

LEARNING OBJECTIVES OF THE SUBJECT

Know the main representation systems in Geomatics.
Learn how to use the two main computer-assisted drawing programs: Autocad and Microstation.
STUDY LOAD

<table>
<thead>
<tr>
<th>Type</th>
<th>Hours</th>
<th>Percentage</th>
</tr>
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<tbody>
<tr>
<td>Hours large group</td>
<td>24,0</td>
<td>16.00</td>
</tr>
<tr>
<td>Self study</td>
<td>90,0</td>
<td>60.00</td>
</tr>
<tr>
<td>Hours medium group</td>
<td>36,0</td>
<td>24.00</td>
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</tbody>
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**Total learning time:** 150 h

CONTENTS

**REPRESENTATION SYSTEMS**

**Description:**
1. Introduction to the representation systems
2. Metric and descriptive geometry
3. Normalization
4. Sketching

**Specific objectives:**
Knowledge of the main representation systems used
Introduction to the metric and descriptive geometry: basic elements, figures, parallelism, proportions
Concept of scale
Knowledge of the standards that the representation systems must follow
Carrying out maps by hand

**Related activities:**
Exercises of metric geometry
Scale exercises
Practice outside the class of sketching

**Full-or-part-time:** 30h
Theory classes: 5h
Laboratory classes: 3h
Guided activities: 4h
Self study: 18h
### DIEDRIC SYSTEM

**Description:**
1. Rectas y planos
2. Paralelismo y perpendicularidad
3. Intersecciones
4. Abatimientos
5. Distancias, giros
6. Cambios de plano

**Specific objectives:**
Fundamentos del sistema diédrico. Representación de objetos en 2 dimensiones y 3 dimensiones.

**Related activities:**
Ejercicios de sistema diédrico en el aula de informática. Resolución de los mismo

**Full-or-part-time:** 23h  
Theory classes: 3h  
Laboratory classes: 2h 30m  
Guided activities: 2h 30m  
Self study : 15h

### DIMENSIONED PLANE SYSTEM

**Description:**
1. Introduction  
2. Dimensioned plane system  
3. Applications of the dimensioned plane system (I): Roofs and rafts  
4. Applications of the dimensioned plane system (II): Representation of  
5. Applications of the dimensioned plane system (III): Longitudinal and transversal profiles  
6. Aplicaciones del sistema de planos acotados (IV): dams  
7. Aplicaciones del sistema de planos acotados (V): flatness  
8. Aplicaciones del Sistema de Planos Acotados (VI): roads and forest vias

**Specific objectives:**
Knowing the dimensioned plane system and his practic applications in the environment of the Geomatic  
Determination of slopes, interpolation, slopes.

**Related activities:**
Exercises of dimensioned planes in the informatic class  
Interpolation of level curves  
Calculation of surfaces and volumes

**Full-or-part-time:** 26h 40m  
Theory classes: 5h  
Laboratory classes: 5h  
Self study : 16h 40m
CAD APPLIED TO GEOMATICS

Description:
1. Foundations of the software of design assisted by computer. Basic entities.
2. Handling of basic tools: line, point, poliline
6. Editing Impression and exchange of Information

Specific objectives:
Learning the main tools of the software most used: Autocad and Microstation
Realization of the topographic drawing according to specified characteristics

Related activities:
Practices in the computing room

Full-or-part-time: 55h 20m
Theory classes: 2h
Laboratory classes: 20h
Self study: 33h 20m

ACTIVITIES

EXERCISES OF DIEDRIC SYSTEM

Description:
Intersection of straight lines and planes
Paralelism and perpendicularity exercises
Intersection exercises

Material:
The activities will be developed in the computing room

Full-or-part-time: 12h
Laboratory classes: 4h
Self study: 8h

EXERCISES OF DIMENSIONED PLANE SYSTEM

Description:
Interpolation of level curves
Platforms, covers
Slopes, longitudinal and tranversal profiles
Surfaces, volumes

Full-or-part-time: 20h
Laboratory classes: 5h
Self study: 15h
CAD INTRODUCTION

Description:
Tools of drawing and edition.
Layers
Modification and changes
Topographic drawing

Full-or-part-time: 19h
Laboratory classes: 7h
Self study: 12h

GRADING SYSTEM

The student must take all the tests. The final mark of the subject is made up of the sum of the different practices that will be carried out in class. There will be two practices of integral development in the classroom that will have a higher value than the rest, not being in any case greater than 20% each. Completion of all practices is compulsory.

EXAMINATION RULES.

The delivery of the practices will be done through Atenea. Continuous evaluation

BIBLIOGRAPHY

Basic:

Complementary: