Course guides
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: 2021  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 exploitation, positioning and navigation; 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
STUDY LOAD

<table>
<thead>
<tr>
<th>Type</th>
<th>Hours</th>
<th>Percentage</th>
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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>
</table>

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 mismos

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
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
Parallelism 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

Oral tests, written, projects, individual practical exercises, resolution of exercises, tests of short answer and continuous evaluation

EXAMINATION RULES.

The student must carry out all the tests. The theoretical part (long, short and test type answers) will have a value of 20%, the continuous evaluation another 20%, the resolution of exercises a 20%, the practice 30% and the project with the oral presentation a 10%.

BIBLIOGRAPHY

Basic:

Complementary: