310602 - Computer Assisted Design

Coordinating unit: 310 - EPSEB - Barcelona School of Building Construction
Teaching unit: 751 - DECA - Department of Civil and Environmental Engineering
Academic year: 2019
Degree: BACHELOR'S DEGREE IN GEOINFORMATION AND GEOMATICS ENGINEERING (Syllabus 2016).
(Teaching unit Compulsory)
ECTS credits: 6  
Teaching languages: Spanish

Teaching staff
Coordinator: Rogelio López Bravo
Others: Rogelio López Bravo
Ana M. Tapia Gómez

Degree competences to which the subject contributes

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.

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.

Teaching methodology

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

Learning objectives of the subject
310602 - Computer Assisted Design

### Study load

<table>
<thead>
<tr>
<th>Total learning time: 150h</th>
<th>Hours large group: 24h</th>
<th>16.00%</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Hours medium group: 36h</td>
<td>24.00%</td>
</tr>
<tr>
<td></td>
<td>Hours small group: 0h</td>
<td>0.00%</td>
</tr>
<tr>
<td></td>
<td>Self study: 90h</td>
<td>60.00%</td>
</tr>
</tbody>
</table>
## REPRESENTATION SYSTEMS

<table>
<thead>
<tr>
<th>Learning time: 30h</th>
</tr>
</thead>
<tbody>
<tr>
<td>Theory classes: 5h</td>
</tr>
<tr>
<td>Laboratory classes: 3h</td>
</tr>
<tr>
<td>Guided activities: 4h</td>
</tr>
<tr>
<td>Self study: 18h</td>
</tr>
</tbody>
</table>

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

### Related activities:
- Exercises of metric geometry
- Scale exercises
- Practice outside the class of 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

## DIEDRIC SYSTEM

<table>
<thead>
<tr>
<th>Learning time: 23h</th>
</tr>
</thead>
<tbody>
<tr>
<td>Theory classes: 3h</td>
</tr>
<tr>
<td>Laboratory classes: 2h 30m</td>
</tr>
<tr>
<td>Guided activities: 2h 30m</td>
</tr>
<tr>
<td>Self study: 15h</td>
</tr>
</tbody>
</table>

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

### Related activities:
- Ejercicios del sistema diédrico en el aula de informática. Resolución de los mismo

### Specific objectives:
- Fundamentos del sistema diédrico.
- Representación de objetos en 2 dimensiones y 3 dimensiones.
310602 - Computer Assisted Design

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

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

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

CAD APPLIED TO GEOMATICS

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

Related activities:
Practices in the computing room

Specific objectives:
Learning the main tools of the software most used
Realization of the topographic drawing according to specified characteristics
# 310602 - Computer Assisted Design

## Planning of activities

<table>
<thead>
<tr>
<th>Exercises of Diedric System</th>
<th>Hours: 12h</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Laboratory classes: 4h</td>
</tr>
<tr>
<td></td>
<td>Self study: 8h</td>
</tr>
</tbody>
</table>

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

**Support materials:**
The activities will be developed in the computing room

<table>
<thead>
<tr>
<th>Exercises of Dimensioned Plane System</th>
<th>Hours: 20h</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Laboratory classes: 5h</td>
</tr>
<tr>
<td></td>
<td>Self study: 15h</td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>CAD Introduction</th>
<th>Hours: 19h</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Laboratory classes: 7h</td>
</tr>
<tr>
<td></td>
<td>Self study: 12h</td>
</tr>
</tbody>
</table>

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

## Qualification system

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

## Regulations for carrying out activities

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:
