310603 - Geographic Information and Cartography

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 GEOPHYSICS AND GEOMATICS ENGINEERING (Syllabus 2016). (Teaching unit Compulsory)
ECTS credits: 6
Teaching languages: Spanish

Teaching staff
Coordinator: ROGELIO LOPEZ BRAVO
Others: ROGELIO LOPEZ BRAVO

Degree competences to which the subject contributes

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.

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 comú a la branca Topografia)
CE7EGG. Knowledge, using and application of instruments and appropriate 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.

Teaching methodology
Combination of masterful class, participatory with practices of individual and cooperative character. It also includes a part of self-sufficient learning. In the medium groups it will be done exercises related with the subject.

Learning objectives of the subject

Conocer los conceptos fundamentales en Cartografía.
Entender las principales superficies topográficas y su presentación así como los diferentes elementos geográficos.
Conocer los procesos de la Generalización Cartográfica
Normativa y calidad en Cartografía
Difusión de la Cartografía

### Study load

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

<table>
<thead>
<tr>
<th><strong>C1 FUNDAMENTAL CONCEPTS</strong></th>
<th><strong>Learning time:</strong> 21h</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Description:</strong></td>
<td>Theory classes: 3h</td>
</tr>
<tr>
<td>Introduction to basic concepts in cartography and its relationship with the rest of the subjects of the Degree in Geomatics and Surveying</td>
<td>Practical classes: 6h</td>
</tr>
<tr>
<td><strong>Related activities:</strong></td>
<td>Self study : 12h</td>
</tr>
<tr>
<td>Exercises and related scales, slopes, profiles and practical reference systems</td>
<td></td>
</tr>
<tr>
<td><strong>Specific objectives:</strong></td>
<td></td>
</tr>
<tr>
<td>Knowledge of the basics of cartography (scale, plan ...)</td>
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<table>
<thead>
<tr>
<th><strong>C2 GEOGRAPHIC ELEMENTS.</strong></th>
<th><strong>Learning time:</strong> 23h</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Description:</strong></td>
<td>Theory classes: 4h</td>
</tr>
<tr>
<td>Determination of the main reference systems on the Earth's surface.</td>
<td>Practical classes: 5h</td>
</tr>
<tr>
<td><strong>Related activities:</strong></td>
<td>Laboratory classes: 2h</td>
</tr>
<tr>
<td>Laboratory practices in developing some map projections in its graphical representation.</td>
<td>Self study : 12h</td>
</tr>
<tr>
<td><strong>Specific objectives:</strong></td>
<td></td>
</tr>
<tr>
<td>Exercises related to geographic coordinates</td>
<td></td>
</tr>
<tr>
<td>Learn the use of concepts related to geographic coordinates</td>
<td></td>
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<tr>
<td>Basic knowledge of the need of the most representative cartographic projections</td>
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</tbody>
</table>
### C3 GRAPHIC SEMIOLOGY

**Description:**
Cartography as a means of communication through the cartographic design. Study of visual perception and visual mapping variables used.

**Related activities:**
Laboratory practices using visual variables

**Specific objectives:**
Correct use of language mapping

**Learning 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.

**Related activities:**
Mapping project approach

**Specific objectives:**
The student knows the tasks within each phase of the mapping process

**Learning 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

**Related activities:**
Directed laboratory practices

**Specific objectives:**
Knowledge of the sequence of operations performed in the process of generalization.

**Learning 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

**Related activities:**
Laboratory practices aimed at creating thematic maps

**Specific objectives:**
Development of thematic mapping and linking with visual variables

**Learning 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

**Related activities:**
Research and presentation of different regulations

**Specific objectives:**
Study of different regulations affecting the cartographic product

**Learning time:** 19h
- Theory classes: 2h
- Laboratory classes: 1h
- Guided activities: 2h
- Self study: 14h
# Planning of activities

| A1 FUNDAMENTAL CONCEPTS | Hours: 8h  
Practical classes: 6h  
Self study: 2h |
<table>
<thead>
<tr>
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<tbody>
<tr>
<td><strong>Description:</strong></td>
<td>Realization of exercises about scales, slopes, equidistances, etc. It will be done in groups of 3 people and individually.</td>
</tr>
<tr>
<td></td>
<td><strong>Support materials:</strong> The documentation of the students will be done across Atenea or at the library of the school.</td>
</tr>
<tr>
<td><strong>Specific objectives:</strong></td>
<td>The student must be capable of resolving basic exercises of Cartography.</td>
</tr>
</tbody>
</table>

| A2 GEOGRAPHIC ELEMENTS | Hours: 5h  
Practical classes: 3h  
Self study: 2h |
<table>
<thead>
<tr>
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</thead>
<tbody>
<tr>
<td><strong>Description:</strong></td>
<td>Realization of exercises about geographic coordinates. It will be done in groups of 3 people and individually.</td>
</tr>
<tr>
<td></td>
<td><strong>Support materials:</strong> The documentation of the students will be done across Atenea or at the library of the school.</td>
</tr>
<tr>
<td><strong>Specific objectives:</strong></td>
<td>The student must be capable of resolving basic exercises of Cartography.</td>
</tr>
</tbody>
</table>

| A3 CARTOGRAPHIC PROJECTIONS | Hours: 6h  
Practical classes: 2h  
Laboratory classes: 2h  
Self study: 2h |
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</thead>
<tbody>
<tr>
<td><strong>Description:</strong></td>
<td>Graphic development of some cartographic projections. Individual project.</td>
</tr>
<tr>
<td><strong>Support materials:</strong></td>
<td>The practice will be developed in the computing room.</td>
</tr>
<tr>
<td><strong>Specific objectives:</strong></td>
<td>Know and develop cartographic projections of geometric character and its drawing in CAD.</td>
</tr>
</tbody>
</table>
### A4 GRAPHIC SEMIOLOGY

**Hours:** 10h  
Practical classes: 2h  
Laboratory classes: 3h  
Guided activities: 1h  
Self study: 4h

**Description:**  
Application of the visual variables explained in the unit. Individual project.

**Support materials:**  
It will be facilitate across Atenea

**Descriptions of the assignments due and their relation to the assessment:**  
It will be done a delivery for its revision and evaluation, in case it is necessary, at the date fixed by the teacher.

**Specific objectives:**  
Knowledge and application of the visual variables

### A5 CARTOGRAPHIC PROCESS

**Hours:** 14h  
Practical classes: 1h  
Laboratory classes: 2h  
Guided activities: 1h  
Self study: 10h

**Description:**  
Development of flux diagrams of the cartographic product. Search of processes in different official organisms. Work in group

**Descriptions of the assignments due and their relation to the assessment:**  
Presentation in class in prefix days

**Specific objectives:**  
The student must know the different steps of the cartographic processes. The student will start its own project.

### A6 GENERALIZATION

**Hours:** 10h  
Practical classes: 1h  
Laboratory classes: 3h  
Guided activities: 1h  
Self study: 5h

**Description:**  
From a selected cartography it will be done a change of scale or graphic object. Individual project

**Support materials:**  
The material will be shown across Atenea

**Descriptions of the assignments due and their relation to the assessment:**  
The last day of class will be carried out a delivery for its evaluation.

**Specific objectives:**  
Practical knowledge of the different operations that are done in the cartographic generalization
### A7 THEME CARTOGRAPHIC

**Hours:** 12h  
Laboratory classes: 4h  
Guided activities: 1h  
Self study: 7h

**Description:**  
Carrying out different theme maps. Individual project

**Support materials:**  
The practice will be carried out in the computing room with different software

**Descriptions of the assignments due and their relation to the assessment:**  
The last day of class will be carried out a delivery for its evaluation in case it is necessary.

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

### A8 LEGISLATION AND REGULATIONS

**Hours:** 13h  
Laboratory classes: 1h  
Guided activities: 2h  
Self study: 10h

**Description:**  
Oral exposition in class of the regulations of official institutions. Group project.

**Support materials:**  
The student will look for information in the bibliography and the institutions.

**Descriptions of the assignments due and their relation to the assessment:**  
It will be carried out a brief oral exposition in class

**Specific objectives:**  
Knowledge of official institutions, web pages and regulations.

### Qualification system

It will be done two partial test, once in the middle of the course and the other one at the end with a valuation of 30% of the final mark each one.

Laboratory activities and individual projects: 30% of the final mark  
Group projects: exposition and contents: 10% of the final mark

To pass the subject the marks of the previous activities have to be over 3.5.

At the end of the course it will be a re-evaluation exam for the students with final mark over 3.5, where all the contents of the subject will be evaluated.

The attendance and work in class will be valued.

### Regulations for carrying out activities

Continuous attendance to class. All the evaluation activities will be mandatory.
Bibliography

Basic: