250106 - GEOLOGIA - Geology

Coordinating unit: 250 - ETSECCPB - Barcelona School of Civil Engineering
Teaching unit: 751 - DECA - Department of Civil and Environmental Engineering
Academic year: 2018
Degree: BACHELOR'S DEGREE IN CIVIL ENGINEERING (Syllabus 2010). (Teaching unit Compulsory)
BACHELOR'S DEGREE IN CIVIL ENGINEERING (Syllabus 2017). (Teaching unit Compulsory)
ECTS credits: 6
Teaching languages: Catalan, Spanish

Teaching staff
Coordinator: JOSE MOYA SANCHEZ
Others: LUCILA CARLOTA CONCEPCION CANDELA LLEDO, JOAN MARTÍNEZ BOFILL, JOSE MOYA SANCHEZ

Opening hours
Timetable: José Moya (D-2, 3ª floor, office 306/1): Monday 12-14h and agreed appointments.

Degree competences to which the subject contributes
Specific:
- 3059. Basic knowledge of geology and terrain morphology and the ability to apply it to engineering problems. Climatology.

Transversal:
- 591. EFFICIENT ORAL AND WRITTEN COMMUNICATION - Level 1. Planning oral communication, answering questions properly and writing straightforward texts that are spelt correctly and are grammatically coherent.
- 597. EFFECTIVE USE OF INFORMATION RESOURCES - Level 1. Identifying information needs. Using collections, premises and services that are available for designing and executing simple searches that are suited to the topic.
- 600. SELF-DIRECTED LEARNING - Level 1. Completing set tasks within established deadlines. Working with recommended information sources according to the guidelines set by lecturers.

Teaching methodology
The course consists of 2 hours per week of classroom sessions in large groups (theory and workshops) and 2 hours of practice weekly, half of them in small groups and the other half in the large-sized groups.

In the theory sessions, especially in the workshops, exercises, questionnaires and problems, raised previously, are discussed and assessed in the classroom.

The practical sessions consist of: a) laboratory activities in small groups for rock description and identification; and b) exercises on geological maps (large groups). All the practices are assessed in the classroom.

Additionally, a 5 hours trip for the reconnaissance of geological structures and soils in the field is carried out.

Teaching materials for the activities are provided by means the virtual campus ATENEA: contents of theory and practices, programming of the activities and directed learning.

Learning objectives of the subject
250106 - GEOLOGIA - Geology

Students will acquire a basic understanding of geology, morphology and climatology and learn how these disciplines apply to engineering problems.

On completion of the course, students will have acquired the ability to:
1. Identify specific types of rock and infer their basic mechanical and hydraulic properties;
2. Identify terrain structures and infer some of the basic structural, mechanical and hydrological properties of rocks;
3. Interpret geological maps and construct geological cross-sections using cartographic information and the results of reconnaissance surveys.

Mineralogy and its role in the composition of rocks; Types of naturally occurring rocks: igneous, sedimentary and metamorphic; Structural geology, including faults and joints and basic concepts of plate tectonics; Basic seismology; Geomorphology, in particular its bearing on engineering

4. Teamwork.

<table>
<thead>
<tr>
<th>Study load</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Total learning time:</strong> 150h</td>
</tr>
<tr>
<td>Theory classes:</td>
</tr>
<tr>
<td>Practical classes:</td>
</tr>
<tr>
<td>Laboratory classes:</td>
</tr>
<tr>
<td>Guided activities:</td>
</tr>
<tr>
<td>Self study:</td>
</tr>
</tbody>
</table>
**Content**

<table>
<thead>
<tr>
<th>Introduction</th>
<th>Learning time: 2h 24m</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Theory classes: 1h</td>
</tr>
<tr>
<td></td>
<td>Self study: 1h 24m</td>
</tr>
</tbody>
</table>

**Description:**

<table>
<thead>
<tr>
<th>GEOLOGICAL MATERIALS</th>
<th>Learning time: 60h</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Theory classes: 11h</td>
</tr>
<tr>
<td></td>
<td>Practical classes: 3h</td>
</tr>
<tr>
<td></td>
<td>Laboratory classes: 11h</td>
</tr>
<tr>
<td></td>
<td>Self study: 35h</td>
</tr>
</tbody>
</table>

**Description:**
Identify sedimentary, igneous and metamorphic rocks which are common in nature
Description of mechanic behavior of rocks in front of the effort. Mechanic strength of rocks.
Workshop 1: discussion of the questionaries on geological materials
Workshop 2: on the solution and discussion 1st part theory exam

**Specific objectives:**
Identify rocks which are common in nature
### Geological structure and tectonics

**Learning time:** 40h 48m  
Theory classes: 6h  
Practical classes: 11h  
Self study: 23h 48m

**Description:**  
Summaries of the primary structures of the rocks. Determination of the orientation of geological maps  
The age of the Earth. Relative dating of rocks and structures. Reconstruction of geological history. The scale of geological time. Diachrony of lithological formations.  
Large continental morphotectonic units. General structure of mountain ranges and their geographical distribution. Transform faults. Continental rift zones. Salt diapirs. Regional Examples  
Workshop 3: discussion of questionnaires on geological structures and tectonics  
Geological maps

---

### Field trip

**Learning time:** 14h 23m  
Laboratory classes: 6h  
Self study: 8h 23m

**Description:**  
field trip
The grade consists of the following components (the percentages indicate the weight in the mark of the subject):

1) Continuous assessment in the classroom (32%): in theory classes and workshops (18%), in petrology practices (7%), in geological maps practices (7%).

2) Four exams (68%) grouped into two parts: a) a first part consisting of a theory exam (21%) and a practical exam of petrology (13%), b) a second part consisting of a theory exam (21%) and a geological map exam (13%).

Students will obtain a “no show” mark in the subject in the following cases: a) unjustified absence to any of the practices, workshops and exercises of theory or exams, b) failure to deliver the results of the evaluable activities on the designated dates.

The assessment method for the English group will be identical to that of the other groups.
**Regulations for carrying out activities**

Qualification criteria and admission to reevaluation. Students not passing the regular evaluation will have the option to perform a reevaluation exam in the period set in the academic calendar provided that: a) they have completed and delivered all the results of the practices, workshops and theoretical exercises carried out in classroom and the four regular exams, b) they have obtained a grade equal or greater than two (2.0) in the these exams. The maximum mark for the reevaluation exam will be five (5.0). The non-attendance of a student summoned to the reevaluation exam, celebrated in the fixed date, cannot give rise to the realization of another exam with a later date. Students who have passed the regular assessment cannot take the reevaluation test.

An extraordinary evaluation exam will be carried out for those students who, due to proven major reasons, have not been able to carry out any of the evaluation exam. This extraordinary exam must be authorized by the head of studies, at the request of the teacher responsible for the subject, and will be carried out coinciding with the reevaluation exam.

**Bibliography**

**Basic:**


**Complementary:**

