Course guide
310615 - 310615 - Geophysics

Unit in charge: Barcelona School of Building Construction
Teaching unit: 748 - FIS - Department of Physics.

Degree: BACHELOR’S DEGREE IN GEOINFORMATION AND GEOMATICS ENGINEERING (Syllabus 2016).
(Compulsory subject).

Academic year: 2022  ECTS Credits: 4.5  Languages: Spanish

LECTURER
Coordinating lecturer: Carlota E. Auguet Sangrá

Others:

PRIOR SKILLS
Electromagnetism foundations.
Action of a magnetic field over a charge in movement and an element of electricity.
Magnetic fields created by different conductives.

DEGREE COMPETENCES TO WHICH THE SUBJECT CONTRIBUTES
Transversal:
1. THIRD LANGUAGE. Learning a third language, preferably English, to a degree of oral and written fluency that fits in with the future needs of the graduates of each course.

TEACHING METHODOLOGY
In the hours of learning in-person classes will be alterned between classes of explanation type with classes of resolution of exercises and problems. In the expositive classes, big group, the professor does a theoretical explanation to introduce the concepts that will be worked, and carries out examples of practice application of the same ones. The classes of exercise and problems resolution will be done in the medium group, and alternate the resolution of practical exercises and problems by the students and clarification of the most problematic points by the professor. The professor also propose to the student, both face-to-face and through the ATENEA platform, exercises and problems for autonomous learning.

LEARNING OBJECTIVES OF THE SUBJECT
Get the students used with the physic-mathematic tools necessary for the study of the typical contents of Sismology and Geomagnetism.
Introduction to the methods used for the Geophysics to access to the knowledge of the Earth’s inside and its dynamics.

STUDY LOAD

<table>
<thead>
<tr>
<th>Type</th>
<th>Hours</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hours medium group</td>
<td>27,0</td>
<td>24.00</td>
</tr>
<tr>
<td>Self study</td>
<td>67,5</td>
<td>60.00</td>
</tr>
<tr>
<td>Hours large group</td>
<td>18,0</td>
<td>16.00</td>
</tr>
</tbody>
</table>

Total learning time: 112.5 h
## CONTENTS

### Unit 1
**Description:**
Introduction to Geophysics. Earth's internal structure and composition. Tectonic plates.

**Full-or-part-time:** 2h  
Theory classes: 2h

### Unit 2
**Description:**
Geomagnetism. Earth magnetic field: inner and outer contributions. Dipolar field. Magnetic elements and force lines.

**Specific objectives:**
Get used to the geomagnetic coordinates

**Full-or-part-time:** 7h  
Theory classes: 4h  
Practical classes: 3h

### Unit 3
**Description:**
Magnetic anomalies.

**Full-or-part-time:** 4h  
Theory classes: 2h  
Practical classes: 2h

### Unit 4
**Description:**

**Full-or-part-time:** 3h  
Theory classes: 1h  
Practical classes: 2h

### Unit 5
**Description:**
Seismic waves. Sismograms and accelerograms.

**Full-or-part-time:** 5h  
Theory classes: 3h  
Practical classes: 2h
## Unit 6

**Description:**
Propagation of the seismic waves in a flat layer of constant velocity. Domocrones, parameter graphics of the distance-lightning epicentral.

**Full-or-part-time:** 4h  
Theory classes: 2h  
Practical classes: 2h  

## Unit 7

**Description:**
Generalization of the case of n layers. Continuous variation of the velocity with the depth. Relation of Benndorf.

**Full-or-part-time:** 2h  
Theory classes: 1h  
Practical classes: 1h  

## Unit 8

**Description:**
Distribution of velocity waves P and S. Nomenclature of the sysmic phases.

**Full-or-part-time:** 1h  
Theory classes: 0h 30m  
Practical classes: 0h 30m  

## Unit 9

**Description:**

**Full-or-part-time:** 3h  
Theory classes: 2h  
Practical classes: 1h  

## Unit 10

**Description:**
Electrical methods of propection.

**Full-or-part-time:** 1h  
Theory classes: 1h
Put in common of projects and practices.

**Description:**
Presentation of the projects about different complementary topics of interests for everyone. Explanation of how was made the practice and the results obtained.

**Full-or-part-time:** 3h
Theory classes: 3h

Carrying out tests of continuos evaluation.

**Description:**
Carrying out tests of continuos evaluation.

**Full-or-part-time:** 6h
Theory classes: 6h

**GRADING SYSTEM**

It will be made two exams of continuous evaluation that will count a 25% each one. The first will be done during the seventh week of the semester, and the second one during the fourteenth week. It will also be done a final exam that will count a 5%. The final mark will be the bigger one between the average and the one of the final exam. Optional work that will increase a 5% the final mark.

It will be done a retake exam.

**EXAMINATION RULES.**

The delivery of the final exam erases the possibility of having a "not attended".
To attend at the retake exam is mandatory to have attended at the final exam, and that the final mark of the subject is between 3.5 and 4.9.
The maximum qualification for the retake exam will be 5.

**BIBLIOGRAPHY**

**Basic:**

**Complementary:**