Course guide
310638 - 310638 - Remote Sensing Project

Unit in charge: Barcelona School of Building Construction
Teaching unit: 751 - DECA - Department of Civil and Environmental Engineering.
Degree: BACHELOR’S DEGREE IN GEOPHYSICS AND GEOPHYSICS ENGINEERING (Syllabus 2016). (Optional subject).

Academic year: 2022  ECTS Credits: 4.5  Languages: Catalan, Spanish

LECTURER
Coordinating lecturer: CAROLINA PUIG POLO

OTHERS:

REQUIREMENTS
Have studied or passed the subject of Remote Sensing

DEGREE COMPETENCES TO WHICH THE SUBJECT CONTRIBUTES

Specific:
1. Knowledge, application and analysis of the processes of treatment of digital images and special information, proceeding from airborne and satellite sensors.
2. Design and develop geomatic and topographic projects.
3. (ENG) Planification, project, direction, execution and management of processes of measurement, information systems, exploitation of images, positioning and navigation; modeling, representation and visualization of territorial information, under and above the terrestrial surface.
4. (ENG) Planification, project, direction, execution and management of processes and products of application to the Information Society within the geomatic field.

General:
8. Use of teams and instrumental: Capacity to select the necessary resources to achieve the planned goals according to the quality requirements. Use of the teams, in adequate conditions, with professional efficiency and taking into account the limitations of the instruments and its context of use, in relation with the required precisions.

Transversal:
5. EFFICIENT ORAL AND WRITTEN COMMUNICATION - Level 3. Communicating clearly and efficiently in oral and written presentations. Adapting to audiences and communication issues by using suitable strategies and means.
6. SUSTAINABILITY AND SOCIAL COMMITMENT - Level 3. Taking social, economic and environmental factors into account in the application of solutions. Undertaking projects that tie in with human development and sustainability.
7. 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.

TEACHING METHODOLOGY
The subject is mainly practical, at the beginning of each content will be done a brief theoretical explanation and afterwards will be applied the learnt concepts.
The attendance is considered indispensable for the correct assimilation of the subject, because the project is made in a collaborative way.
LEARNING OBJECTIVES OF THE SUBJECT

The basic goal of this subject is consolidate the knowledge learnt in the subject of Remote Sensing and study real applications through practical classes.

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>
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</tbody>
</table>

Total learning time: 112.5 h

CONTENTS

- Introduction to sensors and the tipology of satellite images used during the course. Introduction to the software used.

  **Description:**
  Brief introduction to the sensors and images used during the course. Introduction to software: LeoWorks, Neast, Miramon,..

  **Specific objectives:**
  Know the characterisitcs of the sensors and images. Learn the basic functioning of software about satellite image treatment.

  **Related activities:**
  Activity 1. Visualization and interpretation of optic images and radar images

  **Full-or-part-time:** 7h
  Theory classes: 3h
  Practical classes: 1h
  Laboratory classes: 1h
  Self study : 2h

- Preprocessing of satellite images: geometric corrections and radiometric

  **Description:**
  Reviewed of the geometric correction and radimetric of optic images and radar images

  **Full-or-part-time:** 16h
  Theory classes: 3h
  Practical classes: 4h
  Laboratory classes: 1h
  Self study : 8h
- **Meteorological satellites. Applications.**

Description:
Brief introduction to the different types of meteorological satellites and the spectral band of their sensors. Characteristics from the METEOSAT and NOAA images. Estimation of the precipitation across remote sensing images.

**Full-or-part-time:** 25h 30m
Theory classes: 4h
Practical classes: 3h
Laboratory classes: 1h
Self study: 17h 30m

- **Applications of the remote sensing for vegetation, ground and ice studies.**

Description:
Description of the analysis tools that allow us to classify different grounds, delimit surfaces with gels and determine zones with vegetal cover.

**Full-or-part-time:** 31h
Theory classes: 4h
Practical classes: 4h
Laboratory classes: 3h
Self study: 20h

- **Multitemporal analysis of images. Detection of changes. Use changes and covers of ground.**

Description:
Study of how with multitemporal images, optics and by radar, allow us to analyze the evolution of terrestrial covers.

**Full-or-part-time:** 33h
Theory classes: 4h
Practical classes: 6h
Laboratory classes: 3h
Self study: 20h

**GRADING SYSTEM**

The qualification of the subject is broken down into:
30% delivery of activities
70% delivery and presentation of the synthesis project

**EXAMINATION RULES.**

To pass the subject, the student must have delivered all the activities programmed and attended to the practical classes.
BIBLIOGRAPHY

Basic: