30137 - Digital and Remote Sensing Geographical Information

Información del Plan Docente

Academic Year	2018/19
Subject	30137 - Digital and Remote Sensing Geographical Information
Faculty / School	179 - Centro Universitario de la Defensa - Zaragoza
Degree	457 - Bachelor's Degree in Industrial Organisational Engineering 563 - Bachelor's Degree in Industrial Organisational Engineering
ECTS	6.0
Year	3
Semester	Second semester
Subject Type	Compulsory
Module	---

1.General information

1.1.Aims of the course

1.2.Context and importance of this course in the degree

1.3.Recommendations to take this course

2.Learning goals

2.1.Competences

2.2.Learning goals

2.3.Importance of learning goals

3.Assessment (1st and 2nd call)

3.1.Assessment tasks (description of tasks, marking system and assessment criteria)

4.Methodology, learning tasks, syllabus and resources

4.1.Methodological overview

The methodology followed in this course is oriented towards the achievement of the learning objectives. It favours the acquisition of the knowledge and appropriate skills in the application of Geographical Information Systems, Global Navigation Satellite Systems, image interpretation and Remote Sensing to industrial and military oriented applications.

Students are expected to participate actively in the class throughout the semester.

Classroom materials will be available via Moodle. These include a repository of the lecture notes used in class, the course syllabus, as well as other course-specific learning materials, including a discussion forum.

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Further information regarding the course will be provided on the first day of class.

4.2.Learning tasks

This is a 6 ECTS course organized as follows:

- Lectures. Lecture notes and a set of problems will be available for the students.
- Computer lab sessions. Students will work doing tasks related to the application of Geographical Information Systems, Global Navigation Satellite Systems, image interpretation and Remote Sensing techniques.
- Assignments. Students will complete assignments, problems and exercises related to concepts seen in Computer lab sessions and lectures.
- Autonomous work. Time to study theory, solve tasks related to the application of Geographical Information Systems, Global Navigation Satellite Systems, image interpretation and Remote Sensing techniques, prepare assignments, and take exams.
- Tutorials. Teacher's office hours allow students to solve questions and discuss unclear course contents. It is advisable to come with clear and specific questions.

4.3.Syllabus

The course will address the following topics:

Section 1. Geographical Information Systems (GIS).

Topic 1. Introduction to GIS.

Topic 2. Geographical information characteristics (data modeling in GIS).

Topic 3. Sources of information in GIS.

Topic 4. Spatial analysis functions.

Topic 5. Visualization and cartographic design.

Topic 6. Industrial and military oriented applications of GIS.

Section 2. Global Navigation Satellite Systems (GNSS) as a GIS source of data.

Topic 1. What is a GNSS?.

Topic 2. Operation of GNSS systems.

Topic 3. Types of GNSS receivers.

Topic 4. Error sources of GNSS and technology to reduce them.

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Topic 5. Key parameters in GNSS receivers.

Section 3. Remote Sensing.

Topic 1. Introduction to Remote Sensing.

Topic 2. Remote Sensing data characteristics.

Topic 3. The concepts of "resolution" and Remote Sensing systems and programs.

Topic 4. Remote Sensing images visualization and treatment.

4.4.Course planning and calendar

The beginning of the classes is in February, second semester. The lecture and the practice sessions will be in groups and will be held at the place and time resolved by the "Centro Universitario de la Defensa".

The key dates of the subject, related to the different activities that are developed throughout the course, as well as the assignments or work that students must present, will be indicated in the "Anillo Digital Docente" (ADD) (https://moodle2.unizar.es). In addition, students will also find there the detailed program of the subject and the computer software and materials needed to complete it.

4.5.Bibliography and recommended resources

Teaching materials or notes of the subject will be available in the Moodle Platform.