

Code: 1761 Geographic Information Systems and Remote Sensing**Degree:** 1st cycle - Forestry and Natural Resources**Curricular Year:** 2nd**Semester Course:** 2nd**Credits:** 6 ECTS**Compulsory****Language:** Portuguese/English**Prerequisites:** Carthography and Elements of Topography**Responsible:** Manuel Lameiras de Figueiredo Campagnolo**Other lecturer(s):** Maria da Graça Corte-Real Mira da Silva Abrantes**Web site:** <http://www.isa.utl.pt/home/node/3998>**1. Contact hours:****Lectures 28 Practicals/Laboratory 42 Others 14 Total 84****2. Objectives:**

The student is expected to become familiar with data structures for spatial information and spatial operations on those data, both for vector and raster representations. He is expected to be able to solve some spatial problems using GIS software and be able to perform 3D representation and analysis in GIS systems.

The student will have to learn to download and preprocess remote sensing data, to interpret those data and to integrate them with other sources of spatial information.

3. Programme:**I - Geographic Information Systems**

Data structures: raster and vector.

Map creation.

Spatial operations.

Introduction to spatial analysis.

Data editing.

Digital terrain models (DTMs – raster, vectorial, and TIN).

Operations over DTMs using GIS: calculation of slopes, aspect, view shed, areas and volumes.

Problems involving "shortest paths" over raster data.

II - Remote Sensing

Basic principles.

Remote sensing platforms and sensors.

Pre-processing of remotely-sensed data.

Introduction to image classification.

Image transforms and vegetation indexes.

4. Bibliography:**Main Bibliography**See: <http://www.isa.utl.pt/dm/sigdr/sigdr/>**5. Assessment:**

Project (realized in groups of up to 4 students) followed by a mandatory individual discussion (6/20).

Final exam (14/20).

Only students that participate in at least 75% of course work and discuss they projects are eligible to do the final exam.

Course approval: min. 6 on the final exam and min. 10 on total.

6. Estimated Workload:

168	Hours
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7. Last Update:

25/2/2011
