Universitat de Lleida

DEGREE CURRICULUM

SOIL INFORMATION SYSTEMS

Coordination: MARTINEZ CASASNOVAS, JOSE ANTONIO

Academic year 2022-23

SOIL INFORMATION SYSTEMS 2022-23

Subject's general information

<table>
<tr><td>Subject name</td><td>SOIL INFORMATION SYSTEMS</td></tr>
<tr><td>Code</td><td>12178</td></tr>
<tr><td>Semester</td><td>2nd Q(SEMESTER) CONTINUED EVALUATION</td></tr>
<tr><td>Typology</td><td>
<table>
<tr><th>Degree</th><th>Course</th><th>Character</th><th>Modality</th></tr>
<tr><td>Master's Degree in Agronomic Engineering</td><td>2</td><td>OPTIONAL</td><td>Attendance-based</td></tr>
<tr><td>Master's Degree in Soil and Water Management</td><td>1</td><td>COMPULSORY</td><td>Attendance-based</td></tr>
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<tr><td>Course number of credits (ECTS)</td><td>2.5</td></tr>
<tr><td>Type of activity, credits, and groups</td><td>
<table>
<tr><th>Activity type</th><th>PRAULA</th><th>TEORIA</th></tr>
<tr><td>Number of credits</td><td>1.6</td><td>0.9</td></tr>
<tr><td>Number of groups</td><td>1</td><td>1</td></tr>
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<tr><td>Coordination</td><td>MARTINEZ CASASNOVAS, JOSE ANTONIO</td></tr>
<tr><td>Department</td><td>ENVIRONMENT AND SOIL SCIENCES</td></tr>
<tr><td>Teaching load distribution between lectures and independent student work</td><td>1. Presentation of the subject. Introduction to Digital Soil Cartography and Soil Information Systems. (2 h)
2. Delineation of cartographic units for the differential management of agricultural soils by measuring the CEa with proximity sensors. Exercise. (2 h)
3. Design of relational databases. (2 h)
4. Exercise on the design of relational databases (2 h)
5. Delineation of potential cartographic units of soils through MDT and Remote Sensing. (10 h)
6. SIS Raimat study case. (2 h)</td></tr>
<tr><td>Important information on data processing</td><td>Consult this link for more information.</td></tr>
<tr><td>Language</td><td>Spanish</td></tr>
<tr><td>Distribution of credits</td><td>Classes: 2.5 credits (25 hours)
Personal work (approximate): 63 hours</td></tr>
</table>

SOIL INFORMATION SYSTEMS 2022-23

Teaching staff	E-mail addresses	Credits taught by teacher	Office and hour of attention
GONZALEZ DE AUDICANA AMENABAR, MARIA	maria.audicana@unavarra.es	1	
MARTINEZ CASASNOVAS, JOSE ANTONIO	joseantonio.martinez@udl.cat	1,5	

Learning objectives

- Know what soil information systems are.

- Know the methodologies for the structuring of soil information acquired in the field in alphanumeric databases and GIS.

- Apply digital terrain modeling technologies, soil apparent electrical conductivity sensors, GIS and Remote Sensing as support for the delineation of potential cartographic soil units.

- Prepare a SIS of a model area in a GIS environment and establish protocols for consultation and analysis of information for evaluation and planning purposes.

The previous knowledge is common to the module I Inventory and Evaluation of Soils and Territory. It is desirable to know techniques for the analysis of topographic information, analysis of landforms, remote sensing, GIS and relational databases.

Competences

- Ability to structure field information acquired in fields in alphanumeric databases and GIS.

- Ability to apply digital terrain modeling technologies, GIS and Remote Sensing for the analysis of relief and delineation of potential cartographic units of soils.

- Ability to develop a SIS from a model area in a GIS environment and establish protocols for quering and analysis of information for the purpose of evaluation and planning of the territory.

Methodology

The subject is articulated around a case of practical study. In particular, we work with data from an area near Lleida. In this area, the climate and the original materials are the main conditioning factors of the formation of the soils, their typology and possibilities of use. For the realization of the case study will be used descriptions of soil in the field and other field data already acquired previously in that area.

Development plan

Professors: JAMC José A. Martínez Casasnovas, MGAA María Gongález de Audicana Amenabar

Día	Hora	Aula	Profesor	Tema

1			JAMC	1. Presentación de la asignatura. Introducción a la Cartografía Digital de Suelos y a los Sistemas de Información de Suelos
2			JAMC	2. Delineación de unidades cartográficas para el manejo diferencial de suelos agrícolas mediante medida de la CEa con sensores de proximidad. Ejercicio
3			JAMC	3. Diseño de bases de datos relacionales.
4			JAMC	4. Ejercicio sobre el diseño de bases de datos relacionales
5			MGAA	5. Delineación de unidades cartográficas potenciales de suelos mediante MDT y Teledetección
6			MGAA	5. Delineación de unidades cartográficas… (continuación)
7			MGAA	5. Delineación de unidades cartográficas… (continuación)
8			MGAA	5. Delineación de unidades cartográficas… (continuación)
9			MGAA	5. Delineación de unidades cartográficas… (continuación)
10			JAMC	6. SIS caso de estudio
11			JAMC	6. SIS caso de estudio
12			JAMC	6. SIS caso de estudio
13			JAMC	EXAMEN

Evaluation

The evaluation will consist of two parts:

A) The realization of an exam on the concepts explained in the theoretical and practical classes, with a weight of 50% of the final grade.

B) Preparation of a report on the SIS developed for the area of the case study. This work may be individual or by groups of 2 and will have a weight of 50% of the final grade.

Bibliography

Martínez-Casasnovas, J.A., 2010. Bases de datos geo-relacionales. Aplicación al diseño, implementación y consulta de un Sistema de Información de Suelos. Serie: Quaderns DMACS núm. 35, Universitat de Lleida, Departament de Medi Ambient i Ciències del Sòl.