



Universitat de Lleida

DEGREE CURRICULUM
SOIL INFORMATION SYSTEMS

Coordination: MARTÍNEZ CASASNOVAS, JOSÉ
ANTONIO

Academic year 2020-21

Subject's general information

Subject name	SOIL INFORMATION SYSTEMS			
Code	12178			
Semester	ANUAL CONTINUED EVALUATION			
Typology	Degree	Course	Character	Modality
	Master's Degree in Soil and Water Management	1	COMPULSORY	Attendance-based
	Master's Degree in Agronomic Engineering (inter) (R2019)	2	OPTIONAL	Attendance-based
Course number of credits (ECTS)	2.5			
Type of activity, credits, and groups	Activity type	PRAULA		TEORIA
	Number of credits	1.6		0.9
	Number of groups	1		1
Coordination	MARTÍNEZ CASASNOVAS, JOSÉ ANTONIO			
Department	ENVIRONMENT AND SOIL SCIENCES			
Teaching load distribution between lectures and independent student work	<ol style="list-style-type: none"> 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) 			
Important information on data processing	Consult this link for more information.			
Language	Spanish			
Distribution of credits	Classes: 2.5 credits (25 hours) Personal work (approximate): 63 hours			

Teaching staff	E-mail addresses	Credits taught by teacher	Office and hour of attention
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MARTÍNEZ CASASNOVAS, JOSÉ 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

06/10/2020	16 – 18 h	Videoconferencia Sala del Curso Campus Virtual	JAMC	1. Presentación de la asignatura. Introducción a la Cartografía Digital de Suelos y a los Sistemas de Información de Suelos
08/10/2020	16 – 18 h	Videoconferencia Sala del Curso Campus Virtual	JAMC	2. Delineación de unidades cartográficas para el manejo diferencial de suelos agrícolas mediante medida de la CEa con sensores de proximidad. Ejercicio
14/10/2020	16 – 18 h	Videoconferencia Sala del Curso Campus Virtual	JAMC	3. Diseño de bases de datos relacionales.
16/10/2020	16 – 18 h	Videoconferencia Sala del Curso Campus Virtual	JAMC	4. Ejercicio sobre el diseño de bases de datos relacionales
20/10/2020	16 – 18 h	Videoconferencia Sala del Curso Campus Virtual	MGAA	5. Delineación de unidades cartográficas potenciales de suelos mediante MDT y Teledetección
22/10/2020	16 – 18 h	Videoconferencia Sala del Curso Campus Virtual	MGAA	5. Delineación de unidades cartográficas... (continuación)
26/02/2020	16 – 18 h	Videoconferencia Sala del Curso Campus Virtual	MGAA	5. Delineación de unidades cartográficas... (continuación)
28/02/2020	16 – 18 h	Videoconferencia Sala del Curso Campus Virtual	MGAA	5. Delineación de unidades cartográficas... (continuación)
30/02/2020	16 – 18 h	Videoconferencia Sala del Curso Campus Virtual	MGAA	5. Delineación de unidades cartográficas... (continuación)
03/11/2020	16 – 18 h	Videoconferencia Sala del Curso Campus Virtual	JAMC	6. SIS caso de estudio
05/11/2020	16 – 18 h	Videoconferencia Sala del Curso Campus Virtual	JAMC	6. SIS caso de estudio
10/11/2020	16 – 18 h	Videoconferencia Sala del Curso Campus Virtual	JAMC	6. SIS caso de estudio
11/11/2020	17 – 18 h	Campus virtual	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.