



Universitat de Lleida

DEGREE CURRICULUM

SOIL SURVEY

Coordination: POCH CLARET, ROSA MARIA

Academic year 2023-24

Subject's general information

Subject name	SOIL SURVEY			
Code	12177			
Semester	ANUAL			
Typology	Degree	Course	Character	Modality
	Master's Degree in Soil and Water Management	1	COMPULSORY	Attendance-based
Course number of credits (ECTS)	2.5			
Type of activity, credits, and groups	Activity type	PRACAMP	PRAULA	TEORIA
	Number of credits	0.4	0.2	1.9
	Number of groups	1	1	0
Coordination	POCH CLARET, ROSA MARIA			
Department	ENVIRONMENT AND SOIL SCIENCES AND CHEMISTRY			
Teaching load distribution between lectures and independent student work	15 study hours of individual work per credit			
Important information on data processing	Consult this link for more information.			
Language	Spanish			
Distribution of credits	Soil uses and functions, properties and characteristics, Soil morphology, Soil genesis and classification, soil components, parent material 20 h Poch Soil water, physical properties 5 h Arricibita			

Teaching staff	E-mail addresses	Credits taught by teacher	Office and hour of attention
ARRICIBITA VIDEGAIN, FRANCISCO JAVIER	arricibita@unavarra.es	0	
POCH CLARET, ROSA MARIA	rosa.poch@udl.cat	0	

Learning objectives

Purpose:

People who pass the course will be able to:

- Assess the functions or services of soils at different territorial scales
- Interpret basic cartographic information on soils: morphology, and physical-chemical characterization.
- Know the main processes and soil-forming factors, mainly in semi-arid and Mediterranean environments.
- Know the components of the soil and their physical and chemical properties.
- Know the different techniques of analysis and study of soils: field, office and laboratory
- Know the bases of the classification of soils at high hierarchical levels through the Soil Taxonomy and WRB systems.

Goals:

Give the bases to be able to understand and pass the rest of the subjects of the subject: Soil information systems, Soil evaluation and spatial planning and Soil-water-plant-atmosphere interactions. It will be taught with practices common to the Soil Map course. The general objectives of the subject are:

- Generate, manage and interpret information about soils for different purposes and scales
- Framing the soil and water information in the context of current and future environmental problems: carbon sequestration, climate change, desertification, food security, soil and water pollution, new irrigation.
- Use soil and water data in territorial planning in general and in irrigation systems in particular.

Competences

Competences:

CB1 That students know how to apply the knowledge acquired and their ability to solve problems in new or unfamiliar environments within broader (or multidisciplinary) contexts related to their area of study. CB2 That students are able to integrate knowledge and face the complexity of formulating judgments based on information that, being incomplete or limited, includes reflections on social and ethical responsibilities linked to the application of their knowledge and judgments. CB3 That students know how to communicate their conclusions –and the knowledge and ultimate reasons that support them– to specialized and non-specialized audiences in a clear and unambiguous way. CB4 That students possess the learning skills that allow them to continue studying in a way that will be largely self-directed or autonomous.

CE1: Generate and interpret soil and water data.

CG1 Develop capacities and processes of analysis, synthesis and evaluation, from the acquisition of concepts, calculations, procedures and techniques; CG2 Increase the ability to observe reality, imagination and spatial memory; CG3 Learn to work in a multidisciplinary and multi-objective way; CG4 Train in the generation, analysis, organization and evaluative applications of information on the territory; CG5 Learn in the field and in the laboratory actively, experimentally and in small groups; CG6 Learn to plan, develop, write and present a group work, through practical case study work; CG7 Learn the dynamics of a work team: decision-making, organization and group execution. CT1 Correction in written oral expression; CT2 Mastery of a foreign language; CT3 Mastery of ICT; CT4 Respect for the fundamental rights of equality between men and women, the promotion of Human Rights and the values of a culture of peace and democratic values

Subject contents

Land uses and functions

The soil as a natural object. Land uses, services, functions and protection. Soils as a continuum of observation.

Properties and characteristics of soils

The soil as a three-phase system

Soil components

- Inorganic components
- Organic components

Soil chemistry

- Soil reaction
- Surface reactions: ion exchange

Soil physics

- Soil structure and porosity
- Soil water
- Moisture content
- Water movement

Soil morphology

- Introduction
- Observable characters and inferred properties
- Methodology for macromorphological studies of
- Horizon identification
- Description of soils in the field

Forming factors and processes

Soil classification

Methodology

Theoretical classes with exercises in the classroom

Practical classes in the field: description of soil pits

Weekend field trip (second semester, date to be determined; in combination with the subjects of Soil Map and Soil Degradation and Rehabilitation) from Lleida to the Ebro Delta to observe land - landscape - land use relationships.

Laboratory practices (second semester, date to be determined, in combination with the subject of Soil Map). Basic soil analysis: pH, CE, carbonates, organic matter.

Development plan

TBD

Evaluation

- Continuous exercises (course work) 30%
- Outgoing reports (field) 20%
- Final test 45%
- 5% attendance

Bibliography

Basic references

Porta J, López-Acevedo M, Poch RM. 2019. *Edafología: uso y protección de suelos*. 4a edición. Mundi-Prensa Libros, Madrid.

Porta J, López-Acevedo M. 2005. *Agenda de campo de suelos. Información de suelos para la agricultura y el medio ambiente*. Ed. Mundi-Prensa, Madrid

Brady NC, Weil RR. 2008. *The nature and properties of soils (14th ed.)*. Prentice Hall Upper Saddle River, New Jersey.

Additional references

Porta J, López-Acevedo M, Roquero C. 2003. *Edafología para la agricultura y el medio ambiente*, Ed Mundi-Prensa, Madrid.

Ashman MR, Puri G. 2002. *Essential Soil Science*. Malded, Blackwell Publishing

Duchaufour Ph. 1987. *Manual de Edafología*. Masson. S.A. Barcelona

Singer MJ, Munns DN. 2006. *Soils. An Introduction*. Pearson Prentice Hall.

Links

<http://www.iec.cat/mapasols> - Compendio de información de suelos en Cataluña y Baleares.

<http://soils.usda.gov/technical/classification/taxonomy/> - Soil Taxonomy.

<ftp://ftp.fao.org/agl/agll/docs/wsr103e.pdf> - WRB for Soil Resources.

<http://www.cienciadelsuelo.es/index1.html> - Página interactiva para el aprendizaje de la edafología. (David Badia y cols.).

<http://www.isric.nl/> - Información de suelos del mundo.

<http://edafologia.ugr.es/index.htm> - Recursos didácticos en edafología, Universidad de Granada. Módulos y ejercicios: Introducción a la edafología, Mineralogía de suelos, Génesis de suelos, Clasificación de suelos. (Carlos Dorronsoro).

<http://www1.unex.es/eweb/edafo/> - Recursos didácticos en edafología, Universidad de Extremadura. (Octavio Artieda).

<http://virtual-museum.soils.wisc.edu/displays.html> - Virtual museum of minerals and molecules, University of Wisconsin.