

25208 - Soil science

Información del Plan Docente

Academic Year	2018/19
Subject	25208 - Soil science
Faculty / School	201 - Escuela Politécnica Superior
Degree	277 - Degree in Environmental Sciences 571 - Degree in Environmental Sciences
ECTS	6.0
Year	1
Semester	Second Four-month period
Subject Type	Basic Education

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

This subject is offered in the [English Friendly](#) form

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. A wide range of teaching and learning tasks are implemented, such as lectures, seminars, laboratory sessions, fieldwork and autonomous work and study.

The preferred methodology in the lectures and practice sessions will combine an expositive and a demonstrative method. The expositive method, which is characterized by the communication of concepts, will be used when students do not have

25208 - Soil science

prior knowledge that allow participatory debate, or in the case of concepts or relationships requiring a formal precision. The demonstrative method is marked by demonstrating a task or a procedure, and will be used in practice tasks.

It is recommended for students the interrogative method, which consists on asking the teacher or trying to find answers to his questions, and the active method which consists on becoming the agent of his own formation through personal research, direct contact with reality and experience with the working group in which s/he is incorporated.

4.2. Learning tasks

This 6 ECTS (150 hours) course is organized as follows:

- **Lectures.** Expositive and participatory lectures that will be followed by exercises and discussion topics.
- **Seminars and laboratory practices.** Demonstrative and interrogative activities essentially aimed to dominate laboratory and field procedures.
- **Fieldwork.** Which is carried out during the second half of the course, and focused to the consolidation and expansion of concepts.
- **Autonomous work and study.** Study and application of the topics covered in the course, preparation of practices' reports, conduct of a group work, preparation of exams...

4.3. Syllabus

This course will address the following topics:

Lectures

Section 1. Introduction

1. The concept of soil. Soil description: observed and inferred attributes. Soil morphology: genetic and diagnostic horizons. Methods for macromorphologic studies.

Section 2. Soil components

1. Mineral components. Soil minerals and their derived attributes.
2. Soil organic matter. The carbon cycle. Soil organic matter and fertility. Humus types in forest soils. Soil biomass.
3. Soil water and atmosphere. Water holding capacity. Water infiltration and redox processes.

Section 3. Soil formation

1. Soil forming factors: lithology, climate, relief, organisms and time. Soil-landscape relationships. Chronosequences and toposequences in Aragon.
2. Soil forming processes. Physical, chemical and biological weathering. Transformation and translocation. Additions and losses.

Section 4. Soil attributes and environmental quality

1. Physical attributes: structural stability, porosity, texture, plasticity, extensibility, etc. Impact on soil management.
2. Chemical attributes: pH, base saturation, main nutrients, organic matter, chelates, etc. Impact on soil management.
3. Biological properties: respiration, microbial biomass, qCO₂, enzyme activities. Indicators of environmental quality.
4. Soil quality facing degradation processes. Autodepuration and recuperation. Case studies in Aragón.

25208 - Soil science

Practice sessions

1. Field work. Description of soil forming factors and landscape.
2. Field work. Soil sampling strategies. Profile sampling. Surface sampling. Undisturbed samples.
3. Lab work. Sampling conditioning prior to analysis. Drying, sieving and shredding.
4. Lab work. Soil salinity. Qualitative assessment of carbonates, sulphates and chloride.
5. Lab work. Soil pH and carbonate measurement.
6. Lab work. Particle size and texture.
7. Lab work. Soil organic matter and Munsell color.
8. Computer lab work. Soil classification by WRB.
9. Computer lab work. Showing and discussing analytical and morphological data.
10. Field trip. Soils of Aragon.

4.4.Course planning and calendar

The basic pattern for classroom and laboratory activities is composed by four weekly hours. Nevertheless, this pattern should be modified by non school days, field trips or by other academic activities. These changes will be announced in classroom and also through the Moodle e-learning campus.

Further information concerning the timetable, classroom, office hours, assessment dates and other details regarding this course will be provided on the first day of class or please refer to the Faculty of Sciences website and Moodle.

4.5.Bibliography and recommended resources