

25208 - Soil science

Información del Plan Docente

Academic Year	2016/17
Academic center	201 - Escuela Politécnica Superior
Degree	571 - Degree in Environmental Sciences 277 - Degree in Environmental Sciences
ECTS	6.0
Course	1
Period	Second Four-month period
Subject Type	Basic Education
Module	---

1. Basic info

1.1. Recommendations to take this course

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

1.2. Activities and key dates for the course

2. Initiation

2.1. Learning outcomes that define the subject

2.2. Introduction

3. Context and competences

3.1. Goals

3.2. Context and meaning of the subject in the degree

3.3. Competences

3.4. Importance of learning outcomes

4. Evaluation

5. Activities and resources

5.1. General methodological presentation

The preferred methodology in the theoretical and practical classes will be affirmative, combining 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 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.

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For the students, it is recommended as learning methods the interrogative method, by asking the teacher or trying to find answers to his questions, and the active method, becoming the agent of his own formation through personal research, direct contact with reality and experience with the working group in which he is incorporated.

5.2.Learning activities

1. Theoretical sessions. Expositive and participatory lectures that will be followed by exercises and discussion topics.
2. Seminars and laboratory practices. Demonstrative and interrogative activities essentially aimed to dominate laboratory and field procedures.
3. Field task. Field work carried out during the second half of the course, and focused to the consolidation and expansion of concepts.
4. Non contact activities. Study and application of the topics covered by the schedule, preparation of practices' reports, conduct of a group work, preparation of exams...

5.3.Program

Theory programme

Block 1. Introduction

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

Block 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.

Block 3. Soil formation

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

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Block 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.

Practice tasks programme

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 Aragón.

5.4.Planning and scheduling

It is estimated that an average student should devote to this subject, 6 ECTS, a total of 150 hours. This time must include both classroom and non-attendance activities. The student must ensure that the dedication is distributed evenly throughout the quarter.

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.

5.5.Bibliography and recommended resources

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