

25245 - Soil and land evaluation

Información del Plan Docente

Academic Year	2017/18
Faculty / School	201 - Escuela Politécnica Superior
Degree	277 - Degree in Environmental Sciences
ECTS	6.0
Year	
Semester	Four-month period
Subject Type	Optional
Module	---

1.General information

1.1.Introduction

1.2.Recommendations to take this course

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

1.3.Context and importance of this course in the degree

1.4.Activities and key dates

2.Learning goals

2.1.Learning goals

2.2.Importance of learning goals

3.Aims of the course and competences

3.1.Aims of the course

3.2.Competences

4.Assessment (1st and 2nd call)

4.1.Assessment tasks (description of tasks, marking system and assessment criteria)

5.Methodology, learning tasks, syllabus and resources

5.1.Methodological overview

The learning process for this subject include lectures and participatory classes, practices in laboratory, field trips and on-line activities.

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5.2.Learning tasks

This subject emphasizes the importance of soil as natural resource, which provides many ecosystem services for environmental and food security and therefore the human well-being. This subjects brings together some of the systems developed to classify and evaluate soils and lands. It is mainly addressed for the students interested in interpreting a soil survey and to compare soils according agricultural, range or woodland land-uses .

5.3.Syllabus

Theory programme

Topic 1. Soil ecosystems services.

Topic 2. Soil description for soil classification and land evaluation.

Topic 3. Soil types and their formation: factors and processes.

Topic 4. World Reference Base (WRB) for soil resources: an international soil classification system.

Topic 5. Soils and land evaluation systems for land planning

Topic 6. Soil maps interpretation

Topic 7. Diagnosis of soil quality for rehabilitation projects

Topic 8. Soil conservation practices

Topic 9. Fire-affected soils and emergency measures in controlling post-fire degradation

Practical programme

Laboratory practicals:

1. Preparing soil samples: Drying, sieving, grinding and packing. Qualitative tests.

2. Physical properties: Particle size analysis, porosity, soil aggregate stability.

3. Chemical properties: pH, electrical conductivity, organic matter, carbonates, gypsum.

4. Biological properties: Soil respiration, enzymatic activities

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5. Final report

Field trips:

1. Soil and landscape relationships.

2. Management of soils

5.4. Course planning and calendar

Week	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	H
Lectures	T1	T2	T2	T3	T3	T4	T4	T5		T6	T7	T7	T8	T9	T9	
Hours	2	2	2	2	2	2	2	2		2	2	2	2	2	2	30
Prblems							T4	T5					T7	T8	T9	
Hours							2	2					2	2	2	10
Lab		P1	P2	P3	P4	P5										
Hours		2	2	2	2	2										10
Field trips							S1						S2			
Hours							5						5			10
Examination																5
Tutored work (H)		2		2	2	2	2	2		2		2	2	2	2	20

T: topics; H: hours

5.5. Bibliography and recommended resources

Basic references (Mainly available on-line):

FAO (1976). A framework for land evaluation. FAO Soils bulletin, 32. Rome. Available on-line: <http://www.fao.org/docrep/X5310E/X5310E00.htm>

FAO (2006). Guidelines for soil description. 4th ed. Rome. Available on-line: <http://www.fao.org/docrep/019/a0541e/a0541e.pdf>

IGN. 1992. Atlas Nacional de España. Sección II. Grupo 7. Edafología. Instituto Geográfico Nacional. M.O.P.T. Madrid.

IUSS Working Group WRB. 2015. World reference base for soil resources: International soil classification system for naming soils and creating legends for soil maps. (updated 2015). World Soil Resources Reports, 106. FAO-ISRIC-ISSS. Roma. Available on-line: <http://www.fao.org/3/a-i3794e.pdf>

PORTA, J., LÓPEZ-ACEVEDO, M.; ROQUERO, C. 2003. Edafología para la agricultura y el medio ambiente. Mundi-Prensa. 3ª edición. Madrid.

Additional bibliography

Specific references on soils of Aragón

BADIA, D. (1989). Los suelos de Fraga. Cartografía y evaluación. Colección de Estudios Altoaragoneses, 30. Instituto de Estudios Altoaragoneses. Huesca.

BADÍA, D. Coord (2009). Itinerarios edáficos por el Alto Aragón. Cuadernos Altoaragoneses de Trabajo, nº 28. Ed. Instituto de Estudios Altoaragoneses. 189 pp. Huesca.

BADÍA, D.; MARTÍ, C. (1999). Suelos del Pirineo Central: Fragen. 190 pp. Publicación a cargo del Instituto Nacional de Investigación y Tecnología Agraria Universidad de Zaragoza, Consejo de Protección de la Naturaleza de Aragón e Instituto de Estudios Altoaragoneses. Huesca.

BADÍA, D.; MARTÍ, C.; CUCHÍ, J.A.; CASANOVA, J. (2006). Los suelos de los viñedos en la D. O. Somontano de Barbastro. 205 pp. Colección Ciencias, 8. Ed. Prensas Universitarias de Zaragoza.

BADÍA, D.; IBARRA, P.; MARTÍ, C.; LONGARES, L.A.; BELMONTE, A. (2008). El Aiguabarreig: suelos y paisajes. 193 pp. Serie Investigación, 53. Consejo de Protección de la Naturaleza de Aragón. Zaragoza.

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BADÍA, D., MARTÍ, C.; CHARTE, R. (2011). Soil Erosion and Conservations Measures in Semiarid Ecosystems Affected by Wildfires. Chapter 5, pp 87-110. In: Soil Erosion Studies. Godone, D. and Stanchi, S . (Eds). INTECH Open Access Publisher.

BADÍA-VILLAS, D. , DEL MORAL, F. (2016). Soils of Arid lands. In: The Soils of Spain (J.F. Gallardo Lancho, Coord.), Chapter 4, pp. 147-164. Springer International Publishing Switzerland. ISBN: 978-3-319-20540-3

GÓMEZ-MIGUEL, V.D.; BADÍA-VILLAS, D. (2016). Soil Distribution and Classification. In: The Soils of Spain (J.F. Gallardo Lancho, Coord.), Chapter 2, pp. 13-50. Springer International Publishing Switzerland

BADÍA, D., RUIZ, A., GIRONA, A., MARTÍ, C., CASANOVA, J., IBARRA, P., ZUFIAURRE, R. (2016) The influence of Elevation on Soil Properties and Forest Litter in the Siliceous Moncayo Massif, SW Europe. *Journal of Mountain Science* (in press).

Soil Taxonomy (USDA):

Available on-line:

http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/survey/class/?cid=nrcs142p2_053580

SOIL SURVEY STAFF. 2014. Keys to Soil Taxonomy, 12th ed. USDA-Natural Resources Conservation Service, Washington, DC.

SOIL SURVEY STAFF. 2015. Illustrated guide to soil taxonomy. U.S. Department of Agriculture, Natural Resources Conservation Service, National Soil Survey Center, Lincoln, Nebraska.

Spanish version of Keys to Soil Taxonomy: Soil Survey Staff. 2014. Claves para la Taxonomía de Suelos, 12th ed. USDA-Natural Resources Conservation Service, Washington, DC.

Webs:

<http://www.cienciadelsuelo.es/> (with English version)

<http://www.suelosdearagon.com/>

The updated recommended bibliography can be consulted in:
<http://psfunizar7.unizar.es/br13/egAsignaturas.php?id=2208>



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