28962 - Soil science

Información del Plan Docente

Academic Year	2017/18
Faculty / School	201 - Escuela Politécnica Superior
Degree	437 - Degree in Rural and Agri-Food Engineering
ECTS	5.0
Year	4
Semester	Second semester
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 has a first module of Applied Soil Science, centered on mineral and organic fertilizers, the management of salt-affected soils as well as soil conservation practices and a second module on soils formation, description, classification and evaluation.

5.3.Syllabus

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Theory programme

I. APPLIED SOIL SCIENCE

Topic 1. Diagnosis of soil fertility.

Topic 2. The mineral fertilisation of agricultural soils.

Topic 3. Organic amendments for agricultural soils.

Topic 4. Management and restoration of salt-affected soils

Topic 5. Soil conservation practices

II. FROM SOIL FORMATION TO LAND ASSESSMENT

Topic 6. Factors and processes of soil formation

Topic 7. Soil taxonomy: The World Reference Base (WRB) of Soil resources.

Topic 8. Soils and land evaluation for land planning

Topic 9. Soil maps interpretation.

Practical programme

Laboratory practicals:

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

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

5. Final report

Field trips:

1. Study and morphological description of soil profiles. Soil and landscape relationships (Soil geography)

2. Management of agricultural soils.

5.4.Course planning and calendar

Week	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	H
Lectures	T1	T1	T2	T2	T3	T3	T4	T4	T5		T6	T7	T7	T8	T9	
Hours	2	2	2	2	2	2	2	2	2		2	1	1	2	2	26
Problems and case studies														T7	T8	
Hours											1		1	1	1	4
Lab			P1	P2	P3	P4	P5									
Hours			2	2	2	2	2									10
Field trips								S1						S2		
Hours								5						5		10
Examination																5
Tutored			2		2	2	2	2	2		2		2	2	2	20

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work (H)																
Student (H)	3	3	3	3	3	3	3	3	3		5	5	5	5	5	55

T: topics; H: hours

5.5.Bibliography and recommended resources

Basic references

FAO. 1976. A framework for land evaluation. FAO Soils bulletin, 32. Rome.

FAO. 2006. Guidelines for soil description. 4th ed. Rome.

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

IUSS. 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.

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

Additional bibliography

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.

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=8123