Doble Grado en CIENCIAS AMBIENTALES Y GEOLOGÍA

Curso 2019/2020

DOBLE GRADO EN CIENCIAS AMBIENTALES Y GEOLOGÍA

DATOS DE LA ASIGNATURA

ASIGNATURA	ENVIRONMENTAL HYDROLOGY AND SOIL SCIENCE	SUBJECT	ENVIRONMENTAL HYDROLOGY AND SOIL SCIENCE
CÓDIGO	757914222		
MÓDULO	TECNOLOGÍA AMBIENTAL	MATERIA	HIDROLOGÍA Y EDAFOLOGÍA AMBIENTAL
CURSO	4-5 º	CUATRIMESTRE	2 º
DEPARTAMENTO	CIENCIAS DE LA TIERRA	ÁREA DE CONOCIMIENTO	GEODINÁMICA EXTERNA
CARÁCTER	OBLIGATORIA	CAMPUS VIRTUAL	MOODLE

DISTRIBUCIÓN DE CRÉDITOS

	TOTAL	TEÓRICOS GRUPO GRANDE	TEÓRICOS GRUPO REDUCIDO	PRÁCTICAS DE INFORMÁTICA	PRÁCTICAS DE LABORATORIO	PRÁCTICAS DE CAMPO
ECTS	6	2.52	1.48	0	2	0

DATOS DEL PROFESORADO

COORDINADOR

NOMBRE	MANUEL OLÍAS ÁLVAREZ		
DEPARTAMENTO	CIENCIAS DE LA TIERRA		
ÁREA DE CONOCIMIENTO	GEODINÁMICA EXTERNA		
UBICACIÓN	FACULTAD EXPERIMENTALES MODULO 3 PLANTA 4 DESPACHO 9		
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URL WEB		CAMPUS VIRTUAL	MOODLE

DESCRIPCIÓN GENERAL DE LA ASIGNATURA

DESCRIPCIÓN GENERAL

This subject provides the student with the basic knowledge necessary to understand two very important issues in any environmental study: soil and water. The main problems affecting these resources (pollution, water overexploitation, soil erosion, etc.) are also addressed.

ABSTRACT

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OBJETIVOS: RESULTADOS DEL APRENDIZAJE

The main objectives are:

To know the hydrological cycle in detail, characteristics of surface waters and groundwaters, basic aspects of water resources management, problems of water pollution and non-conventional water resources.

To know the basic processes of soil formation, its constituents, its physicochemical properties, classification and the

main problems challenges related to soils, mainly erosion and pollution.

At the end of the course students should be able to:

- Carry out an assessment of water resources of a zone
- Estimate water evopotranspiration
- Use hydrogeological information
- Classify the water quality for the different uses
- Understand data from soil profiles and maps
- Use the universal soil loss equation in a practical case and to know the measures to reduce soil erosion
- Understand the processes of soil contamination and the possible remediation measures

REPERCUSIÓN EN EL PERFIL PROFESIONAL

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RECOMENDACIONES AL ALUMNADO

No formal prerequisites are demanded. Students should have a basic theoretical knowledge of geology, mathematics and chemistry.

More information can be found on the International Office website

COMPETENCIAS

Las competencias básicas, generales, transversales y específicas se encuentran detalladas en las guías docentes de estas asignaturas en el Grado en Geología y/o Ciencias Ambientales.

TEMARIO Y DESCRIPCIÓN DE LOS CONTENIDOS

TEORÍA

HYDROLOGY

1 **The hydrological cycle**. Water in the soil. Precipitation. Evaporation and Evapotranspiration. Infiltration. Runoff.

2 **Surface hydrology**. Watersheds. Rivers. Lakes and reservoirs. Environmental flow regime.

3 **Hydrogeology**. Hydrogeological behavior of materials. Law of Darcy. Hydrodynamic parameters. Overexploitation.

4 **Water pollution**. Natural composition of water. Contaminant agents. Quality indices.

5 **Introduction to the management of water resources**. Concepts on water management. Water quality depending on its use.

6 **Non-conventional water resources**. Desalination. Reuse of wastewater.

SOIL SCIENCE

7 **Soil formation**. Processes and forming factors. The soil profile. Horizons.

8 **Soil constituents.** Solid phase: inorganic and organic. Liquid phase. Gas phase.

9 **Soil properties**. Physic properties. Physico-chemical properties.

10 **Soil classifications.** Basics of soil taxonomy. Land evaluation.

11 **Soil degradation**: types and evaluation.

12 **Soil erosion**. Basic concepts. Forms of water erosion. Conditioning factors. USLE: Universal equation of soil loss. Wind erosion. Desertification.

13 **Soil contamination and remediation**. Contaminant agents. Salinization. Phytosanitary products. Heavy metals. Acid rain. Mining activities.

PRÁCTICAS DE LABORATORIO

Problem and lab sessions will be devoted to apply and reinforce some of the theoretical concepts

METODOLOGÍA DOCENTE

Grupo grande	• Método expositivo (lección magistral). • Exposiciones audiovisuales. • Aprendizaje autónomo. • Aprendizaje cooperativo. • Atención personalizada a los estudiantes.
Grupo reducido	• Realización de seminarios, talleres o debates. • Estudio de casos. • Aprendizaje autónomo. • Aprendizaje cooperativo.
Prácticas de laboratorio	• Prácticas de laboratorio con grupos reducidos, enfocadas al manejo de técnicas experimentales en laboratorio, reconocimiento de minerales y fósiles a visu y microscopio, la resolución de problemas, el trabajo con mapas, etc. • Aprendizaje autónomo. • Aprendizaje cooperativo. • Atención personalizada a los estudiantes.

CRONOGRAMA ORIENTATIVO I

SEMANAS (S):	S1	S2	S3	S4	S5	S6	S7	S8	S9	S10	S11	S12	S13	S14	S15
GRUPO GRANDE	X	X	X	X	X	X	X	X	X	X	X	X	X		
GRUPO REDUCIDO	X	X	X	X	X		X	X	X	X		X	X		
PRÁCTICAS DE LABORATORIO		X	X	X	X	X			X	X	X	X	X		
PRÁCTICAS DE INFORMÁTICA															
PRÁCTICAS DE CAMPO															

EVALUACIÓN DE LA ASIGNATURA

PRIMERA EVALUACIÓN ORDINARIA (FEBRERO/JUNIO)

EVALUACIÓN CONTINUA

Course assessment is worth 40% of the final course grade. It will consider the essays, oral presentations, other activities, etc. The final exam is worth 60% of the final course grade, it will consist of two parts: theory and problems. Besides that, students can obtained an additional 10% of the final grade based on the attendance and participation at classes. Students are required to obtain a minimum of 4/10 grade in each part of the exam to make the final grade average. Final results will be given in terms of a numerical scale between 0 and 10 (including tenths), with the corresponding qualitative ratings below: • <=4.9: Fail (D) • 5.0 - 6.9: Pass (C) • 7.0 - 8.9: Pass with Merit (B) • 9.0 - 10: Distinction (A)

EVALUACIÓN FINAL

The theory exam is worth 60% of the final course grade and the problem exam the remaining 40%. Students are required to obtain a minimum of 4/10 grade in each part of the exam to make the final grade average. Final results will be given in terms of a numerical scale between 0 and 10 (including tenths), with the corresponding qualitative ratings below: • <=4.9: Fail (D) • 5.0 - 6.9: Pass (C) • 7.0 - 8.9: Pass with Merit (B) • 9.0 - 10: Distinction (A)

¿Contempla una evaluación parcial? NO

SEGUNDA EVALUACIÓN ORDINARIA

The same that for the ordinary evaluation I

TERCERA EVALUACIÓN ORDINARIA Y OTRAS EVALUACIONES

The same that for the ordinary evaluation I

OTROS CRITERIOS DE EVALUACIÓN

¿Contempla la posibilidad de subir nota una vez realizadas las pruebas? NO

REFERENCIAS

BÁSICAS

Brady, N.C. y Weil R.R. (2004). Elements of the nature and properties of soils. Ed. Prentice Hall.

Cech, T.V. (2005). Principles of water resources. History, development, management and policy. John Wiley & Sons.

Fetter, C.W. (2001). Applied Hydrogeology. Ed. Prentice-Hall,

Gordon, N.D. McMahon, T.A., Finlayson, B.L., Gippel, C.J. y Nathan, R.J. (2004).

Stream hydrology. An introduction for ecologists. John Wiley & Sons.

Pierzynsky, G.M., Sims, J.T. y Vance, G.F. (2005). Soils and environmental quality. CRC Press, Boca Ratón. USA.

ESPECÍFICAS

For each unit, specific bibliography will be provided.