



FICHA TÉCNICA DE LA ASIGNATURA

Datos de la asignatura	
Nombre completo	Optativa complementaria: Soil Pollution and Depletion
Código	DIM-MESEM-517
Impartido en	Máster Universitario en Ingeniería Industrial + Máster en Medioambiente y Transición Energética [Primer Curso]
Créditos	3,0 ECTS
Carácter	Optativa
Departamento / Área	Departamento de Ingeniería Mecánica

Datos del profesorado	
Profesor	
Nombre	Pilar Palomar Herrero
Departamento / Área	Escuela Técnica Superior de Ingeniería (ICAI)
Correo electrónico	ppalomar@comillas.edu
Profesor	
Nombre	María del Mar Cledera Castro
Departamento / Área	Departamento de Ingeniería Mecánica
Despacho	Alberto Aguilera 25 [D-310]
Correo electrónico	mcledera@icai.comillas.edu
Teléfono	2372
Profesor	
Nombre	Catalina Hueso Kortekaas
Departamento / Área	Departamento de Ingeniería Mecánica
Correo electrónico	khueso@icai.comillas.edu
Profesor	
Nombre	Beatriz Castillo Viana
Departamento / Área	Escuela Técnica Superior de Ingeniería (ICAI)
Correo electrónico	bcastillo@icai.comillas.edu
Profesor	
Nombre	Miguel Ángel de la Calle Agudo
Departamento / Área	Escuela Técnica Superior de Ingeniería (ICAI)
Correo electrónico	madecalle@icai.comillas.edu

DATOS ESPECÍFICOS DE LA ASIGNATURA



Contextualización de la asignatura

Aportación al perfil profesional de la titulación

The objective of this subject is to provide the student with the necessary tools and knowledge about the main sources of contamination of soil and groundwater, the main techniques to decontaminate them, analyze and measure environmental risks, and generate environmental authorizations.

Combining all the knowledge acquired in the rest of the subjects, and with the new ones exposed in this subject, the student will be provided with the necessary knowledge to develop and propose sustainable transition strategies.

Prerequisitos

Previous knowledge of basic environmental concepts is required.

Competencias - Objetivos

BLOQUES TEMÁTICOS Y CONTENIDOS

Contenidos – Bloques Temáticos

1. Soil and groundwater contamination
 1. Soil vector and groundwater vector
 2. Pollution sources: Industrial, agricultural, livestock, mining activities, landfills, septic tanks...
 3. Soil salinization
 4. Ecosystem services of soils and aquifers
2. Movement and transport of pollutants
 1. Hydrogeology. Case study.
3. Environmental protection measures
 1. Protection regulations
 2. Control networks, viewers and situation in Spain.
 3. Sampling. Case Study
4. Soil remediation techniques
5. Environmental risks and authorizations
 1. Risk analysis
 2. Environmental authorizations

METODOLOGÍA DOCENTE

Aspectos metodológicos generales de la asignatura

In the subject several units are distinguished.

1. Description of soil and aquifer vectors and forms of pollution
2. Movement of pollutants in soil and aquifers
3. Forms of environmental protection of soils and aquifers
4. Remediation techniques for contaminated soils.

5. Authorizations, analysis and management of environmental risks.

Each unit will be evaluated, either through the development of theoretical evaluation tests, or through the analysis of the knowledge acquired by the student performing a deliverable project.

RESUMEN HORAS DE TRABAJO DEL ALUMNO

IN-CLASS HOURS

- Master lesson: 25 hours
- Exhibition and development of practical cases: 5 hours

AUTONOMOUS WORK

1. Study and previous preparation of the theoretical contents and practical cases: 20 hours
2. Work in the development of the *final project* to be presented: 30 hours
3. Preparation and review of theoretical concepts: 10 hours

TOTAL HOURS: 90 hours (3 ECTS)

EVALUACIÓN Y CRITERIOS DE CALIFICACIÓN

The evaluation method consists of a follow-up of the student's continuous work and the demonstration by him of the knowledge acquired.

To this end, the following will be evaluated:

- Class participation and quality of interventions
- Previous preparation of the case studies
- Development of the final project to be delivered.
- Level of knowledge acquired through evaluation tests.

Calificaciones

The grade of the subject consists of:

1. 60% average grade of the evaluation tests carried out during the course (T out of 10 points)
2. 40% evaluation of the final project developed (P out of 10 points)

These evaluations assess not only the quality of the work, but also the degree of active participation and contribution.

The final grade of the subject will be calculated as:

$$\text{FINAL NOTE} = 60\%T + 40\%P$$

To pass the subject it is necessary to obtain a final grade equal to or greater than 5.00

In case of not reaching this requirement, the student will repeat that or those evaluation blocks (T or P) in which their grade is less than

5.00. The rest of the grades will be maintained.

The calculation of the extraordinary final grade will be the same as the previous case.

BIBLIOGRAFÍA Y RECURSOS