FICHA TÉCNICA DE LA ASIGNATURA

Datos de la asignatura

<table>
<thead>
<tr>
<th>Nombre completo</th>
<th>Environmental Engineering &amp; Sustainability</th>
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<tr>
<td>Código</td>
<td>DIM-SAP-346</td>
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<td>Nivel</td>
<td>Intercambio</td>
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<td>Cuatrimestre</td>
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<td>Carácter</td>
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<tr>
<td>Departamento / Área</td>
<td>Departamento de Ingeniería Mecánica</td>
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<tr>
<td>Responsable</td>
<td>Maria del Mar Cledera Castro</td>
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Datos del profesorado

Profesor

<table>
<thead>
<tr>
<th>Nombre</th>
<th>Catalina Hueso Kortekaas</th>
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<tr>
<td>Departamento / Área</td>
<td>Departamento de Ingeniería Mecánica</td>
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<tr>
<td>Correo electrónico</td>
<td><a href="mailto:khueso@icai.comillas.edu">khueso@icai.comillas.edu</a></td>
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Profesores de laboratorio

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<tr>
<th>Nombre</th>
<th>Carlos Morales Polo</th>
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<td><a href="mailto:cmorales@comillas.edu">cmorales@comillas.edu</a></td>
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DATOS ESPECÍFICOS DE LA ASIGNATURA

Contextualización de la asignatura

Aportación al perfil profesional de la titulación

This course is an introduction to environmental engineering and sustainable development. It includes environmental quality standards, sources, characteristics, transport, and effects of water pollutants where we will study biological, chemical, and physical processes in water and the design of water purification (WPP) and wastewater treatment plants (WWTP). It also includes the study of the structure and composition of the atmosphere and effects of air pollutants, greenhouse gases, climate change and the equipment needed to clean the air in industries such as thermoelectric power plants, cement plants, etc..... We will study solid waste management and disposal. Finally, we will study concepts such as carbon footprint, life cycle assessment and introduce Sustainability

Prerrequisitos
Having passed a first year of bachelor’s degree in engineering

**Competencias - Objetivos**

**BLOQUES TEMÁTICOS Y CONTENIDOS**

**Contenidos – Bloques Temáticos**

**Theory:**

3. Air Pollution: parts of the atmosphere, pollution measurement and control, greenhouse gases, carbon footprint, carbon capture and storage.
4. Water Pollution: hydrology and hydrogeology, quality, purification (WPP) and wastewater treatment plants (WWTP).
5. Soil Pollution: Soil features and pollution. Natural resources management. Solid waste management.

**Laboratory:**

There will be four 2-hour sessions in the second lecture week.

- Raw Water Analysis.
- Chlorination procedure and Jar Test.
- Waste Water Analysis
- Visit to a Solid waste plant
- DISPER 4.0 Simulation of air pollution
- Air pollution measurement of CH4, Ozone, ....

**METODOLOGÍA DOCENTE**

**Aspectos metodológicos generales de la asignatura**

Theory.

In class practice of exam problems

Accompanied self resolution

**EVALUACIÓN Y CRITERIOS DE CALIFICACIÓN**
The following conditions must be accomplished to pass the course:

- A minimum overall grade of at least 5 over 10.
- A minimum grade in the final exam of 4 over 10.

The overall grade is obtained as follows:

- Final exam (50-60 %)
- Other exams (30%).
- Lab (10%)
- Participation in class exercises and debates (0-10%)

The grade of extraordinary exam is obtained as follows:

- Extraordinary exam (80-90 %)
- Continuous evaluation (10-20 %)

BIBLIOGRAFÍA Y RECURSOS

Bibliografía Básica