

## 30170 - Environmental engineering

### Syllabus Information

**Academic year:** 2023/24

**Subject:** 30170 - Environmental engineering

**Faculty / School:** 179 - Centro Universitario de la Defensa - Zaragoza

**Degree:** 563 - Bachelor's Degree in Industrial Organisational Engineering

**ECTS:** 4.5

**Year:** 2

**Semester:** Second semester

**Subject type:** Compulsory

**Module:**

### 1. General information

The objectives of the subject are to provide knowledge about environmental problems, to train in techniques of pollution minimization and environmental management, and to know the existing basic environmental regulations.

These objectives are aligned with some of the Sustainable Development Goals (SDGs) of the United Nations 2030 Agenda (SDGs 1, 2, 3, 5, 6, 7, 9, 11, 12, 13, 14, 15 and 16)

The subject provides knowledge about the environment that allows students to be responsible for the management of the environmental aspects of an organization, focusing on the prevention, minimization and remediation of environmental pollution

This knowledge can help future Army Officers to carry out their mission.

### 2. Learning results

- Recognizes and knows how to evaluate the effect of pollutants on the receiving environment: atmosphere, water and soil
- Know how to analyse an industrial activity and identify the environmental problems it may generate.
- Know how to plan a pollution prevention and control strategy in specific cases.
- Know how to select the most appropriate technique for purification and/or contamination control in specific cases.
- Be capable of dimensioning simple water, atmospheric and soil pollution control installations.
- Analyse the impact of different industrial activities on the environment.
- Know the fundamentals of an Environmental Management System in an industrial activity.
- Know the basic regulations related to environmental matters (dumping, atmosphere, waste, environmental impact, and integrated pollution control) and the obligations derived from them

### 3. Syllabus

Unit 1: Environmental Management System

Unit 2: Chemical engineering concepts applied to the environment

Unit 3: Water pollution

Unit 4: Atmospheric pollution

Unit 5: Contamination by waste

### 4. Academic activities

The general methodology of the subject is based on theoretical and practical activities on different topics related to environmental pollution and seeks that students achieve the expected learning results and acquire habits applicable during their professional and personal life.

They include lectures, seminars, laboratory practices, written tests and non-face-to-face activities, such as problem solving, elaboration of theoretical and practical work and personal study. Audiovisual materials and written materials provided through the Moodle platform will be used.

## 5. Assessment system

### Continuous assessment

The student must demonstrate that they has achieved the expected learning results by passing the evaluation instruments grouped in the following parts, which will be carried out throughout the four-month period

1. **Theoretical and practical examinations (ExTeo).** Weighting 35 %.
2. **Examination of problems (ExProb).** Weighting 45 %.
3. **Laboratory practices (Prac).** Weighting 10 %.
4. **Active learning activities (Act).** Weighting 10 %.

**IMPORTANT:** the grade obtained in the theoretical-practical exams and in the problems exam must be greater or equal to 4 in order to pass the subject by continuous evaluation.

### Global test:

Students who do not pass the subject by continuous evaluation or who, having passed it, would like to improve their grade , will have the right to take the first global test. Those who do not pass the subject in this first call, will be entitled to a second global test.

In both cases the overall test will consist of three parts:

1. **Theoretical-practical exam (ExTeo)** to evaluate the theory part (40 %).
2. **Problem exam (ExProb)** to evaluate the problem part (50 %).
3. **Practical exam (ExPrac)** to evaluate the practical part (10 %).

**IMPORTANT:** the grade obtained in the theoretical-practical exam and in the problems exam must be higher or equal to 4 in order to pass the subject in the overall test.

Assessment instruments:	Weighting	RA1	RA2	RA3	RA4	RA5	RA6	RA7	RA8
Theoretical and practical examinations	35%	x	x	x	x		x	x	x
Examination of problems	45%					x			
Laboratory practices	10%	x	x			x			
Active learning activities	10%	x	x	x	x		x	x	x