

29938 - Technologies for Treatment of Polluted Waters and Gases

Syllabus Information

Academic year: 2023/24

Subject: 29938 - Technologies for Treatment of Polluted Waters and Gases

Faculty / School: 110 - Escuela de Ingeniería y Arquitectura

Degree: 435 - Bachelor's Degree in Chemical Engineering

ECTS: 6.0

Year: 4

Semester: Second semester

Subject type: Optional

Module:

1. General information

The goals of the subject are to train the future engineer in pollution, minimization techniques or measures and water and air treatment technologies, which will allow him/her, in general, to apply measures of control and correction of environmental pollution, especially in the industrial sector intensifying the training acquired in the subject "Environmental Engineering", a compulsory subject in the undergraduate degrees of the industrial branch.

These approaches and goals are closely aligned with the Sustainable Development Goals (SDGs) of the 2030 Agenda (<https://www.un.org/sustainabledevelopment/es/>); specifically with SDG3 (Objective 3.3 and 3.9), SDG4 (Objective 4.7), SDG6 (Objective 6.3, 6.4 and 6.6), SDG7 (Objective 7a), SDG9 (Objective 9.4), SDG11 (Objective 11.6), SDG12 (Objectives 12.2, 12.4, 12.5, 12.6 and 12.8.), SDG13 (Objective 13.3), SDG14 (Objective 14.1).

2. Learning results

- Plan a strategy for quality control, pollution control and efficient and sustainable water use.
- Assess the extent of an air pollution problem and determine the best strategy(ies) for the reduction of air pollutants taking into account specific process criteria.

3. Syllabus

Block WATER TREATMENT TECHNOLOGIES

Unit 1. Water quality and pollution

Unit 2. Water supply water conditioning techniques

Unit 3. Wastewater treatment techniques

Block TECHNOLOGIES FOR TREATMENT OF CONTAMINATED GASES

Unit 1. Atmosphere and air quality

Unit 2. Control and cleaning of contaminated gases

4. Academic activities

- **Theoretical classes:** 30 hours.
- **Problem and Case Studies:** 15 hours. The classes will be used for the definition and guided works as well as for the realization of exercises or concrete practical cases of direct application or complementary to what has been treated in theory class, which will help to consolidate the concepts developed in a gradual way.
- **Practical laboratory classes:** 10 hours.
- **Visits to facilities:** 5 hours.
- **Guided Works:** 30 hours. Guidance, follow-up and evaluation of guided work.
- **Assessment exams:** 6 hours.
- **Student work:** 54 hours.
- **Tutoring.**

5. Assessment system

Each block will be evaluated independently, each of them representing 50% of the final grade of the subject. A minimum grade of 4 out of 10 will be required to average between blocks.

1. Continuous assessment method

For each of the blocks:

- **Exhibit 1. Guided work (50%).** Assessment of the degree of compliance with the proposed goals, the procedure developed, the quality of the reports presented and the participation in the programmed sessions . Minimum grade to average: 4
- **Exhibit 2. Laboratory or computer practice (15%).** Assessment of attendance, participation and quality of reports submitted. Minimum grade to average: 4
- **Exhibit 3. Midterm Exam (35%).** Test type questions, short answer or development related to global material covered in the subject. Minimum grade to average: 4

The tests passed in continuous assessment mode will maintain the grade obtained during the whole academic year (i.e., for ordinary and extraordinary calls).

2. Global assessment method

Individual written test carried out on dates established by the center (in ordinary and extraordinary calls) which includes three parts:

- **Part 1. Examination of Practical Cases (50%).** Examination of practical cases similar to those addressed in the guided work. Minimum grade to average: 4
- **Part 2. Practice Test(15%).** Examination of short answer or essay questions, related to the practices. Minimum grade to average: 4
- **Part 3. Theory Test (35%).** Test type questions, short answer or development related to global material covered in the subject. Minimum grade to average: 4