

25224 - Water pollution

Syllabus Information

Academic year: 2023/24

Subject: 25224 - Water pollution

Faculty / School: 201 - Escuela Politécnica Superior

Degree: 571 - Degree in Environmental Sciences

ECTS: 6.0

Year: 3

Semester: First Four-month period

Subject type: Compulsory

Module:

1. General information

The main objective is to provide the student with the scientific and technical knowledge that will allow them to carry out the identification and control of water pollution providing quality training in evaluation, management and environmental planning, having as a reference the protection of health and the environment.

This goal is aligned with some of the SDGs, specifically SDG 6 (6.3 and 6.a) and 12 (12.4).

This subject presents the basics of knowledge on water pollution, in such a way that, complementing the training with the subjects Air Pollution and Soil Pollution, it will provide the students with the necessary theoretical and practical knowledge fundamental to carry out the identification, evaluation, prevention, control and correction of environmental pollution, in an integrated manner.

It is recommended to have previously taken the subjects Chemical Bases of the Environment, Environmental Administration and Legislation, Environment and Sustainability, Ecology I and II, and Chemical Analysis in the Environment.

2. Learning results

In order to pass this subject, the students shall demonstrate they has acquired the following results:

1. To determine the quality of a water by using indicator parameters.
2. Identify and quantify the pollution generated by an urban or industrial activity and assess the effect it may have on the receiving water environment.
- 3 Plan a strategy for the prevention and control of water pollution in specific cases.
4. To design a treatment system for urban and industrial wastewater treatment, by means of the selection and sizing of the process units that integrate it.
5. Plan a system for the treatment of drinking water for human consumption and for the regeneration of treated water for subsequent reuse.

All of these learning results are part of Sustainable Development Goals 6: Clean water and sanitation and 12: Responsible production and consumption.

3. Syllabus

BLOCK 1. INTRODUCTION TO WATER QUALITY AND POLLUTION

0. Sustainable Development Goals.

1. General concepts on water quality and contamination.
2. Water pollutants.
3. Evolution of contaminants in the receiving environment.
4. Basic water legislation.

BLOCK 2.- WATER TREATMENT TECHNOLOGIES

1. General concepts on water treatment technologies.
2. Homogenization chambers
3. Techniques for the removal of solids, grease, suspended matter and biodegradable matter.
4. Sludge treatment technologies.
5. Disposal techniques for non-biodegradable material.
6. Treatment with resins and membranes.
7. Disinfection.

8. Low-cost technologies.

4. Academic activities

Master classes: 30 hours

Theoretical sessions in which the contents of the subject will be explained

Seminars: 5 hours

Resolution of cases related to the topics of the subject.

Laboratory practices: 16h

Laboratory sessions related to water characterization and water treatment

Integral practical work: 4h

Group sessions for the realization and presentation of the work on the planning of a global strategy for the control of water pollution in an industrial activity

Visits to facilities: 5h

Visits to water treatment facilities

Autonomous student work (86h) and evaluation (4h)

5. Assessment system

The subject will be evaluated by means of a global evaluation with the following activities to be carried out on the dates established by the center:

Test 1. Individual written test of theory (50% of the final grade)

It will include multiple-choice and theoretical-practical questions (short and essay questions). For its realization, the use of any kind of documentation other than the one provided in the exam will not be allowed. Minimum grade to average with the rest of the tests: 5

Test 2. Individual written practical exam (30% of the final grade)

It will include short questions on laboratory practices (25%) and seminars (5%). No documentation of any kind other than that provided in the exam will be allowed for its completion. Minimum grade to average with the rest of the tests: 5

Test 3. Presentation of the integral practical work (20% of the final grade)

It will consist of the presentation and defence of the work done throughout the term. Minimum grade to average with the rest of the tests: 5

ATTENTION: There is the possibility of taking the evaluation of Tests 2 and 3, before the date of the global test of the evaluation, having attended all the practical and work sessions and submitting the corresponding reports, as students will be informed in the presentation of the subject..

If the final grade is ≥ 5 but any of the evaluation test grades are not, the subject will result failed and the grade on the transcript will be "4.0 failed". If tests 2 and/or 3 are passed in the first call, but the subject is failed, if the student wishes, the grades corresponding to these activities will be kept for the second call of the same academic year.

The success rate in the subject for the last three years is 90.91% (2019-20), 95.45% (2020-2021) and 89.29% (2021-2022),