

60386 - Environmental Pollution

Syllabus Information

Academic year: 2023/24

Subject: 60386 - Environmental Pollution

Faculty / School: 100 - Facultad de Ciencias

Degree: 624 - Master's in Geology: Techniques and Applications

ECTS: 6.0

Year: 1

Semester: Second semester

Subject type: Optional

Module:

1. General information

Pollution-related problems are linked to a wide range of human activities (agricultural, livestock, mining, industrial and urban). As a result, polluting compounds are remarkably diverse (organic compounds, pesticides, heavy metals, fertilizers, etc.) and their environmental effects, on a local or global scale, are also very varied and have significant social and economic repercussions. In this context, the subject Contamination aims to provide the student with an overview of the pollution problems affecting the environment (rocks, sediments, soils and water) and how to approach their analysis, mitigation and remediation.

SDG 4: Quality education.

SDG 6: Clean water and sanitation.

SDG 9: Industry, innovation and infrastructure

SDG 11: Sustainable cities and communities

SDG 12: Responsible production and consumption

2. Learning results

Upon completion of the subject, the student will be able to:

- Identify the various types of soil, sediment and water pollution caused by human activities (mining, industry, agriculture, livestock).
- Explain the mechanisms by which pollutants are transported and transformed in the exogenous environment.
- Understanding contamination from a risk management point of view.
- Describe the methods and techniques of sampling and analysis necessary to carry out a contamination study.
- Describe the most important methods of remediation of contaminated sites.
- Manage bibliography, in Spanish and English, related to pollution and remediation.
- To express knowledge and conclusions in reports and oral presentations.

3. Syllabus

Topic 1. Pollution as a risk (4h).

Topic 2. Pollution sources and types of pollutants (4h).

Topic 3. Physics of pollutant transport and destination (6h).

Topic 4. Transport chemistry and destination of pollutants (8h).

Topic 5. Sampling and analysis of polluted sites (12h).

Topic 6. Case study: acid mine drainage (12h).

Topic 7. Remediation and remediation technologies (14h).

4. Academic activities

Activity 1. Lectures (2 ECTS): concepts and theoretical bases of the subject.

Activity 2. Practical work experience (2 ECTS): analysis of real or theoretical-practical cases on different types of pollution.

Activity 3. Seminars (0.4 ECTS): presentation and discussion of pollution cases.

Activity 4. Laboratory practice (0.8 ECTS): application of laboratory work methodologies, with the appropriate equipment and techniques, for the analysis of polluted water and soil samples.

Activity 5. Field practice: (0.8 ECTS): application of water and soil sampling techniques in a practical case of pollution.

5. Assessment system

Continuous assessment

Activity 1 (lectures): individual questionnaires on the different topics covered in the subject (25%).

Activity 2 (cabinet practices): reports on the results of the practical sessions, delivered within the established deadline (25%).

Activity 3 (seminars): questionnaires on the content of each seminar (10%).

Activity 4 (laboratory practices): report detailing the laboratory procedures and the analysis of the results obtained (it can also be presented in an audiovisual format) (20%).

Activity 5 (field practices): report of the field trip, summarizing the aspects related to sampling or remediation techniques (it can also be presented in an audiovisual format) (20%).

Each assessment test is graded from 0 to 10, and a minimum grade of 5 points is necessary to pass. The final grade will be obtained by applying the proportions indicated for each activity as long as the grade for each activity is not below 4.

Overall assessment

The global test consists of two exams. The first one, of a theoretical nature, on issues related to the different topics covered in activities 1 and 3 (35%). The second, of a practical nature, with different exercises on activities 2, 4 and 5 (65%).

Each exam will be graded from 0 to 10 and will be passed with a minimum grade of 5 points. The overall grade will be obtained by applying the proportions indicated for each exam, as long as the grades for each exam are not below 4.