

27126 - Environmental Biotechnology

Syllabus Information

Academic year: 2024/25

Subject: 27126 - Environmental Biotechnology

Faculty / School: 100 - Facultad de Ciencias

Degree: 446 - Degree in Biotechnology

ECTS: 6.0

Year:

Semester: First semester

Subject type: Compulsory

Module:

1. General information

The objective of this subject is to introduce students to the main environmental problems for which biotechnology can provide solutions, as well as to instruct them on current solutions to these problems. In addition, it is intended that the student knows the contributions of biotechnology to the maintenance of environmental balance on the planet, and the potential of the various technologies studied in previous subjects.

Compulsory subject taught in the third year of the degree.

2. Learning results

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

- Knowledge of the most important current problems in the conservation of the natural environment.
- Knowledge of the solutions that biotechnology can offer to alleviate environmental problems.
- Ability to observe the natural environment
- Ability to carry out a critical analysis of the information, as well as a synthesis and integration of the knowledge provided in the general context of biotechnology.
- Ability to search for and analyse specific information related to the subject matter
- Ability to prepare, interpret and publicly defend reports

This subject will allow students to learn about biotechnological solutions to environmental problems and, therefore, to know how to optimize, modify, improve, alter the many aspects that can affect these solutions,.

3. Syllabus

TRAINING ACTIVITY 1:

Block I: Most relevant environmental problems and solutions. Introduction to Environmental Biotechnology; Water pollution; Wastewater treatment; Waste; Composting.

Block II: Bioremediation and biodegradation. Biosensors; Bioremediation of contaminants; Phytoremediation; Cyanotoxins; Biodegradation of natural compounds; Biodegradation of agri-food waste

Block III: Biotechnological alternatives to environmentally aggressive processes. Clean energy and biomaterials; Biocontrol

TRAINING ACTIVITIES 2 AND 3:

In the tutored seminars, practical cases of current environmental problems will be assessed.

Industrial facilities using technologies described in the lectures will be visited and a laboratory practice of a biological treatment will be carried out

4. Academic activities

TRAINING ACTIVITY 1: 35 hours

Participative master classes whose materials will be made available to the student at the ADD (Anillo Digital Docente).

TRAINING ACTIVITY 2: 15 hours

Case studies in which some aspect of biotechnology has provided solutions to environmental problems.

Methodology: handling of the bibliography, individual and/or group work, and oral presentation and defence of the same.

TRAINING ACTIVITY 3: 10 hours

Laboratory practices and visits to entities such as water and/or waste treatment plants.

STUDY: 84 hours

ASSESSMENT TESTS. 6 hours

5. Assessment system

-The evaluation of the theoretical contents of training activities 1 and 2 will be by means of written tests with multiple choice and essay questions. This evaluation will constitute 80% of the final grade

- The oral presentation and discussion of the seminars will constitute 10% of the final grade.

-The evaluation of training activity 3 will constitute 10% of the final grade.

In addition to the assessment system previously mentioned, the student will have the possibility to be evaluated in a global test, which will assess the achievement of the learning results indicated above.

To pass the subject it is essential to achieve a 5 out of 10 in each of the training activities, and 5 out of 10 in the overall grade. For training activity 1, a minimum grade of 4.5 out of 10 must be obtained in each of the three thematic blocks in order to be averaged.

Fraud or total or partial plagiarism in any of the evaluation tests will result in the failure of the subject with the minimum grade, in addition to the disciplinary sanctions adopted by the Guarantee Commission for these cases.

6. Sustainable Development Goals

6 - Clean Water and Sanitation

7 - Affordable and Clean Energy

12 - Responsible Production and Consumption