Degree competences to which the subject contributes

**Specific:**
1. The ability to design natural biotechnological processes for eliminating pollutants in solid, liquid and gaseous media.

**Generical:**
2. The ability to take the initiative and be creative.
3. The ability to communicate effectively orally and in writing.

Teaching methodology

Lectures, which cover the content of the subject and in which students' active participation is encouraged.

Problem-solving classes and classes involving practical cases.

Technical visits to wastewater and waste gas treatment plants. Debate in the classroom on activities carried out beforehand.

Learning objectives of the subject

1. To revise some of the environmental applications of biotechnology. To become familiar with the biotechnological processes used in industry.

2. To describe techniques for gaseous pollutants abatement using biological systems.
Study load

<table>
<thead>
<tr>
<th>Total learning time: 45h</th>
<th>Hours large group:</th>
<th>30h</th>
<th>66.67%</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Hours medium group:</td>
<td>15h</td>
<td>33.33%</td>
</tr>
</tbody>
</table>

Content

Subject Area I. Biological processes: applications in wastewater and waste treatment

Learning time: 22h 30m
Theory classes: 15h
Practical classes: 7h 30m

Description:
1. Introduction to environmental biotechnology
2. Biological treatment of wastewater
3. Biological treatment of waste
4. Biodegradation of xenobiotic compounds
5. Biosorption of metals. Bioleaching

Subject Area II. Techniques for gaseous pollutants abatement using biological systems

Learning time: 22h 30m
Theory classes: 15h
Practical classes: 7h 30m

Competencies of the degree to which the subject contributes

Description:
1. Introduction
2. Non-biological methods
3. Biological treatment of gases and odours

Qualification system

Assignments handed in during the course (bibliographic research, comments on articles, exercises and problems): 30%
Written tests 1: 25%
Written tests 2: 25%
Individual bibliographic research assignment: 20%
33111 - EBATR - Bioresources Engineering Applied to the Waste Treatment

Bibliography

Basic:


