Course guide
33115 - GTR - Waste Management and Treatment

Unit in charge: Manresa School of Engineering
Teaching unit: 750 - EMIT - Department of Mining, Industrial and ICT Engineering.
Degree: MASTER'S DEGREE IN NATURAL RESOURCE ENGINEERING (Syllabus 2015). (Compulsory subject).
Academic year: 2022  ECTS Credits: 5.0  Languages: Spanish

LECTURER
Coordinating lecturer: Bonsfills Pedros, Anna

DEGREE COMPETENCES TO WHICH THE SUBJECT CONTRIBUTES
Specific:
1. The ability to understand the types of waste that may be generated from natural resources and apply the most appropriate approaches to management and treatment.

TEACHING METHODOLOGY
Lectures, which cover the topics related to the specific learning objectives. Exercises and introduction to research tasks, which students must do and hand in and which form part of continuous assessment.

Two individual written tests are set during the semester. Parts of the tests are multiple-choice and the other parts involve solving problems.

LEARNING OBJECTIVES OF THE SUBJECT
1. To gain a broad understanding of the management and treatment of solid, liquid and gaseous waste from extractive activities and of the effect of pollutants on these activities, with an emphasis on heavy metals.
2. To contribute to waste minimisation at source, the use of waste during the manufacturing process and the recycling and recovery of materials whose useful life has ended.
3. To give as much value as possible to waste, following sustainability criteria.
4. To apply the knowledge acquired in simple research tasks.

STUDY LOAD

<table>
<thead>
<tr>
<th>Type</th>
<th>Hours</th>
<th>Percentage</th>
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<tbody>
<tr>
<td>Hours large group</td>
<td>30,0</td>
<td>66.67</td>
</tr>
<tr>
<td>Hours medium group</td>
<td>15,0</td>
<td>33.33</td>
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Total learning time: 45 h
CONTENTS

DESCRIPTION

Description:
1. Introduction
2. Characterisation of waste
3. Management of industrial waste
4. Industrial waste treatment systems
5. Building and mining waste
6. Metal mining waste
7. Non-metal and potash mining waste
8. Radioactive waste

Full-or-part-time: 50h
Theory classes: 30h
Practical classes: 20h

GRADING SYSTEM

The final mark is calculated by applying the following percentages:
Continuous assessment activities 30%
Individual written test I (multiple-choice and problems) 35%
Individual written test II (multiple-choice and problems) 35%

BIBLIOGRAPHY

Basic: