Degree competences to which the subject contributes

Specific:
CE15MUGE. Building energy manage and apply improvements in energy efficiency and for reduce operating costs

Learning objectives of the subject

At the end of the subject, students will be able to detect, analyse and take decisions related to improving the energy efficiency of existing buildings. The subject will provide knowledge, skills and competences needed to implement energy management systems, to conduct energy audits and to identify technically and economically viable energy efficiency measures. The subject will also provide knowledge, skills and competences to understand the energy market and the operation of Energy Saving Companies.

Study load

<table>
<thead>
<tr>
<th>Total learning time: 125h</th>
<th>Hours large group: 17h 30m</th>
<th>14.00%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hours medium group: 5h</td>
<td>4.00%</td>
<td></td>
</tr>
<tr>
<td>Hours small group: 5h</td>
<td>4.00%</td>
<td></td>
</tr>
<tr>
<td>Guided activities: 7h 30m</td>
<td>6.00%</td>
<td></td>
</tr>
<tr>
<td>Self study: 90h</td>
<td>72.00%</td>
<td></td>
</tr>
</tbody>
</table>
## ISO 50001 energy management system

**Description:**
- Introduction, goal and scope
- General Requirements
- Management Responsibility
- Energy Policy
- Energy Action Plan
- Implementation and operation
- Performance Audits
- Management Review

**Learning time:** 41h 40m
- Theory classes: 5h 50m
- Practical classes: 1h 40m
- Laboratory classes: 1h 40m
- Guided activities: 2h 30m
- Self study: 30h

## Energy audits

**Description:**
- Introduction
- Legal framework
- Methodology
- Planning
- On-site monitoring
- Energy assessment
- Identification of energy efficiency measures and economic analysis
- Energy results and final report

**Learning time:** 41h 40m
- Theory classes: 5h 50m
- Practical classes: 1h 40m
- Laboratory classes: 1h 40m
- Guided activities: 2h 30m
- Self study: 30h
The final grade depends on the following assessment criteria:
- Exam (30%)
- Team project (35%)
- Individual projects and activities (30%)

Qualification system

Learning time: 41h 40m
- Theory classes: 5h 50m
- Practical classes: 1h 40m
- Laboratory classes: 1h 40m
- Guided activities: 2h 30m
- Self study: 30h

Energy market and Energy Service Companies

Description:
- Introduction to the electricity market
- Electricity bill
- Electricity tariffs
- Introduction to the gas market
- Gas bill
- Gas tariffs
- Other fuels
- Introduction to Energy Service Companies
- Energy Supply contracting and energy performance contracting
- Performance verification
- Case studies

Bibliography

Basic: