To introduce the student into a new way to analyze different systems taking into consideration the energetic point of view. Public buildings, transport and industries examples will be analyzed in order to reach improvements in their energetic costs.

Learning objectives of the subject

To introduce the student into a new way to analyze different systems taking into consideration the energetic point of view. Public buildings, transport and industries examples will be analyzed in order to reach improvements in their energetic costs.
### Study load

<table>
<thead>
<tr>
<th>Total learning time: 75h</th>
<th>Hours large group:</th>
<th>30h</th>
<th>40.00%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Self study:</td>
<td></td>
<td>45h</td>
<td>60.00%</td>
</tr>
</tbody>
</table>

220128 - Energy Efficiency Systems
## Content

### Module 1: Energy Audits

**Description:**
1. Definitions
2. Basic Energy concepts
3. Units
4. Introduction to the bills comprehension
5. Energy audits (Steps, scope)

**Learning time:** 14h  
Theory classes: 6h  
Self study: 8h

### Module 2: Building Energy Audit

**Description:**
1. Introduction
2. Building concepts
3. Lighting concepts
4. Heating and cooling
5. First exercise definition

**Learning time:** 14h  
Theory classes: 6h  
Self study: 8h

### Module 3: Energetic improvements in Transport.

**Description:**
1. First exercise presentation
2. Introduction to the energetic consumption in the transport
3. Aeronautics energetic improvements
4. Railway energetic improvements
5. Automotive energetic improvements

**Learning time:** 14h  
Theory classes: 6h  
Self study: 8h
The final grade will be calculated based on:

\[ NT = 0.4 \times N1 + 0.5 \times N2 + 0.1 \times NC \]

Being:
- NT: Final Grade
- N1: First Exercise qualification
- N2: Second Exercise qualification
- NC: Contribution to the meetings

### Qualification system

#### Module 4: Industrial energetic assessment

- **Description:**
  1. Introduction
  2. Electrical energy management
  3. Energetic improvements in the industry
  4. Second exercise definition

- **Learning time:** 14h
  - Theory classes: 6h
  - Self study: 8h

#### Module 5: Second exercise presentation

- **Description:**
  1. Presentations

- **Learning time:** 19h
  - Theory classes: 6h
  - Self study: 13h

### Bibliography

**Basic:**


**Complementary:**


**Others resources:**

Class notes