295301 - IGSE - Integration and Management of Energy Systems

Coordinating unit: 295 - EEBE - Barcelona East School of Engineering
Teaching unit: 709 - DEE - Department of Electrical Engineering
Academic year: 2019
Degree: BACHELOR'S DEGREE IN ENERGY ENGINEERING (Syllabus 2009). (Teaching unit Compulsory)
ECTS credits: 6  
Teaching languages: Catalan, Spanish

Teaching staff

Coordinator: MARIA ELENA MARTIN CAÑADAS
Others: Primer quadrimestre:
MARIA ELENA MARTIN CAÑADAS - M11, M12
MONTSERRAT MATA DUMENJO - M11, M12

Segon quadrimestre:
MARIA ELENA MARTIN CAÑADAS - M11
MONTSERRAT MATA DUMENJO - M11

Prior skills

Basic knowledge of storing and generating heat and power systems

Degree competences to which the subject contributes

Specific:
CEENE-40. Tackle energy saving problems systematically by integrating processes and technologies.

Transversal:
05 TEQ N3. TEAMWORK - Level 3. Managing and making work groups effective. Resolving possible conflicts, valuing working with others, assessing the effectiveness of a team and presenting the final results.
06 URI N3. EFFECTIVE USE OF INFORMATION RESOURCES - Level 3. Planning and using the information necessary for an academic assignment (a final thesis, for example) based on a critical appraisal of the information resources used.
07 AAT N3. SELF-DIRECTED LEARNING - Level 3. Applying the knowledge gained in completing a task according to its relevance and importance. Deciding how to carry out a task, the amount of time to be devoted to it and the most suitable information sources.

Teaching methodology

The teaching methodology will be project based learning.

Learning objectives of the subject

? Review and model the main electricity and heat generation and storage integrated technologies.
? Learning systematic methods of thermal systems analysis and design of heat exchanger networks.
? Learning systematic analysis methods of combined thermal and electrical systems.
? Employ tools and systematic identification procedures of opportunities for energy savings and reuse.
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Study load

<table>
<thead>
<tr>
<th></th>
<th>Total learning time: 150h</th>
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<tbody>
<tr>
<td>Hours large group:</td>
<td>45h 30.00%</td>
</tr>
<tr>
<td>Hours medium group:</td>
<td>0h 0.00%</td>
</tr>
<tr>
<td>Hours small group:</td>
<td>15h 10.00%</td>
</tr>
<tr>
<td>Guided activities:</td>
<td>0h 0.00%</td>
</tr>
<tr>
<td>Self study:</td>
<td>90h 60.00%</td>
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Content

Integrated technologies.

Description:
Description and modeling of the main generation and storage technologies that will be part of the integrated energy systems.

Systematic methods for the analysis of thermal systems and design of heat exchangers networks.

Description:
Exposition of methods for the analysis and design of thermal systems and heat exchangers networks.

Systematic analysis methods of combined thermal and electrical systems.

Description:
Exhibition of systematic methods to perform analysis of combined systems of thermal and electric type.

Distributed systems.

Description:
Determination of the optimal management of distributed systems.
Qualification system

The final grade will be obtained from the following equation:
\[ NF = 0.25 \times 0.25 \times P_1 + P_2 + P_3 + 0.25 \times 0.25 \times PR \]

\( P_1, P_2, P_3 \): Projects 1, 2 and 3
\( PR \): Practices

50% of the mark of each project will result from its oral defense and the remaining 50% of the valuation of the written report.
This course will not have a re-evaluation exam.

Bibliography

Basic:


Others resources:

Hyperlink

Revistes electròniques Elsevier, IEEE
Electronic journals Elsevier, IEEE