390205 - SCE - Energy Systems and Components

Degree competences to which the subject contributes

Specific:
1. TEAMWORK - Level 2. Contributing to the consolidation of a team by planning targets and working efficiently to favor communication, task assignment and cohesion.
2. Rural engineering: engines and machinery, electrical engineering.

Transversal:

Learning objectives of the subject

To track this course is that students achieve a basic vocabulary and an overview of energy systems. It aims to introduce students to the basics of electrical and thermal power systems, their applications, as well as saving technologies and energy efficiency, not to mention environmental issues. Must be able to know the behavior of electrical systems, machines thermal criteria of energy efficiency and environmental protection. It aims to have the capacity to select and successfully apply these technologies in rural areas, as well as master the techniques of calculation introduced the subject.
### Study load

<table>
<thead>
<tr>
<th>Total learning time: 150h</th>
<th>Hours large group:</th>
<th>Hours medium group:</th>
<th>Hours small group:</th>
<th>Guided activities:</th>
<th>Self study:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>40h</td>
<td>0h</td>
<td>20h</td>
<td>0h</td>
<td>90h</td>
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<tr>
<td></td>
<td>26.67%</td>
<td>0.00%</td>
<td>13.33%</td>
<td>0.00%</td>
<td>60.00%</td>
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</tbody>
</table>
# INTRODUCTION TO ENERGY SYSTEMS

**Learning time:** 5h  
Theory classes: 2h  
Self study: 3h

**Description:**  

**Related activities:**  
Activity 1: Class of theoretical explanation  
Activity 2: Individual final assessment  
Activity 5: Work: Update energy data

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# ELECTRICAL SYSTEMS single and three phase

**Learning time:** 45h  
Theory classes: 10h  
Laboratory classes: 8h  
Self study: 27h

**Description:**  
Three-phase systems. Connecting generators and receivers in star and triangle. Relations-voltage intensity. Active power, reactive and apparent three-phase systems. Improved power factor receptors balanced.

**Related activities:**  
Activity 1: Class of theoretical explanation  
Activity 2: Individual final assessment  
Activity 3: Solving exercises and problems  
Activity 4: Practice Lab. Measure three phase power systems.  
Activity 5: Work: Description of electrical installation
<table>
<thead>
<tr>
<th>ELECTRICAL MACHINES</th>
<th>Learning time: 20h</th>
</tr>
</thead>
<tbody>
<tr>
<td>Description:</td>
<td>Theory classes: 6h</td>
</tr>
<tr>
<td></td>
<td>Laboratory classes: 2h</td>
</tr>
<tr>
<td></td>
<td>Self study: 12h</td>
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</tbody>
</table>


Related activities:
Activity 1: Class of theoretical explanation
Activity 2: Individual final assessment
Activity 3: Solving exercises and problems

<table>
<thead>
<tr>
<th>DEFINITIONS AND FUNDAMENTAL CONCEPTS OF THERMAL MACHINES</th>
<th>Learning time: 30h</th>
</tr>
</thead>
<tbody>
<tr>
<td>Description:</td>
<td>Theory classes: 8h</td>
</tr>
<tr>
<td></td>
<td>Laboratory classes: 4h</td>
</tr>
<tr>
<td></td>
<td>Self study: 18h</td>
</tr>
</tbody>
</table>


Related activities:
Activity 1: Class of theoretical explanation
Activity 2: Individual final assessment
Activity 3: Solving exercises and problems
### POWER AND EFFICIENCY OF MOTORS

**Description:**

**Related activities:**
- Activity 1: Class of theoretical explanation
- Activity 2: Individual final assessment
- Activity 3: Solving exercises and problems
- Activity 4: Practice Lab.

**Learning time:** 30h
- Theory classes: 8h
- Laboratory classes: 4h
- Self study: 18h

### PRODUCTION OF HEAT AND COLD AND MORE EFFICIENT TECHNOLOGIES

**Description:**

**Related activities:**
- Activity 1: Class of theoretical explanation
- Activity 2: Individual final assessment
- Activity 3: Solving exercises and problems

**Learning time:** 20h
- Theory classes: 6h
- Laboratory classes: 2h
- Self study: 12h
**Planning of activities**

| ACTIVITY 1. THEORETICAL EXPLANATION | Hours: 88h  
Theory classes: 38h  
Self study: 50h |
|-------------------------------------|----------------|
| ACTIVITY 2. INDIVIDUAL ASSESSMENT TESTS | Hours: 2h  
Theory classes: 2h |
| ACTIVITY 3. RESOLUTION OF EXERCISES AND PROBLEMS | Hours: 40h  
Laboratory classes: 16h  
Self study: 24h |
| ACTIVITY 4. LABORATORY | Hours: 10h  
Laboratory classes: 4h  
Self study: 6h |
| ACTIVITY 5. DESCRIPTION AND ANALYSIS OF A DOMESTIC ELECTRICAL INSTALLATION | Hours: 10h  
Self study: 10h |

**Qualification system**

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### Bibliography

#### Basic:


#### Complementary:


#### Others resources:

- **Hyperlink**
  - Programes informàtics PROPAGUA i PROGASES