820125 - IEBAT1EE - Low and High Voltage Electrical Installations I

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 ELECTRICAL ENGINEERING (Syllabus 2009). (Teaching unit Compulsory)
BACHELOR'S DEGREE IN ELECTRICAL ENGINEERING (Syllabus 2009). (Teaching unit Compulsory)
ECTS credits: 6  Teaching languages: Catalan, Spanish

Coordinator: JUAN MORÓN ROMERA
Others: Primer quadrimestre:
JUAN MORÓN ROMERA - M11, M12, M13, M14

Segon quadrimestre:
EDORTA LÓPEZ URZAINQUI - T11, T12
JUAN MORÓN ROMERA - T11, T12, T13, T14

Opening hours
Timetable: Hours published on the bulletin board.
Make an interview by e-mail

Degree competences to which the subject contributes

Specific:
4. Carry out calculations for the design of low and medium voltage electrical installations.

CEELE-22. Carry out calculations for the design of high voltage electrical installations.

Transversal:
1. SELF-DIRECTED LEARNING - Level 2: Completing set tasks based on the guidelines set by lecturers. Devoting the time needed to complete each task, including personal contributions and expanding on the recommended information sources.
2. TEAMWORK - Level 2. Contributing to the consolidation of a team by planning targets and working efficiently to favor communication, task assignment and cohesion.

Teaching methodology
Magistral classes for theory sessions, individual and group work, and project based learning.

Learning objectives of the subject

-To show how design low voltage electrical installations.
- To show the use of Standards and Regulations for electrical installations.
- To show the main elements of an installation (functionality, characteristics of operation, main applications)
- To show how draw an electrical diagram and its symbols.
820125 - IEBAT1EE - Low and High Voltage Electrical Installations I

- To analyze the causes of faults, its effects and protection methods.
- To show methodology for design, sizing and optimization the elements for a low voltage electrical installation.

### Study load

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

## Unit 1. Low Voltage Electrical Installations: Generalities

**Learning time:** 6h  
- Theory classes: 3h  
- Self study: 3h

## Unit 2. Interior installations for houses

**Learning time:** 22h  
- Theory classes: 3h  
- Laboratory classes: 2h  
- Self study: 17h

## Unit 3. Industrial Automation: Fundamentals

**Learning time:** 17h  
- Theory classes: 4h 30m  
- Laboratory classes: 4h  
- Self study: 8h 30m

## Unit 4. Electrical power and Energy

**Learning time:** 14h  
- Theory classes: 3h  
- Laboratory classes: 1h  
- Self study: 10h

## Unit 5. Grid connection: Regulations.

**Learning time:** 21h  
- Theory classes: 4h 30m  
- Self study: 16h 30m

## Unit 6. Conductor Sizing

**Learning time:** 9h  
- Theory classes: 4h 30m  
- Self study: 4h 30m
### Qualification system

Middle term exam: 20%
Class exercises: 10%
Homework: 15%
Laboratory work: 15%
No proof of reassessment.
Self Study: 10%
Final test: 30%

### Units and Learning Time

<table>
<thead>
<tr>
<th>Unit</th>
<th>Learning time</th>
<th>Theory classes</th>
<th>Laboratory classes</th>
<th>Self study</th>
</tr>
</thead>
<tbody>
<tr>
<td>Unit 7. Power Quality</td>
<td>3h</td>
<td>1h 30m</td>
<td></td>
<td>1h 30m</td>
</tr>
<tr>
<td>Unit 8. Protection elements</td>
<td>16h</td>
<td>6h</td>
<td>2h</td>
<td>8h</td>
</tr>
<tr>
<td>Unit 9. Ground connection</td>
<td>13h</td>
<td>4h 30m</td>
<td>2h</td>
<td>6h 30m</td>
</tr>
<tr>
<td>Unit 10. Interior or Load installations</td>
<td>20h</td>
<td>6h</td>
<td>4h</td>
<td>10h</td>
</tr>
<tr>
<td>Unit 11. Shortcircuit analysis</td>
<td>9h</td>
<td>4h 30m</td>
<td></td>
<td>4h 30m</td>
</tr>
</tbody>
</table>
Regulations for carrying out activities

Timetable established by school

Bibliography

Basic:


Others resources:

Audiovisual material

Atenea