Course guide
820125 - IEBAT1EE - Low and High Voltage Electrical Installations I

Unit in charge: Barcelona East School of Engineering
Teaching unit: 709 - DEE - Department of Electrical Engineering.
Degree: BACHELOR'S DEGREE IN ELECTRICAL ENGINEERING (Syllabus 2009). (Compulsory subject).
Academic year: 2022  ECTS Credits: 6.0  Languages: Catalan, Spanish

LECTURER

Coordinating lecturer: 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

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.
- 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>Type</th>
<th>Hours</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hours large group</td>
<td>45.0</td>
<td>30.00</td>
</tr>
<tr>
<td>Self study</td>
<td>90.0</td>
<td>60.00</td>
</tr>
<tr>
<td>Hours small group</td>
<td>15.0</td>
<td>10.00</td>
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</tbody>
</table>

Total learning time: 150 h

CONTENTS

**Unit 1. Low Voltage Electrical Installations: Generalities**

**Full-or-part-time:** 6h
- Theory classes: 3h
- Self study: 3h

**Unit 2. Interior installations for houses**

**Full-or-part-time:** 22h
- Theory classes: 3h
- Laboratory classes: 2h
- Self study: 17h

**Unit 3. Industrial Automation: Fundamentals**

**Full-or-part-time:** 17h
- Theory classes: 4h 30m
- Laboratory classes: 4h
- Self study: 8h 30m

**Unit 4. Electrical power and Energy**

**Full-or-part-time:** 14h
- Theory classes: 3h
- Laboratory classes: 1h
- Self study: 10h

**Unit 5. Grid connection: Regulations.**

**Full-or-part-time:** 21h
- Theory classes: 4h 30m
- Self study: 16h 30m
### Unit 6. Conductor Sizing

**Full-or-part-time:** 9h  
Theory classes: 4h 30m  
Self study : 4h 30m

### Unit 7. Power Quality

**Full-or-part-time:** 3h  
Theory classes: 1h 30m  
Self study : 1h 30m

### Unit 8. Protection elements

**Full-or-part-time:** 16h  
Theory classes: 6h  
Laboratory classes: 2h  
Self study : 8h

### Unit 9. Ground connection

**Full-or-part-time:** 13h  
Theory classes: 4h 30m  
Laboratory classes: 2h  
Self study : 6h 30m

### Unit 10. Interior or Load installations

**Full-or-part-time:** 20h  
Theory classes: 6h  
Laboratory classes: 4h  
Self study : 10h

### Unit 11. Shortcircuit analysis

**Full-or-part-time:** 9h  
Theory classes: 4h 30m  
Self study : 4h 30m

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### GRADING SYSTEM

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

Timetable established by school

BIBLIOGRAPHY

Basic:

RESOURCES

Audiovisual material:
- Atenea