

820125 - IEBAT1EE - Low and High Voltage Electrical Installations I

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| Coordinating unit: | 295 - EEBE - Barcelona East School of Engineering |
| Teaching unit: | 709 - EE - Department of Electrical Engineering |
| Academic year: | 2017 |
| 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 |

Teaching staff

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| Coordinator: | JUAN MORÓN ROMERA |
| Others: | JUAN MORÓN ROMERA |

Opening hours

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

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Study load

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| Total learning time: 150h | Hours large group: | 45h | 30.00% |
| | Hours medium group: | 0h | 0.00% |
| | Hours small group: | 15h | 10.00% |
| | Guided activities: | 0h | 0.00% |
| | Self study: | 90h | 60.00% |

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Content

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| <p>Unit 1. Low Voltage Electrical Installations: Generalities</p> | <p>Learning time: 6h Theory classes: 3h Self study : 3h</p> |
| <p>Unit 2. Interior installations for houses</p> | <p>Learning time: 22h Theory classes: 3h Laboratory classes: 2h Self study : 17h</p> |
| <p>Unit 3. Industrial Automation: Fundamentals</p> | <p>Learning time: 17h Theory classes: 4h 30m Laboratory classes: 4h Self study : 8h 30m</p> |
| <p>Unit 4. Electrical power and Energy</p> | <p>Learning time: 14h Theory classes: 3h Laboratory classes: 1h Self study : 10h</p> |
| <p>Unit 5. Grid connection: Regulations.</p> | <p>Learning time: 21h Theory classes: 4h 30m Self study : 16h 30m</p> |
| <p>Unit 6. Conductor Sizing</p> | <p>Learning time: 9h Theory classes: 4h 30m Self study : 4h 30m</p> |

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| Unit 7. Power Quality | Learning time: 3h Theory classes: 1h 30m Self study : 1h 30m |
| Unit 8. Protection elements | Learning time: 16h Theory classes: 6h Laboratory classes: 2h Self study : 8h |
| Unit 9. Ground connection | Learning time: 13h Theory classes: 4h 30m Laboratory classes: 2h Self study : 6h 30m |
| Unit 10. Interior or Load installations | Learning time: 20h Theory classes: 6h Laboratory classes: 4h Self study : 10h |
| Unit 11. Shortcircuit analysis | 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%

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Regulations for carrying out activities

Timetable established by school

Bibliography

Basic:

Schmelcher, Theodor; Guillén, Jorge. Manual de baja tensión : indicaciones para la selección de aparatos de maniobra, instalaciones y distribuciones. Berlin; Munich: Siemens-Aktiengesellschaft, [Abt. Verl.], 1984. ISBN 38-0091-397-6.

Espanya. Reglamento electrotécnico para baja tensión e instrucciones técnicas complementarias (2002). 2ª ed. Madrid: International Thomson / Paraninfo, cop. 2004. ISBN 8428328870.

Others resources:

Audiovisual material

Atenea