Course guide
220102 - EME - Electrotechnics and Electrical Machines

Unit in charge: Terrassa School of Industrial, Aerospace and Audiovisual Engineering
Teaching unit: 709 - DEE - Department of Electrical Engineering.
Degree: BACHELOR’S DEGREE IN INDUSTRIAL TECHNOLOGY ENGINEERING (Syllabus 2010). (Compulsory subject).
Academic year: 2022  ECTS Credits: 7.5  Languages: Catalan

LECTURER
Coordinating lecturer: Antoni Garcia Espinosa
Others: Antoni Font Piera
         Jordi-Roger Riba Ruiz
         Jaume Saura Perisé

DEGREE COMPETENCES TO WHICH THE SUBJECT CONTRIBUTES
Specific:
1. An understanding of and the ability to use the principles of circuit theory and electrical machines.
2. The ability to calculate and design electrical machines

TEACHING METHODOLOGY
Sessions of exhibition content that are developed in the theoretical concepts of the subject, complementing it with applied examples to facilitate understanding.
Sessions where teachers solve problems solving techniques and exercise which will focus on applying the industrial world.
Practical sessions where students manipulate industrial measurement instruments, transformers and electrical machines to acquire knowledge of the subject.

LEARNING OBJECTIVES OF THE SUBJECT
The student must know and familiarize with the three-phase systems, and understand the operation and behaviour of static and rotating electrical machines.

STUDY LOAD

<table>
<thead>
<tr>
<th>Type</th>
<th>Hours</th>
<th>Percentage</th>
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</thead>
<tbody>
<tr>
<td>Hours small group</td>
<td>14,0</td>
<td>7.47</td>
</tr>
<tr>
<td>Hours medium group</td>
<td>14,0</td>
<td>7.47</td>
</tr>
<tr>
<td>Self study</td>
<td>112,5</td>
<td>60.00</td>
</tr>
<tr>
<td>Hours large group</td>
<td>47,0</td>
<td>25.07</td>
</tr>
</tbody>
</table>

Total learning time: 187.5 h
## CONTENTS

### Three-phase system

**Full-or-part-time:** 51h  
Theory classes: 13h  
Practical classes: 4h  
Laboratory classes: 4h  
Self study: 30h

### Transformers

**Full-or-part-time:** 76h  
Theory classes: 19h  
Practical classes: 6h  
Laboratory classes: 6h  
Self study: 45h

### Rotating machine. Induction machine.

**Full-or-part-time:** 60h 30m  
Theory classes: 15h  
Practical classes: 4h  
Laboratory classes: 4h  
Self study: 37h 30m

## ACTIVITIES

### THEORY LESSONS

**Full-or-part-time:** 105h  
Theory classes: 42h  
Self study: 63h

### PROBLEM LESSONS

**Full-or-part-time:** 35h  
Practical classes: 14h  
Self study: 21h

### EVALUATION TESTS

**Full-or-part-time:** 12h 30m  
Theory classes: 5h  
Self study: 7h 30m
LABORATORY PRACTICE MODULE 1 AND 2

Full-or-part-time: 15h
Laboratory classes: 6h
Self study: 9h

LABORATORY PRACTICE MODULE 2 AND 3

Full-or-part-time: 20h
Laboratory classes: 8h
Self study: 12h

GRADING SYSTEM

The final grade for the course will be calculated taking into account of the four activities indicated:
Partial exam: 30%
Final exam: 50%
Practical Module 1: 10%
Practices Module 2: 10%

All those students who fail, want to improve their mark or cannot attend the partial exam, they will have the opportunity to be examined the same day of the final exam. If due to the circumstances it is not viable to do it the same day of the final examination, the teacher responsible for the subject will propose, via the platform Atenea, that the mentioned recovery exam will be carried out another day, in class schedule.
The new mark of the recovery exam will substitute the previous one, just in the case that it is higher.

EXAMINATION RULES.

The partial exam can recover through the final exam.
The partial and final exam will be make individually and written.
Practice sessions will be made by safety regulations and electrical machines laboratory will be required to have passed the first practice on safety in low voltage installations.

BIBLIOGRAPHY

Basic: