Course guide  
220099 - TC - Circuit Theory

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: 6.0  
Languages: Catalan

LECTURER

Coordinating lecturer: Ramon Mujal Rosas

Others:

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. An understanding of the basics of electronics

TEACHING METHODOLOGY

The course will consist of:
Sessions of the theoretical exposure in large groups.
Sessions of problem solving in medium groups.
Sessions of practical training and simulation laboratory in small groups.
Independent work and study exercises and problems.

For the methodology students have the educational material that will support hanging Athena.
Also in Athena have hanging teaching guide, and distribution groups theory and problems, as well as subgroups of practice.
The practice is divided into laboratory practice and practical computer simulation.
In order to realize autonomous work is going to do a planning for weekly dedication.

LEARNING OBJECTIVES OF THE SUBJECT

The Circuit Theory course is the base for other subjects future such as electrical engineering, electrical machines, design lines, and electronics and the regulation and control of machines.
It is therefore a basic course, for unify their knowledge, because there are very different levels depending on their origin, for further progress and provide work tools necessary to make later any subject electrical successfully.
Finally, the last part of the course is to give practical examples of applying knowledge achieved in the study of the subject, which should enable students to see the usefulness of what he has learned, and also see most logical subject, that contains many knowledge that seem there isn't relation between it.

STUDY LOAD

<table>
<thead>
<tr>
<th>Type</th>
<th>Hours</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hours small group</td>
<td>14,0</td>
<td>9.33</td>
</tr>
<tr>
<td>Hours large group</td>
<td>32,0</td>
<td>21.33</td>
</tr>
<tr>
<td>Hours medium group</td>
<td>14,0</td>
<td>9.33</td>
</tr>
<tr>
<td>Self study</td>
<td>90,0</td>
<td>60.00</td>
</tr>
</tbody>
</table>
Total learning time: 150 h

## CONTENTS

### Unit I: Analysis of DC circuits

**Description:**

**Full-or-part-time:** 24h  
Theory classes: 5h  
Practical classes: 2h  
Laboratory classes: 2h  
Self study: 15h

### Unit II: Analysis of AC circuits

**Description:**

**Full-or-part-time:** 24h  
Theory classes: 5h  
Practical classes: 2h  
Laboratory classes: 2h  
Self study: 15h

### Unit III: Network Theorems electric

**Full-or-part-time:** 24h  
Theory classes: 5h  
Practical classes: 2h  
Laboratory classes: 2h  
Self study: 15h

### Unit IV: transistor circuits first and second order

**Full-or-part-time:** 27h  
Theory classes: 6h  
Practical classes: 3h  
Laboratory classes: 3h  
Self study: 15h

### Unit V: balanced and unbalanced three-phase systems

**Full-or-part-time:** 27h  
Theory classes: 6h  
Practical classes: 3h  
Laboratory classes: 3h  
Self study: 15h
## Unit VI: Practical applications of circuit theory

**Full-or-part-time:** 24h  
Theory classes: 5h  
Practical classes: 2h  
Laboratory classes: 2h  
Self study: 15h

### ACTIVITIES

#### THEORY LESSONS

**Description:**

**Full-or-part-time:** 39h  
Theory classes: 25h  
Self study: 14h

#### PROBLEM LESSONS

**Description:**

**Full-or-part-time:** 56h  
Practical classes: 14h  
Self study: 42h

#### LABORATORY PRACTICE

**Description:**

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

#### COMPUTER SIMULATION SESSIONS

**Description:**

**Full-or-part-time:** 12h  
Laboratory classes: 6h  
Self study: 6h
### MONITORING PROBLEMS SESSIONS

**Description:**

**Full-or-part-time:** 6h  
Theory classes: 2h  
Self study: 4h

### MIDTERM EXAM

**Full-or-part-time:** 9h  
Theory classes: 2h  
Self study: 7h

### FINAL EXAM

**Full-or-part-time:** 12h  
Theory classes: 3h  
Self study: 9h

### FINAL REVIEW OF RECOVERY COURSE

**Description:**

318/5000  
For this will be a written test that will be of shorter duration than the examination to which it recovers and of much more basic contents  
This basic test will only allow to pass the subject, that is to say, the maximum grade will be of 5.  
Only students who do not have the subject approved can be presented to this test.

**Specific objectives:**

With this test the student is given the last opportunity to reach the minimum requirements to pass the subject, which would be more basic than in the normal exam, but the maximum grade will also be simply passed (5) or suspended. It is not possible to obtain more note by means of this test than it has been indicated is of minimum contained.

**Material:**

The typical material of a written exam. Writing material, calculator and paper

**Delivery:**

The written test will be delivered on the same day and at the time of the test, corrected as soon as possible to have a reference note

**Full-or-part-time:** 1h  
Theory classes: 1h
GRADING SYSTEM

THE FINAL QUALIFICATION OF THE SUBJECT IS THE SUM OF THE FOLLOWING PARTIAL QUALIFICATIONS:

NOTE A: PARTIAL EXAM NOTE
NOTE B: PRACTICAL NOTE
NOTE C: FINAL EXAM
NOTE D: FIRST PART RECOVERY

Final Note = (0.25 x Note Partial Exam) + (0.15 x Practical Notes) + (0.5 x Note Final Exam)

All those students who can not attend the partial or partial exam activity, who have unsatisfactory results (less than 5), will be able to redirect the note on the same day as the final exam.

For this, in this final exam, one or two additional problems will appear corresponding to the first part of the course (partial exam). With this reconduction the maximum grade that the student can obtain in the first part of the course (partial exam note) is the one approved (5)

EXAMINATION RULES.

The exams will do without notes.
In exercises of continuous assessment is usually able to have notes or form, but in any case indicated in each test
For the implementation of practices usually will have any material except when requesting a report, in such case, may not have any note.
In any case, before each test indicate specifically what material can be used in its implementation.

BIBLIOGRAPHY

Basic:

Complementary: