

29809 - Basic principles of electrical technology

Información del Plan Docente

Academic Year	2017/18
Faculty / School	110 - Escuela de Ingeniería y Arquitectura 326 - Escuela Universitaria Politécnica de Teruel
Degree	440 - Bachelor's Degree in Electronic and Automatic Engineering 444 - Bachelor's Degree in Electronic and Automatic Engineering
ECTS	6.0
Year	1
Semester	Second semester
Subject Type	Compulsory
Module	---

1.General information

1.1.Introduction

SHORT DESCRIPTION

This subject, Fundamentals of electrical engineering is a compulsory subject of 6 ECTS credits (150 hours of work).

corresponding to 60 face-to-face hours (classes of theory, problems, laboratory...) and 90 non-Presential 90 hours (problem solving, study...).

This course develops the basis of The Theory of Circuits.

1.2.Recommendations to take this course

PREREQUISITE COURSE

It is recommended having passed the Mathematics I and II courses and be studying Physics II and Mathematics III.

Study and work in a continued way, from the first day of the course, are fundamental to pass successfully the subject.

It is important to resolve, as soon as possible, any doubts that may arise. For which the student has the guidance of the teacher, both during classes and tutoring hours.

1.3.Context and importance of this course in the degree

1.4.Activities and key dates

The detailed timetable of the various activities to be developed will be established once the University and the Centre have published the academic calendar (which may be consulted on the website of the Centre). The relationship and date

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of various activities, together with all kinds of information and documentation on the subject, will be published in <http://moodle.unizar.es/Nota>. Student must be registered to access this web.

2.Learning goals

2.1.Learning goals

The student, to pass successfully this subject, shall demonstrate the following results.

He knows and uses the basis of the theory of circuits and electrical machines. He applies, the principles of the theory of circuits and electrical machines, to the analysis of simple problems. He can analyse electrical circuits in sinusoidal steady-state and transient-state. He can manages the usual electrical circuits laboratory instruments.

2.2.Importance of learning goals

3.Aims of the course and competences

3.1.Aims of the course

AIMS

The subject and their expected results respond to the following statements and objectives:

the objective of the course is that the student obtains a functional tool that allows you to move forward in electrical and electronic sphere.

3.2.Competences

4.Assessment (1st and 2nd call)

4.1.Assessment tasks (description of tasks, marking system and assessment criteria)

COMPONENTS OF ASSESSMENT

The student must demonstrate that it has achieved learning results provided through the following activities of evaluacion:

Examen (50-86%).

There will be a written test on each official call. The qualification of this activity will be from 0 to 10 points and will involve a maximum of 86% of the overall grade of the student, and may weigh less (up to 50%) if any of the batches of problems and theory, as it will be exhibiting at the 3rd point.

To pass the subject it is necessary to obtain a minimum score of 3.5 points in the written theory exam. Both the procedure carried out to solve the exercises, and the numerical results obtained will be valued on the exam.

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Laboratory practices (14%).

The student must pass a practical examination in the laboratory. The qualification of this activity will be from 0 to 10 points and will mean 14% of the overall grade of the student. To pass the course it is necessary to obtain a minimum score of 3.5 points on the

Proposed works (0 - 36%).

In order to encourage the continuous work of the student during the teaching period will propose a review of theory (issue 1) and two batches of statements of exercises (issues 2 and 3), so that the student to do them at home. Each batch will have a minimum of 5 problems. Indicate a date within the teaching period to deliver issues resolved.

For the theory exam (ET) one will quote to students so that they answer to a test type based on questions that have access in the ADD.

With the first batch (T1) one will quote to students so that they solve one of the problems (slightly modified) that have previously had to solve and deliver.

With the second batch (T2) will follow a process similar to the first.

The score of the ET theory exam will be 6%. The assessment of the first batch of T1 is 12% and the second batch T2 of 18%.

Therefore the total weight in the final grade may be 36% exceeding both the theory exam as both batches.

The contribution of the final examination (EF) in the note will depend on the overmatched proposed works. If ET, T1 and T2 are passed, the examination shall weighted 50%. If it does not pass any of the recommended works examination shall weighted 50% more the value that had that job. If fails none of the proposed work the exam will have a value of 86% of the final grade.

5. Methodology, learning tasks, syllabus and resources

5.1. Methodological overview

The learning process that has been designed for this course is based on the following: the teaching process will take place at three main levels: lectures, problems and laboratory.

In lectures classes will be explain the basis of the theory of circuits, illustrating with numerous examples.

Problems and cases type will be teach. It will be, at the laboratory, in small groups, where students put into practice the knowledge acquired.

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5.2.Learning tasks

LEARNING ACTIVITIES

The program offered to students to assist in achieving the expected results includes the following activities:

CLASSROOM work: 2.4 ECTS (60 hours) lecture (30 hours contact). Exhibition and explanatory content sessions. The concepts and fundamentals of analysis of electric circuits, illustrating them with real-life examples will be presented. The student's participation will be encouraged through questions and brief discussions.

5.3.Syllabus

DESCRIPTION OF THE COURSE

1. CIRCUIT ELEMENTS.
2. RESISTIVE NETWORKS.
3. STEADY-STATE WITH SINUSOIDAL EXCITATION.
4. COUPLING BETWEEN WINDINGS MAGNETIC.
5. POWER WITH SINUSOIDAL EXCITATION IN PERMANENT REGIME.
6. TRANSIENT AND STATIONARY.
7. INTRODUCTION TO ELECTRICAL MACHINES.
8. INTRODUCTION TO THE 3-PHASE SYSTEMS

5.4.Course planning and calendar

TIMETABLE OF LECTURES AND WORKS

The lectures, problems and practices in the laboratory sessions are taught according to the schedule established by the Center and is published prior to the start date of the course. Each teacher will inform about the hours of tutoring.

Other activities will be planned according to the number of students and will be announced in advance.

It will be posted on <http://moodle.unizar.es>

5.5. Bibliography and recommended resources

RECOMMENDED BOOKS

- Circuitos eléctricos para la ingeniería / Antonio J. Conejo ... [et al.] . Madrid [etc.] : McGraw-Hill, D.L. 2004
- Hayt, William Hart, Jr. : Análisis de circuitos en ingeniería / William H. Hayt, Jr., Jack E. Kemmerly, Steven M. Durbin ; revisión técnica , Gloria Mata Hernández
- Nilsson, James W.. Circuitos eléctricos / James W. Nilsson, Susan A. Riedel . 7ª ed. Madrid : Pearson Educación, 2005
- ez, Nathan Witemberg Wudka, Alejandro Vega Salinas . - 8ª ed. México [etc.] : McGraw Hill, cop. 2012
- Edminister, Joseph A.. Circuitos eléctricos / Joseph A. Edminister, Mahmood Nahvi ; traducción, Rafael Sanjurjo Navarro, Eduardo Lázaro Sánchez, Pablo de Miguel Rodríguez . 3ª ed. Madrid [etc.] : McGraw-Hill, D.L. 2001
- 1. Nilsson, James W.. Circuitos eléctricos / James W. Nilsson, Susan A. Riedel . 7ª ed. Madrid : Pearson Educación, 2005
- 2. Circuitos eléctricos para la ingeniería / Antonio J. Conejo ... [et al.] . Madrid [etc.] : McGraw-Hill, D.L. 2004
- 3. Circuitos eléctricos. Vol. I / Antonio Pastor Gutiérrez ... [et al.] . 1ª ed., 3ª reimp. Madrid : Universidad Nacional de Educación a Distancia, 2006
- 4. Hayt, William Hart, Jr.. Análisis de circuitos en ingeniería / William H. Hayt, Jr., Jack E. Kemmerly, Steven M. Durbin ; revisión técnica , Ahmed Zekkour Zekkour . 7ª ed. México : McGraw-Hill/Interamericana, cop. 2007
- 5. Edminister, Joseph A.. Circuitos eléctricos / Joseph A. Edminister, Mahmood Nahvi ; traducción, Rafael Sanjurjo Navarro,