Universidad Zaragoza

Year : 2019/20

29809 - Fundamentals of Electrotechnics

Syllabus Information

Academic Year: 2019/20
Subject: 29809 - Fundamentals of Electrotechnics
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.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.

1.2.Context and importance of this course in the degree

1.3.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.

2.Learning goals

2.1.Competences

2.2.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.

2.3.Importance of learning goals

3.Assessment (1st and 2nd call)

3.1.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 4 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.

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 4 points.

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 (EX~~T~~) one will quote to students so that they answer several questions.

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.

4.Methodology, learning tasks, syllabus and resources

4.1.Methodological overview

The methodology used in this course is based on three main resources: lectures, problem-solving and lab activities.

The basis of circuit theory will be introduced in lectures, using several examples. Lectures will also comprise problem and case-based activities.

Lab sessions will allow students to put into practice the knowledge acquired. For that, they will be organized in small groups.

4.2.Learning tasks

In order to achieve the learning results, the program of the course includes the following activities:

CLASSROOM activities, 2.4 ECTS (60 hours): lectures (30) problem-based activities (15 hours), lab activities (15 hours).

Course content will be presented in classroom sessions. Real-life examples will be used to illustrate the fundamental of electrical circuit analysis. Student participation will be encouraged through questions and brief discussions.

4.3.Syllabus

This course will address the following topics:

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

4.4.Course planning and calendar

SCHEDULE OF LECTURES AND PRACTICAL ACTIVITIES

Lectures, problem-solving sessions, and lab sessions will be taught according to the schedule established by the Center. It will published before the course starts. Tutoring will inform about tutoring schedule.

Other activities could be planned depending on the number of students. They will be announced in advance.

They will be published in the Moodle site of the course: https://moodle2.unizar.es/

The detailed schedule will be announced once the University and the Centre have published the academic schedule for the year (which could be consulted on the website of the Centre). The topic, information, documentation, and schedule of course activities, will be published on the Moodle site of the course: https://moodle2.unizar.es/. Students need to be registered to access this site.

4.5.Bibliography and recommended resources

http://biblos.unizar.es/br/br_citas.php?codigo=29809&year=2019