

Academic Year/course: 2022/23

30206 - Physics and electronics

Syllabus Information

Academic Year: 2022/23

Subject: 30206 - Physics and electronics

Faculty / School: 110 - Escuela de Ingeniería y Arquitectura
326 - Escuela Universitaria Politécnica de Teruel

Degree: 439 - Bachelor's Degree in Informatics Engineering
443 - Bachelor's Degree in Informatics Engineering

ECTS: 6.0

Year: 1

Semester: Second semester

Subject Type: Basic Education

Module:

1. General information

2. Learning goals

3. Assessment (1st and 2nd call)

4. Methodology, learning tasks, syllabus and resources

4.1. Methodological overview

The learning process designed for this subject is based on three main aspects: theoretical concepts, problem-solving and practical lab sessions.

Classroom sessions consist of a combination of theory and practice for a better understanding. Theoretical lessons are displayed in the form of lectures in which student participation is encouraged. During problem-solving, students play an active role in the discussion and resolution of these problems.

Practical lab sessions are designed so that students can apply and understand the concepts and techniques learned during classroom lessons. Besides, different devices and measurement equipment are introduced and used during lab session to a better understanding of physical phenomena on which computer technology is based.

Practical lab sessions and other potential assignments will be developed in the group, encouraging team-work.

4.2. Learning tasks

The course includes the following learning tasks:

- Lectures with a combination theory and problems
- Practical lab sessions
- Other possible activities such as tutored problem solving, assignments, etc.

4.3. Syllabus

The course will address the following topics:

In EINA, the program is structured in three parts:

Section I: Electromagnetism

- 1: Electrostatics. electric field and potential
- 2: The electric current
- 3: Magnetism

Section II: Theory of circuits

- 4: Circuits DC

Section III: Electronics

- 5: Analog Electronics
- 6: Digital Electronics

In the EUPT the contents to be developed in the course are:

- Electric field
- Electrical properties of matter. Resistors and capacitors
- Magnetic field
- Magnetic properties of matter. Coils
- Electromagnetic waves. Signals and information transmission
- Electrical circuits: Fundamentals. Voltage and current laws
- Techniques for analysis of resistive circuits
- Basic circuits with capacitors and inductors
- Resistive circuits with sinusoidal sources
- Fundamentals of electrical installations
- Fundamentals of Electronics: Diode and transistor
- Logic families: TTL and CMOS

4.4. Course planning and calendar

The course is divided into 3 parts, which are distributed as follows:

- 5 weeks dedicated to electromagnetism and oscillations.
- 5 weeks dedicated to electrical circuits.
- 5 weeks dedicated to electronic devices.

Weekly teaching organization of the course is as follows:

- Lectures (3 hours per week) designed as a combination of theoretical concepts, analysis and problem-solving.
- Practical lab sessions (6 sessions of 2 hours every 2 weeks).

4.5. Bibliography and recommended resources

TERUEL:

<http://psfunizar10.unizar.es/br13/egAsignaturas.php?codigo=30206&Identificador=12492>

ZARAGOZA:

<http://psfunizar10.unizar.es/br13/egAsignaturas.php?codigo=30206&Identificador=12634>