

Academic Year: (2022 / 2023)

Review date: 11-05-2022

Department assigned to the subject: Department of Electronic Technology

Coordinating teacher: VERGAZ BENITO, RICARDO

Type: Compulsory ECTS Credits : 6.0

Year : 2 Semester : 1

REQUIREMENTS (SUBJECTS THAT ARE ASSUMED TO BE KNOWN)

- Electrical Power Engineering Fundamentals (1st Season, 2nd Semester).
It is STRONGLY recommended to have it passed.

OBJECTIVES

By the end of this subject, students will be able to have:

1. knowledge and understanding of the theoretical fundamentals of electronics engineering and their practical applications;
2. the ability to apply their knowledge and understanding to identify, formulate and solve problems about electronics engineering and their main industrial applications by using both theoretical and practical established methods as well as basic electronic design rules for their real implementation.
3. the ability to apply their knowledge and understanding to develop and design electronic systems that comply with defined and specified technical requirements;
4. the ability to design and conduct appropriate experiments about electronics engineering to characterize and implement basic electronic systems, to properly analyse and interpret the results/data obtained from an engineering point of view, and to draw conclusions about the electronic system performance;
5. the ability to properly apply the technical skills acquired for the experimental evaluation of an electronic system in an electronics engineering lab facility;
6. the ability to combine theory and practice to solve problems about electronics engineering

DESCRIPTION OF CONTENTS: PROGRAMME

1. Electronic signals and systems
 - Block diagram of an electronic system.
 - Electronic signal types and parameters that describe them.
2. Introduction to electronic components and integrated circuits
 - Passive components: description, operation and applications.
 - Diodes: description, operation and applications.
 - Transistors: description, operation and applications.
 - Moore's Law and integrated electronic circuits manufacturing.
3. Analog electronic subsystems: Signal amplifiers
 - Description and modeling.
 - Concept of transfer function. Types of transfer functions.
 - Operational amplifiers. Applications.
4. Instrumentation subsystems
 - Transducers and sensors. Types.
 - Signal conditioning
5. Power supply subsystems
 - Concept, classification, parameters
 - Linear voltage regulators
 - Switching voltage regulators
6. Digital electronic subsystems and A/D and D/A conversion
 - Fundamentals of digital electronics. Numbering and coding in digital systems.
 - Boolean algebra. Basic logic gates. Boolean logic functions and representation.
 - Combinational and sequential digital circuits.
 - A/D and D/A converters. Characteristics

LEARNING ACTIVITIES AND METHODOLOGY

THEORETICAL PRACTICAL CLASSES.

Knowledge and concepts students must acquire. Receive course notes and will have basic reference texts. Students partake in exercises to resolve practical problems.

TUTORING SESSIONS.

Individualized attendance (individual tutoring) or in-group (group tutoring) for students with a teacher. Subjects with 6 credits have 4 hours of tutoring/ 100% on- site attendance.

STUDENT INDIVIDUAL WORK OR GROUP WORK.

Subjects with 6 credits have 98 hours/0% on-site.

WORKSHOPS AND LABORATORY SESSIONS.

Subjects with 3 credits have 4 hours with 100% on-site instruction. Subjects with 6 credits have 8 hours/100% on-site instruction.

ASSESSMENT SYSTEM

FINAL EXAM.

Global assessment of knowledge, skills and capacities acquired throughout the course. The percentage of the evaluation varies for each subject between 60% and 0%.

CONTINUOUS EVALUATION.

Assesses papers, projects, class presentations, debates, exercises, internships and workshops throughout the course. The percentage of the evaluation varies for each subject between 40% and 100% of the final grade.

% end-of-term-examination:	60
% of continuous assessment (assignments, laboratory, practicals...):	40

BASIC BIBLIOGRAPHY

- Thomas L. Floyd. Digital fundamentals., Pearson Prentice Hall.
- Thomas L. Floyd. Principles of Electric Circuits, Pearson Prentice Hall.
- Thomas L. Floyd. Electronic Devices., Pearson Prentice Hall.