

Academic Year: (2024 / 2025)

Review date: 04-02-2025

Department assigned to the subject: Electronic Technology Department

Coordinating teacher: HERNANDEZ CORPORALES, LUIS

Type: Compulsory ECTS Credits : 6.0

Year : 3 Semester : 1

REQUIREMENTS (SUBJECTS THAT ARE ASSUMED TO BE KNOWN)

It is advisable to have followed the topic "Electrical Power Engineering Fundamentals (2nd year 1st term)"
It is advisable to have followed the topic "Fundamentals on Electronics Engineering (2nd year 2nd term)"

SKILLS AND LEARNING OUTCOMES

RA1.2: A systematic understanding of the key aspects and concepts of their branch of industrial engineering.
RA1.3: Coherent knowledge of their branch of industrial engineering including some at the forefront of the branch.
RA2.1: The ability to apply their knowledge and understanding to identify, formulate and solve engineering problems using established methods.
RA3.1: The ability to apply their knowledge and understanding to develop and realise designs to meet defined and specified requirements.
RA3.2: An understanding of design methodologies, and an ability to use them.
RA4.3: Workshop and laboratory skills.
RA5.1: The ability to select and use appropriate equipment, tools and methods.
RA5.2: The ability to combine theory and practice to solve engineering problems.
RA5.3: An understanding of applicable techniques and methods, and of their limitations.
CB1: Students have demonstrated possession and understanding of knowledge in an area of study that builds on the foundation of general secondary education, and is usually at a level that, while relying on advanced textbooks, also includes some aspects that involve knowledge from the cutting edge of their field of study.
CB2: Students are able to apply their knowledge to their work or vocation in a professional manner and possess the competences usually demonstrated through the development and defence of arguments and problem solving within their field of study.
CG1: Ability to resolve problems with initiative, creativity decision-making and critical reasoning skills, and to communicate and transmit knowledge, skills and abilities in the Industrial Engineering area.
CG3: Capacity to design a system, component or process in the area of electronic and automatic engineering in compliance with required specifications.
CG10: Capacity to design and carry out experiments and to analyze and interpret data obtained.
CG22: Knowledge of the fundamentals of electronics.
CE2: Knowledge of the fundamentals and applications of analog electronics.
CE6: Ability to design analog, digital and power electronic systems.

OBJECTIVES

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

1. a systematic understanding of the key aspects and concepts of their branch of engineering in analogue electronics;
2. the ability to apply their knowledge and understanding of analogue electronics to identify, formulate and solve engineering problems using established methods;
3. the ability of choosing and applying relevant analytical and modelling methods.
4. the ability to apply their knowledge and understanding to develop and realise designs to meet defined and specified requirements;

5. an understanding of design methodologies, and an ability to use them.
6. The ability of designing and performing experiments, data interpretation and conclusions discussion.
7. workshop and laboratory skills.
8. the ability to select and use appropriate equipment, tools and methods;
9. the ability to combine theory and practice to solve problems of analogue electronics;
10. an understanding of applicable techniques and methods in analogue electronics, and of their limitations.

DESCRIPTION OF CONTENTS: PROGRAMME

- T1: Introduction to Analog Electronics, transistor circuits and ASICS
- T2: Current Sources and basic amplifiers. Differential amplifier
- T3: Frequency response of amplifier circuits.
- T4: Feedback circuits
- T5: Operational amplifiers. Voltage regulators. Power amplifiers
- T6: Active 1st and 2nd order filters.
- T8: Oscilators. VCO. PLL
- T7: Pulse circuits.

LEARNING ACTIVITIES AND METHODOLOGY

- Master classes.
- Problem resolution classes.
- Lab sessions.
- Personal work of the student
- Circuit simulation sessions

ASSESSMENT SYSTEM

% end-of-term-examination:	50
% of continuous assessment (assignments, laboratory, practicals...):	50

Ordinary call:

With continuous evaluation:

A leveling test will be carried out at the beginning of the course with a value of 5% of the final grade. There will be 2 partial exams during the course, both with a weight of 10% of the final grade. The weight of the two partial exams and the placement test will therefore be 25% of the final grade. The laboratory grade (25%) will be considered. The final exam will be held whose contents will cover the entire subject with a weight of 50% of the final grade. A grade of at least 4 points out of 10 in the final exam is necessary to pass.

Without continuous evaluation:

The final exam will be carried out whose contents will deal with the entire subject with a weight of 55% of the final grade, and the laboratory notes will be considered (25%).

Extraordinary call:

With continuous evaluation:

The final exam will be carried out whose contents will deal with the entire subject with a weight of 50% of the final grade and the notes of the partial exams and the leveling test (25%) and laboratory (25%) will be considered.

Without continuous evaluation:

The final exam will be carried out whose contents will cover the entire subject with a weight of 100% of the final grade.

BASIC BIBLIOGRAPHY

- Sedra, K. C. Smith Circuitos Microelectrónicos, Oxford University Press.

BASIC ELECTRONIC RESOURCES

- Carusone, Martin, Smith . Analog Integrated Circuit Design, 2nd Edition:
<http://https://learning.oreilly.com/library/view/analog-integrated-circuit/9780470770108/Chapter01.html>