SUBJECT TEACHING GUIDE

G812 - Basic Electronics

First Degree in Telecommunication Technologies Engineering

Academic year 2025-2026

1. IDENTIFYING DATA					
Degree	First Degree in Telecommunication Technologies Engineering			Type and Year	Core. Year 2
Faculty	School of Industrial Engineering and Telecommunications				
Discipline	Subject Area: Electronics Basic Training Module				
Course unit title and code	G812 - Basic Electronics				
Number of ECTS credits allocated	6	Term		Semester based (1)	
Knowledge Field	Electrical engineering, electronic engineering and telecommunications engineering				
Web	http://moodle.unican.es				
Language of instruction	Spanish	English Friendly	No	Mode of delivery	Face-to-face

Department	DPTO. INGENIERÍA INFORMÁTICA Y ELECTRÓNICA
Name of lecturer	GUSTAVO A. RUIZ ROBREDO
E-mail	gustavo.ruiz@unican.es
Office	Facultad de Ciencias. Planta: + 2. DESPACHO PROFESORES (2050)
Other lecturers	

4. OBJECTIVES

The main goal of this subject is to properly manage the basic tools of analysis and design of analog and digital electronic circuits. To achieve this, it involves:
1) Using of the circuit models of electronic devices to analyze and design basic analog blocks (current sources and voltage references, single-stage amplifiers, differential amplifiers, cascode) and operational amplifiers.
2) Characterization of basic analog blocks and operational amplifiers, with special emphasis on the practical applications.
3) Gaining background in the analysis and design of basic CMOS digital circuits.
4) Acquiring the ability to assemble, simulate and verify basic analog blocks in the laboratory, and develop some ease in handling basic electronic instrumentation equipment.
5) Handling the manufacturers' datasheets and get used to writting technical reports.

6. SUBJECT PROGRAM

CONTENTS	
1	THEMATIC BLOCK A. Operational amplifiers and operational: Basic concepts. Practical considerations of the operational amplifier. Linear and non-linear applications. Signal generators.
2	THEMATIC BLOCK B. Introduction to digital CMOS. Models of MOS transistors for analog applications. Current sources and voltage references. Single stage and multistage MOS amplifiers. Frequency response. The MOS differential pair. CMOS differential amplifiers. Operational Amplifiers CMOS.

7. ASSESSMENT METHODS AND CRITERIA

Description	Type	Final Eval.	Reassessn	%
Written exam in the classroom. Resit exam in January and February.	Written exam	No	Yes	40,00
Written exam in the classroom. Resit exam in January and February.	Written exam	No	Yes	35,00
Practical exams in Laboratory.	Laboratory evaluation	No	No	25,00
TOTAL				100,00

Observations

The final grade is obtained according to the following equation:
Final Grade = (Exam Block A) * 0.40 + (Exam Block B) * 0.35 + (Practical tests in the laboratory) * 0.25

This subject is passed if the Final Grade is greater than or equal to 5.0. However, Exam Block A and Exam Block B should both be greater than or equal to 5.0.

Resit exams of Exam Block A and Exam Block B are in January and in February. There are not resit exams for the Practical tests in laboratory.

Notice: According to the University policy, cheating is penalised with 0.

Observations for part-time students

Grades of part-time students follows the same criteria as the rest of the students.

8. BIBLIOGRAPHY AND TEACHING MATERIALS

BASIC

Documentación proporcionada a través de la plataforma Moodle de la asignatura.