

SUBJECT TEACHING GUIDE

G858 - Electronics

Degree in Electrical Engineering

Academic year 2024-2025

1. IDENTIFYING DATA					
Degree	Degree in Electrical Engineering			Type and Year	Compulsory. Year 2
Faculty	School of Industrial Engineering and Telecommunications				
Discipline	Subject Area: Electronics and Automation Module in Common with the Industrial Branch				
Course unit title and code	G858 - Electronics				
Number of ECTS credits allocated	6	Term	Semester based (2)		
Web					
Language of instruction	Spanish	English Friendly	Yes	Mode of delivery	Face-to-face

Department	DPTO. TECNOLOGIA ELECTRONICA E INGENIERIA DE SISTEMAS Y AUTOMATICA				
Name of lecturer	FRANCISCO JAVIER AZCONDO SANCHEZ				
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Office	E.T.S. de Ingenieros Industriales y de Telecomunicación. Planta: - 3. DESPACHO PROFESORES (S3019)				
Other lecturers	ROSARIO CASANUEVA ARPIDE				

3.1 LEARNING OUTCOMES
- Abilities for the simulation and use of passive components
- Abilities for the use of electronic instruments
- Abilities for the simulation, analysis and design of electronic circuits

4. OBJECTIVES

Introducing the fundamentals of analog and digital electronics. Learning to analyze model and design basic analog and digital circuits.
 Acquiring experience in using laboratory elements, simulation tools and electronic instruments
 Acquiring experience in designing electronic circuits, and acquiring the ability to read experimental data.
 Development of the abilities to propose electronic-based solutions applied to the specifications of the industrial engineering.

6. SUBJECT PROGRAM

CONTENTS

1	Digital Electronics: Digital vs. Analog. Combinational Logic: Boole’s Algebra, truth tables, minimization, logic operation and memory cells
2	Sequential Logic: Memory elements and programmable systems. Introduction to sequential circuits, PAL, PLAs, FPGAs
3	Introduction and basic laws for electronic circuits. Notation. Ohm’s Law and Kirchhoff’s Laws. shunt and series connection. Voltage and current dividers. Passive components. : capacitors and inductances
4	MOS Amplifiers: Biasing and basic single-stage configuration. Differential Amplifier.
5	Operational Amplifiers: Ideal OpAmps, Real OpAmps. Inverting and non-inverting amplifiers. Adder and difference amplifiers, integrator, differentiator. Comparator.
6	Filters: First and second-order filters. Design of low-pass, high-pass, pass-band and stop-band filters. Analog to Digital Conversion. Digital System Processing. Signal sampling and quantization. Conversion methods A/D and D/A.

7. ASSESSMENT METHODS AND CRITERIA

Description	Type	Final Eval.	Reassessn	%
Laboratory Practice	Laboratory evaluation	Yes	Yes	30,00
Continuous assessment Lab	Others	Yes	Yes	10,00
Final Exam (block 2 exam)	Written exam	Yes	Yes	30,00
Block 1 exam	Written exam	Yes	Yes	30,00
TOTAL				100,00
Observations				
Ordinary assessment includes Lab, folow-up during the tutorial sessions and two exams block 1 and 2 respectively. All the items not passed in the ordinary assessment are included in the extraordinary assesment.				
Observations for part-time students				
For part-time students, the percentage of the continuous assessment is added to the percentage of the final exam				

8. BIBLIOGRAPHY AND TEACHING MATERIALS

BASIC

Sedra and Smith, Microelectronic circuits ,7th Edition, Oxford, 2016.
 Katz, R.H. Borriello, G. contemporary Logic Design, Pearson Education, 2005

