

SUBJECT TEACHING GUIDE

G1001 - Applied Electronics and Electronic Instrumentation

Degree in Industrial Electronic Engineering and Automatic Control Systems

Academic year 2023-2024

1. IDENTIFYING DATA					
Degree	Degree in Industrial Electronic Engineering and Automatic Control Systems			Type and Year	Compulsory. Year 3
Faculty	School of Industrial Engineering and Telecommunications				
Discipline	Subject Area: Industrial Electronics Module: Specific Technology				
Course unit title and code	G1001 - Applied Electronics and Electronic Instrumentation				
Number of ECTS credits allocated	6	Term	Semester based (2)		
Web	https://moodle.unican.es/course/view.php?idnumber=G1001_2223				
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	YOLANDA LECHUGA SOLAEGUI				
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Other lecturers	ROSARIO CASANUEVA ARPIDE				

3.1 LEARNING OUTCOMES
- Ability to perform analysis and design of analog circuits based on operational amplifiers.
- Ability to specify and implement active filters and signal generator circuits.
- Ability to perform specification, design and characterization of electronic instrumentation systems for measuring physical quantities.
- Ability to design, conduct experiments and analyze results in a laboratory of electronic instrumentation.

4. OBJECTIVES

Provide students with the ability to apply design concepts of analog systems based on operational amplifiers to solve practical problems and work independently.

Equip students with the knowledge and skills required to specify and implement measurement systems of physical quantities in industrial environments.

Provide students with ability to handle required instrumentation in the laboratory of Electronics and critically interpret the results.

6. COURSE ORGANIZATION

CONTENTS

1	Applied Electronics:
1.1	Operational amplifier applications. D/A and A/D converters
1.2	Active filters
1.3	Signal generators
2	Electronic Instrumentation:
2.1	Introduction to the measure. Study and treatment of noise
2.2	Fundamentals of the transducers. Signal conditioning circuits.
2.2.1	Resistive sensors
2.2.2	Capacitive and inductive sensors
2.2.3	Generators sensors
2.3	Data acquisition systems

7. ASSESSMENT METHODS AND CRITERIA

Description	Type	Final Eval.	Reassessn	%
Continuous assessment	Others	No	Yes	30,00
Lab practices	Laboratory evaluation	No	Yes	30,00
Final exam	Written exam	Yes	Yes	40,00
TOTAL				100,00

Observations

If the student can not participate in an activity of on-going assessment, the corresponding percentage is added to the percentage of the final exam.

In the case that the health criteria makes it necessary, the evaluation tests will be carried out following the mixed teaching format: classroom and non-classroom classes. In the most extreme case that students and teachers cannot go to the classroom, the assessment tests will be carried out using telematic tools. In these cases, the content of the tests, although similar to the face-to-face case, would be totally or partially individualized for each student.

Observations for part-time students

The percentage for the on-going assessment activities is added to the percentage of the final exam.

8. BIBLIOGRAPHY AND TEACHING MATERIALS

BASIC

A. S. Sedra, K. C. Smith: Circuitos Microelectrónicos. MacGraw-Hill.

Pérez MA., Alvarez JC., Campo JC.: "Instrumentación Electrónica". Thomson

Pérez MA.: "Instrumentación Electrónica: 230 problemas resueltos". Garceta