

## SUBJECT TEACHING GUIDE

G1042 - Electronics

Degree in Nautical Engineering and Maritime Transport

Academic year 2021-2022

1. IDENTIFYING DATA					
Degree	Degree in Nautical Engineering and Maritime Transport			Type and Year	Compulsory. Year 2
Faculty	School of Maritime Engineering				
Discipline	Subject Area: Electronics Module: Marine and Nautical Training				
Course unit title and code	G1042 - Electronics				
Number of ECTS credits allocated	6	Term	Semester based (1)		
Web					
Language of instruction	Spanish	English Friendly	No	Mode of delivery	Face-to-face

Department	DPTO. INGENIERÍA INFORMÁTICA Y ELECTRÓNICA				
Name of lecturer	RAMON IGNACIO DIEGO GARCIA				
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Other lecturers	JULIO BARROS GUADALUPE ALBERTO PIGAZO LOPEZ				

3.1 LEARNING OUTCOMES
- Capacity to use basic electronic components and circuits in marine electronic systems
- Operate electrical, electronic, and control systems in accordance with rule III / 1 of the STCW agreement as amended. Maintenance and repair of electrical and electronic equipment in accordance with rule III / 1 of the STCW agreement as amended.
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#### 4. OBJECTIVES

To acquire the basic, most widely employed knowledge of electronic components and understand the operation and analysis techniques for application to circuits with a focus on marine electronic systems.

Knowledge, understanding and sufficiency in accordance with rule III / 1 of the STCW agreement as amended.

#### 6. COURSE ORGANIZATION

##### CONTENTS

1	Semiconductor devices. Diodes. Diode circuits. Half-wave and full-wave rectifier. Zener regulator. Bipolar and field effect transistors. Transistor amplifiers. Electronic devices and circuits with switching power at low frequency. Use of basic laboratory equipment (power supply, signal generator, multimeter, oscilloscope, etc.).
2	Operational amplifiers. Linear and non-linear circuits with operational amplifiers. Oscillators and timers. Use of basic laboratory equipment (power supply, signal generator, multimeter, oscilloscope, etc.).
3	Introduction to digital circuits. Logical operations. Synthesis of logic functions. Parameters of digital integrated circuits. Combinational circuits. Bistable. Registers and counters. Memories. Use of basic laboratory equipment (power supply, signal generator, multimeter, oscilloscope, etc.).
4	Introduction to electronic instrumentation systems. Elements of a measuring system. Transducers. Conditioners. Analog-digital interfaces. Data acquisition systems. Virtual instrumentation. Use of basic laboratory equipment (power supply, signal generator, multimeter, oscilloscope, etc.).

## 7. ASSESSMENT METHODS AND CRITERIA

Description	Type	Final Eval.	Reassessn	%
The final examination consists on a part of theory and problems, and another part of laboratory practical. The part of theory and problems consist on a written exam.	Written exam	No	Yes	100,00
The final examination consists on a part of theory and problems, and another part of laboratory practical. The part of laboratory practical consist on a practical laboratory examination.	Laboratory evaluation	No	Yes	0,00
<b>TOTAL</b>				<b>100,00</b>
<b>Observations</b>				
<p>The final exam of each official call consists of a part of theory and problems in a written exam , and another part of laboratory practices in a practical laboratory exam. The student must examine each part that has not passed in the corresponding process of continuous evaluation (the part of laboratory practices will be qualified PASSED or NOT PASSED).</p> <p>The final grade for the course is formed by the theory and problems grade. To pass the course it is necessary to obtain a minimum grade of 5 out of 10 in the theory and problems part and a PASS in the laboratory practice part. No support materials can be used during the exams.</p> <p>If the competent health and academic authorities require it, a distance evaluation system will be applied in which the evaluation methods will be done through virtual support and the laboratory practices will be replaced by activities carried out at a distance on the subject syllabus using telematics media.</p>				
<b>Observations for part-time students</b>				
<p>The final exam of each official call consists of a part of theory and problems in a written exam , and another part of laboratory practices in a practical laboratory exam. The student must examine each part that has not passed in the corresponding process of continuous evaluation (the part of laboratory practices will be qualified PASSED or NOT PASSED).</p> <p>The final grade for the course is formed by the theory and problems grade. To pass the course it is necessary to obtain a minimum grade of 5 out of 10 in the theory and problems part and a PASS in the laboratory practice part. No support materials can be used during the exams.</p> <p>If the competent health and academic authorities require it, a distance evaluation system will be applied in which the evaluation methods will be done through virtual support and the laboratory practices will be replaced by activities carried out at a distance on the subject syllabus using telematics media.</p>				

## 8. BIBLIOGRAPHY AND TEACHING MATERIALS

### BASIC

A. Malvino, Principios de Electrónica. Editorial McGraw Hill.

Roger L. Tokheim, Principios Digitales. Editorial McGraw Hill

Miguel A. Pérez, Instrumentación electrónica Editorial Thomson