

## SUBJECT TEACHING GUIDE

G1042 - Electronics

Degree in Nautical Engineering and Maritime Transport

Academic year 2019-2020

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	JULIO BARROS GUADALUPE
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Other lecturers	ALBERTO PIGAZO LOPEZ RAMON IGNACIO DIEGO GARCIA

### 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.

#### 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 of a part of theory and one of problems, consisting of a written test and another part of laboratory practical, consisting of a laboratory examination. The student must do each part that has been failed in the due process of	Written exam	No	Yes	100,00
The final examination consists of a part of theory and one of problems, consisting of a written test and another part of laboratory practical, consisting of a laboratory examination. The student must do each part that has been failed in the due process of	Laboratory evaluation	No	Yes	0,00
<b>TOTAL</b>				<b>100,00</b>

##### Observations

The final examination consists of a first part of theory and problems, in a written examination, and a second part of laboratory practice to be carried out in the laboratory (the laboratory practice part will qualify APT or NOT APT). It is necessary to obtain a minimum grade of 5 out of 10 in the part of theory and problems and of APT in the part of laboratory practices to pass the final examination. No support material may be used during exams.

##### Observations for part-time students

The final examination consists of a first part of theory and problems, in a written examination, and a second part of laboratory practice to be carried out in the laboratory (the laboratory practice part will qualify APT or NOT APT). It is necessary to obtain a minimum grade of 5 out of 10 in the part of theory and problems and of APT in the part of laboratory practices to pass the final examination. No support material may be used during exams.

## 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.