



# COMILLAS

UNIVERSIDAD PONTIFICIA

ICAI

ICADE

CIHS

Syllabus  
2024 - 2025

## GENERAL INFORMATION

Data of the subject	
Subject name	Communication Electronics
Subject code	DEAC-MIT-511
Main program	<a href="#">Official Master's Degree in Telecommunications Engineering</a>
Involved programs	Máster Universitario en Ingeniería de Telecomunicación y Mást. Univ. en Administración de Empresas [First year] Máster Universitario en Ingeniería de Telecomunicación [First year] Máster Universitario en Ingeniería de Telecomunicación y Máster en Ciberseguridad [First year] Máster Universitario en Ingeniería de Telecomunicación + Máster Big Data.Tecnología y Anal. Avanzada [First year] Máster Universitario en Ingeniería de Telecomunicación + Máster in Smart Grids [First year]
Level	Postgrado Oficial Master
Quarter	Semestral
Credits	7,5 ECTS
Type	Obligatoria
Department	Department of Electronics, Control and Communications
Coordinator	Francisco Javier Herraiz Martínez
Office hours	Contact by email

Teacher Information	
<b>Teacher</b>	
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## DESCRIPTION OF THE SUBJECT

Contextualization of the subject
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## Prerequisites

- Fundamentals of analysis and design of low frequency electronic circuits.
- Signals and systems in continuous time.
- Basic knowledge of electromagnetism, radiation and propagation.
- Reading technical documents in English.

## Course contents

### Contents

#### Course Contents

#### Electronic communication systems: transmitters and receivers

##### UNIT 1. Electronic communication systems

- Basic scheme and classification
- Distortion and noise
- Communication subsystems: filters, amplifiers, oscillators, mixers, PLLs, frequency synthesizer, detectors and antennas

##### UNIT 2. Transmitters and receivers

- Transmitter and receiver schemes
- Transmitter parameters
- Receiver parameters and frequency planning
- Modulators and demodulators

#### Analysis and design of communication subsystems

##### Analysis and design of passive subsystems

- Review of high frequency technologies
- Resonators and communication filters
- Power dividers, combiners and other high frequency passive devices for communication systems
- Circulators

##### Analysis and design of active subsystems

- Review of low and medium frequency electronics
- High frequency amplifiers
- Oscillators
- Mixers and other frequency converters
- Switches and router components

#### Laboratory

##### Laboratory sessions



Amplifiers, oscillators

Final project

Design, manufacturing and testing of a communication receiver

## EVALUATION AND CRITERIA

Evaluation activities	Evaluation criteria	Weight
Individual tests during the term and final exam	Correctness of the solutions found, approach to the problem, understanding of the theoretical basis.	60
Laboratory	1. Laboratory sessions: The quality of the designs results and reports. 2. Presentation of a final project: The development of the project and the final report are made in groups. The presentation and evaluation is individual.	40

## Grading

### Tests and final exam (60 %)

- Individual tests during the term (20% in the ordinary period, 15% in the extraordinary or re-sit period)
- Final exam (40% in the ordinary period, 45% in the extraordinary or re-sit period)

### Laboratory (40 %)

1. Laboratory sessions: The quality of the designs results and reports.
2. Presentation of a final project: The development of the project and the final report are made in groups. The presentation and evaluation is individual.

**In the case the laboratory part has not been passed in the normal period, a practical (laboratory) exam will be required. The grade obtained will replace the laboratory part in the continuous evaluation grade.**

**Both parts (tests and laboratory) must be passed independently.**

## Attendance Rules

Class attendance is mandatory, according to the Academic Regulations of the Higher Technical School of Engineering (ICAI). The requirements of attendance will be applied independently for theory and laboratory sessions:



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In the case of theory sessions, failure to comply with this rule may prevent them from taking the exam in the ordinary period.

In the case of laboratory sessions, failure to comply with this rule may prevent you from taking the exam both in the normal and re-sit period.

In any case, unjustified absences from laboratory sessions will be penalized in the evaluation.

## BIBLIOGRAPHY AND RESOURCES

### Basic References

Notes provided by the instructor in the course web page (Moodlerooms)

In compliance with current regulations on the **protection of personal data**, we would like to inform you that you may consult the aspects related to privacy and data [that you have accepted on your registration form](#) by entering this website and clicking on "download"

<https://servicios.upcomillas.es/sedelectronica/inicio.aspx?csv=02E4557CAA66F4A81663AD10CED66792>