GENERAL INFORMATION

Data of the subject	
Subject name	Electronics
Subject code	DEA-GITT-311
Mainprogram	Bachelor's Degree in Engineering in Telecommunication Technologies
Involved programs	Grado en Ingeniería en Tecnologías de Telecomunicación [Tercer Curso] Grado en Ingeniería en Tecnologías de Telecom. y Grado en Análisis de Negocios/Business Analytics [Tercer Curso] Grado en Ingeniería en Tecnologías de Telecom. y Grado en Análisis de Negocios/Business Analytics [Tercer Curso] Grado en Ingeniería en Tecnologías de Telecomunicación [Tercer Curso]
Credits	7,5 ECTS
Type	Obligatoria (Grado)
Department	Department of Electronics, Control and Communications
Coordinator	José Luis Rodríguez Marrero

Teacher Information	
Teacher	
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DESCRIPTION OF THE SUBJECT

Contextualization of the subject
Prerequisites
Electronic Circuits DEA-GITT-211 or similar. The student should be familiar with basic circuits using Op-Amps and diodes: amplifiers, detectors, comparators and first-order RC filters

Course contents

Contents
Theory:

Fifty-minute lectures, three times per week. The following topics will be discussed in class.

1. **Basic transistor circuits**. Transistor as a switch. Basic amplifier stages: emitter follower, current source, and common-emitter amplifier. Biasing.
2. **Ebers-Moll model and its applications**. Transconductance and small signal transistor model. Common-emitter amplifier revisited. Current mirrors.
3. **Some amplifier building blocks**. Push-pull output stages. darlington connection. Differential amplifiers. Capacitance and Miller effect.
4. **Field-effect transistors**. MOS transistors. biasing and basic amplifier stages.
5. **Feedback**. Effects of feedback on amplifier circuits. Analysis and design of series-parallel feedback amplifiers. Stability of feedback amplifiers. Oscillations.

Laboratory:

Lab meets two hours evrey week to explore the design, Spice simulation, construction, and debugging of transistor circuits.

EVALUATION AND CRITERIA

Grading

There will be two exams, a midterm and a final exam, and lab work. Final exam will be cumulative, although the bulk of the exam will cover material from the last ten weeks of class. The overall grade is obtained as follows:

- Midterm exam will be during the 8th week: 20% of the final grade.
- Final exam will be taken during the finals period: 40% of the final grade.
- Lab work: 40% of the final grade.

Students who do not pass this course will take a make-up exam. In this case, the final grade will be obtained as follows:

- Make-up exam will account for 40% of the final grade, midterms, for 20%, and lab work, for 40%.

BIBLIOGRAPHY AND RESOURCES

Basic References

Theory:

- **Sedra-Smith**. Microelectronic Circuits. 7th edition. Oxford University Press, 2015.
- **Horowitz-Hill**. The Art of Electronics, 3rd edition. Cambridge University Press, 2015.

Laboratory:

A lab book will be made available to all students. We also recommend: **Hayes-Horowitz**. Student Manual for the Art of Electronics. Cambridge University Press, 1989.