

DEA-GITT-211 Electronic Circuits

SEMESTER: Fall

CREDITS: 6 ECTS (4 hrs. per week. 3h Theory + 1h Lab)

LANGUAGE: Spanish

DEGREES: GITT

Course overview

This course is an introduction to electronic devices and circuits used in analog signal processing and instrumentation.

Prerequisites

Basic knowledge of electric circuits.

Course contents

Theory:

1. **Form and Function.** Block diagrams. Signal spectrum. Transducers. Basic electronic subsystems: amplifiers, filters, detectors, comparators.
2. **Operational Amplifiers.** Voltage and current amplifiers.
3. **Filters.** Low-pass and high-pass filters. Frequency response.
4. **Diodes.** Rectifiers and detectors.
5. **Comparators.**
6. **Design of an Electronic System.**

Laboratory:

Seven weekly two-hour sessions to explore the design, construction, and debugging of an analog electronic system. Students will use resistors, capacitors, diodes, and operational amplifiers to design a low-power electronic system to process a physical signal (light, temperature,...).

Textbook

- P. Horowitz, W. Hill, The Art of Electronics, 3rd Edition. Cambridge Univ. Press, New York, NY, 2015.

Grading

There will be three midterm exams, 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 I will be during the 4th week: 10% of the final grade.
- Midterm II will be during the 8th week: 20% of the final grade.
- Midterm III will be during the 12th week: 10% of the final grade.
- Final exam will be taken during the finals period: 35% of the final grade.
- Lab work: 25% of the final grade.