

Academic Year: ( 2019 / 2020 )

Review date: 21-03-2019

Department assigned to the subject: Department of Electronic Technology

Coordinating teacher: HERNANDEZ CORPORALES, LUIS

Type: Compulsory ECTS Credits : 6.0

Year : 2 Semester : 2

**STUDENTS ARE EXPECTED TO HAVE COMPLETED**

none

**COMPETENCES AND SKILLS THAT WILL BE ACQUIRED AND LEARNING RESULTS.**

- know the purpose and operation of analog and digital electronic systems
- Operation of basic electronic instrumentation and being able to measure with them.
- Knowledge and use of main electronic parts.
- Ability to design, dimension, build and apply basic electronic functions.
- Ability to use computer aided design tools for electronic circuit design, identify the parts in an electronic circuit and know its function in a schematic diagram.

**DESCRIPTION OF CONTENTS: PROGRAMME****T1: Circuit Theory**

1. Ohm law.
2. Kirchhoff laws
3. Current and voltage sources.
4. Superposition theorem.
5. Thevenin and Norton theorem.
6. Real voltage and current sources.
7. Capacitors and Inductors (C and L).
8. Time response of C and L.
9. Universal equation for C and L.
10. DC and AC circuit analysis.
11. Frequency response of R, C and L circuits.
12. First order passive Filters and Bode Diagram.
13. Computer circuit simulation of AC and DC circuits

**T2: Electronic components**

1. Diodes and Transistors (MOSFET).
2. MOSFET small signal model.
3. Single stage amplifier using MOSFETs.

**T3: Amplification (Operational Amplifiers)**

1. Inverting Amplifier.
2. Non-Inverting Amplifier.
3. Comparator.
4. Differential Amplifier.
5. Input and Output impedance.
6. Cascade Amplifiers.
7. Computer simulation of amplifier circuits

**T4: Digital Electronics**

1. Binary system and Boole Algebra.
2. Combinational circuits: Decoders and Multiplexers.
3. Sequential circuits: Flip-Flops

**LEARNING ACTIVITIES AND METHODOLOGY**

- Theory classes (large group), problem resolutions classes (small groups), individual tutorials and student personal homework; oriented to theoretical knowledge acquisition.
- Laboratory practices and problems resolution classes in small groups, individual tutorials and student personal homework; oriented to practical knowledge related with the fields of the course.

- Computer sessions in small groups using CAD tools for electronics circuits; simulations. The goal of these sessions is to encourage the use of the CAD tools to complement the theoretical-practical learning during the course.

#### ASSESSMENT SYSTEM

The partial exam in the continuing assessment is valued 25% of total mark. Lab exercises also are valued 25%. The final examination has a value of the remaining 50%. The last course block is evaluated together with the final examination. The minimum mark in the final exam is 4 points. For the students not following continuing evaluation, the general rules of the university apply.

**% end-of-term-examination:** 50

**% of continuous assessment (assignments, laboratory, practicals...):** 50

#### BASIC BIBLIOGRAPHY

- Debashis De; Kamakhya Prasad Ghatak, Basic Electronics, Pearson India, 2010
- Tildon H. Glisson Introduction to Circuit Analysis and Design, Springer Nature Switzerland AG. , 2018