

Course Syllabus

ELECTRONIC PRINCIPLES

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Program: Telecommunications Engineering

1. Course number and name

EYAG1002 - ELECTRONIC PRINCIPLES

2. Credits and contact hours

3 credits and 4 contact hours

3. Instructor's course or coordinator's name

EFREN VINICIO HERRERA MUENTES

4. Text book, title, author, and year

- BOYLESTAD, ROBERT L. y NASHELSKY, LOUIS. Electronic Devices and Circuit Theory (11)

5. Specific course information

a. Brief description of the content of the course (catalog description)

This course introduces students to the world of Analog Electronics and its applications. Initially, the general characteristics of semiconductor materials are studied and consequently the P-N junction; diodes are presented as the basic elements of two terminals.

Subsequently, two basic types of transistors are studied: BJT and MOSFET, illustrating their characteristics, operation curves and basic polarization circuits.

The course continues presenting the detailed analysis of small signal amplifiers using BJT transistors.

Afterwards, the operational amplifiers are studied with their different types of configurations and applications.

Some devices of 3 and 4 terminals are also studied like the SCR, TRIAC and UJT. Finally, the design and analysis of power supplies using voltage regulators with diodes, transistors, operational amplifiers and integrated circuits is presented.

b. Prerequisites

ELECTRICAL NETWORKS ANALYSIS I - ELEG1003

c. This course is: Required

6. Specific goals for the course

a. Specific outcomes of instruction

- 1.- Know the electrical and physical characteristics of semiconductor devices.
- 2.- Analyze and design basic electronic circuits that include diodes, transistors and



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operational amplifiers.

3.- Analyze and design basic electronic circuits with small signal amplifiers.

4.- Analyze and design regulated power supplies.

5.- Know the basics of electrical circuits with thyristors.

b. Explicitly indicate which of the student outcomes listed in Criterion 3 or any other outcomes are addressed by the course

- An ability to apply knowledge of mathematics, science and engineering
- An ability to function on multidisciplinary teams

7. Brief list of topics to be covered

1.- BASICS OF SEMICONDUCTORS

2.- TRANSISTORS

3.- SMALL SIGNAL AMPLIFIERS WITH DISCRETE ELEMENTS

4.- THE OPERATIONAL AMPLIFIER

5.- DEVICES OF THREE AND FOUR TERMINALS

6.- POWER SUPPLIES

