

Course Syllabus

DIGITAL SYSTEMS I

Printed by: jfmoncay

Program: Telecommunications Engineering

1. Course number and name

EYAG1003 - DIGITAL SYSTEMS I

2. Credits and contact hours

3 credits and 4 contact hours

3. Instructor's course or coordinator's name

EDGAR EUGENIO IZQUIERDO ORELLANA

4. Text book, title, author, and year

- Brown, Stephen J. & Vranesic, Zvonko G.. Fundamentals of digital logic with verilog design (3rd ed.;
- a. Other supplemental materials
- Brown, Stephen; Vranesic, Zvonko. Fundamentals of Digital Logic with VHDL Design (Third Edition)
- Wakerly, John F. & Chuen, Jong Ching & Hong, Chang Chip. Digital design principles and practices (Fourth edition)
- Ashenden, Peter J.. The Designer's Guide to VHDL (Systems on Silicon) (Third Edition)
- TOCCI. Sistemas Digitales: Principios y Aplicaciones, 10/ed., Incluye CD (10ma Edición)
- Fletcher, William C.. An engineering approach to digital design (Tercera)

5. Specific course information

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

This course presents basic concepts for the design, implementation and analysis of digital electronic circuits. Initially, binary numbers, codes and their applications are reviewed; then, basic digital components and others of larger scale of integration, needed for the construction of digital systems are studied. Additionally, the fundamentals of combinatorial and synchronous sequential machines are presented. The implementation of digital systems is done with basic digital elements and with the hardware description language (Very High-Speed Integrated Circuit Hardware Description Language-VHDL), making functioning tests in a laboratory.

- b. Prerequisites

ELECTRICAL NETWORKS ANALYSIS II - ELEG1001

- c. This course is: Required

6. Specific goals for the course

- a. Specific outcomes of instruction

1.- To design combinatorial and sequential logic circuits by using truth tables and state



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diagrams, meeting operational requirements.

2.- To implement basic combinatorial and sequential circuits by using integrated circuits of small, medium and large-scale integration, meeting operating specifications of a digital system.

3.- To apply hardware description language (VHDL) by using standardized programming packages, for the simulation of basic combinatorial and sequential logic circuits.

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

- An ability to identify, formulate and solve engineering problems
- A recognition of the need for, and an ability to engage in life-long learning
- A knowledge of contemporary issues

7. Brief list of topics to be covered

- 1.- Number Systems and Codes
- 2.- Combinatorial Logic Design Principles
- 3.- Hardware Description Language (VHDL)
- 4.- MSI Integrated Circuits and their Applications in Combinatorial Logic Design
- 5.- Principles of Sequential Logic Design
- 6.- Design of Synchronous Sequential Circuits

