Course Syllabus

DIGITAL SYSTEMS II

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Program: Telecommunications Engineering

1. Course number and name

EYAG1004 - DIGITAL SYSTEMS II

2. Credits and contact hours

2 credits and 3 contact hours

3. Instructor's course or coordinator's name

SARA JUDITH RIOS ORELLANA

4. Text book, tittle, author, and year

• Harris, David; Harris, Sarah. Digital Design and Computer Architecture (Second Edition)

 a.Other supplemental materials

• Kochan, S. Programming in C (Fourth Edition)

• Brown, Stephen; Vranesic, Zvonko. Fundamentals of Digital Logic with VHDL Design (Third Edition)

• Wakerly, John F.. Digital design: principles and practices (4th Edition)

• THOMAS L. FLOYD. Fundamentos de Sistemas Digitales (9na Edición)

 • Tocci, Ronald J.; Widmer, Neal; Moss, Greg. Digital Systems: Principles and Applications (Twelfth Edition)

5. Specific course information

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

This course integrates knowledge about design of sequential digital systems of small, medium and large scale, using both the traditional methods of design, as well as modern methods based on Computer Aided Design (CAD) tools, hardware description language and high level language.

b.   Prerequisites

 DIGITAL SYSTEMS I - EYAG1003

c.   This course is: Required

6. Specific goals for the course

a.   Specific outcomes of instruction

1.- To design synchronous sequential circuits using traditional methods with integrated circuits of Medium Scale Integration (MSI) and Large Scale Integration (LSI).

2.- To create combinatorial and sequential digital circuits using a hardware description language.

3.- To design digital systems using traditional methodology based on synchronous sequential machines (SSM), using CAD tools and hardware description language.

4.- To develop codes in high level language, to control the hardware created through

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CAD tools.

    5.- To identify the characteristics and architecture of the Field Programmable Gate Array (FPGA) technology, as well as its evolution and application for the digital systems implementation.

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

- An ability to design a system, component or process to satisfy realistic constraints
- A recognition of the need for, and an ability to engage in life-long learning

7. Brief list of topics to be covered

   1.- Synchronous sequential circuits (10h.)

   2.- Formal design of digital systems (12h.)

   3.- FPGA fundamentals (2h.)

   4.- Fundamentals of microprocessors and embedded systems (6h.)

   5.- Clanguage for embedded systems (2h.)