Digital Electronics

- 1. Course number and name: 020ELNES2 Digital Electronics
- 2. Credits and contact hours: 6 ECTS credits, 2.5x1:15 contact hours
- 3. Instructor's or course coordinator's name: Andre Chkeiban

4. Text book:

a. Other supplemental materials:

Professor textbook and course material

5. Specific course information

a. Catalog description:

Digital systems and analog systems: comparison, advantages and disadvantages, analog switches – Application to sample-and-hold circuits, analog to digital converter and digital to analog converter – Terminology of digital integrated circuits, digital integrated circuits using saturated bipolar transistors – TTL characteristics, advantages and disadvantages, digital integrated circuits using unsaturated bipolar transistors – ECL characteristics. advantages and disadvantages, digital integrated circuits using MOS transistors – CMOS characteristics, advantages and disadvantages, interfacing digital integrated circuits, introduction to memories: terminology and architecture.

- **b. Prerequisites or co-requisites:** 020ELAES1 Analog Electronics
- c. Required: Required for CCE and EE students

6. Specific goals for the course

a. Specific outcomes of instruction:

Outline the different types of converters.

Implement a conversion chain and simulate it on Proteus.

Outline the different types of logic ICs.

Analyze IC data sheets and identify the characteristics necessary for proper operation.

Implement a memory circuit.

Design and realize an electronic circuit to meet desired needs and perform specific functions

b. KPI addressed by the course:

KPI	a2	b1	b2	c1	c2	c3	g1	g2	k2	k3
Covered	Х	Х	Х	Х	Х	Х			Х	
Assessed	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х
Give Feedback										

7. Topics and approximate lecture hours:

Analog systems vs. digital systems (2 lectures) Analog switches; application to sample-and-hold circuits (5 lectures) Analog to digital converter (2 lectures) Digital to analog converter (1 lecture) Simulation of a conversion chain using Proteus (1 lecture) Digital electronics applications (4 lectures) Introduction to digital integrated circuits (3 lectures) Digital integrated circuits using saturated bipolar transistors (4 lectures) Digital integrated circuits using unsaturated bipolar transistors (2 lectures) Digital integrated circuits using MOS transistors (3 lectures) Interfacing digital integrated circuits (1 lecture) Applications on the different types of logic ICs (4 lectures) Memory; applications to memories (3 lectures)