CC 216 – DIGITAL LOGIC DESIGN

CREDIT HOURS

3 Hours

CONTACT HOURS (Hours/week)

Lecture: 2; Tutorial: 2; Lab: 2

TEXT BOOK

Thomas L. Floyd, "Digital Fundamentals", Prentice Hall, latest edition.

COURSE DESCRIPTION

Number systems - binary arithmetic and codes - logic gates - Boolean algebra and logic simplifications - Design and realization of combinational circuits - Functions of combinational circuits logic - Flip-Flops - analysis design and realization of counters - analysis and realization of shift registers - Computer aided engineering.

PREREQUISITE:

CC 111

RELATION OF COURSE TO PROGRAM

Required

COURSE INSTRUCTION OUTCOMES

The student will be able to:

- Know the basic differences between analog and digital systems
- Use binary numbers and codes
- Describe the operation of logic gates
- Apply Boolean algebra on K-map
- Design a combinational and sequential logic circuits to simplify function

TOPICS COVERED

- Introduction to digital concepts.
- Number systems, operations, and codes.
- Logic gates.
- Boolean algebra and logic simplification – part 1.
- Boolean algebra and logic simplification – part 2.
- Functions of combinational logic.
- 7th week exam.
- Decoders, encoders, MUX, DMUX – part 1.
- Decoders, encoders, MUX, DMUX – part 2.
- Flip-Flops and related devices – part 1.
- Flip-Flops and related devices – part 2.
- 12th week exam.

- Flip-Flops applications.
- Counters.
- Shift registers.

CONTRIBUTION OF COURSE TO MEET THE REQUIREMENTS OF CRITERION 5:

Professional component Content			
Math and Basic Sciences	Engineering Topics	General Education	Other
✓	✓		

RELATIONSHIP OF COURSE TO STUDENT OUTCOMES:

	Student Outcomes	Course aspects
A	An ability to apply knowledge of mathematics, science, and engineering	a_1 a_2
B	An ability to design and conduct experiments, analyze and interpret data.	b_1 b_2 b_3 b_4
C	An ability to design a system, component, or process to meet desired needs within realistic constraints such as economics, environmental, social, political, ethical, health, and safety, manufacturability, and sustainability	c_1 c_2 c_3
D	An ability to function on multi-disciplinary teams.	d_1 d_2 d_3 d_4
E	An ability to identify, formulate, and solve engineering problems	e_1 e_2 e_3
F	An understanding of professional and ethical responsibility	
G	An ability to communicate effectively	
H	The broad education necessary to understand the impact of engineering solutions in a global, economic, environmental, and social content	h_1 h_2 h_3 h_4
I	A recognition of the need for, and an ability to engage in life-long learning.	
J	A knowledge of contemporary issues within and outside the electrical engineering profession.	
k	An ability to use the techniques, skills, and modern engineering tools necessary for electrical engineering practice.	