

CC 216- Digital Logic Design

CREDIT HOURS

3 Hours

CONTACT HOURS (Hours/week)

Lecture: 2; Tutorial: 2; Lab: 2

COURSE COORDINATOR

Prof. Gamal Selim

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 gains knowledge on the basic differences between analog and digital system. He/she is capable of using binary numbers and codes, describe the operation of logic gates, applying Boolean algebra on K-map and 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	Engineering Design
✓	✓		

RELATIONSHIP OF COURSE TO STUDENT OUTCOMES:

Student Outcomes		Course Outcomes
a.	An ability to apply knowledge of mathematics, science, and engineering.	✓
b.	An ability to design and conduct experiments, analyze and interpret data.	✓
c.	An ability to design a system, component, or process to meet desired needs within realistic constraints such as economic, environmental, social, political, ethical, health and safety, manufacturability, and sustainability.	✓
d.	An ability to function on multi-disciplinary teams.	
e.	An ability to identify, formulate, and solve engineering problems.	
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 societal context The broad education necessary to understand the impact of engineering solutions in a global, economic, environmental, a	
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.	