

Zarqa University



Faculty of Engineering Department:
Electrical Engineering Course
title: Digital Fundamentals
(0904234)

Prerequisite: -
Instructor: TBD
Lecture's time: TBD
Office Hours: TBD

Course description:

Logic levels and pulse waveforms; number systems and their conversion; types of logic gates; Boolean algebra; combinational logic; types of sequential elements and their applications; memories: types and classifications.

Aims of the course:

1. Students will learn the number representations used in today's digital systems and their arithmetic properties and conversion techniques.
2. Students will learn to analyze and synthesize networks of combinatorial, digital logic elements.
3. Students will learn to analyze and design digital, clocked sequential circuits.
4. Students will enhance professional writing and participate in a teamwork process by performing engineering design using modern computer tools and writing a corresponding technical report.

Intended Learning Outcomes (ILOs):

At completing this module the student should be able to :

1. An ability to understand the basic difference between digital and analog quantities and systems.
2. An ability to define different number systems and apply arithmetic operations to binary numbers.
3. An ability to understand the different switching algebra theorems and apply them for logic functions.
4. An ability to define the Karnaugh map for a few variables and perform an algorithmic reduction of logic functions.
5. An ability to define different combinational circuits.
6. An ability to understand the bi stable element and the different latches and flip-flops.
7. An ability to understand sequential circuits, like counters, shift registers, and so on.
8. An ability to list basic semiconductor memory types, and explain the difference between RAM and ROM..



Course structures:

Week	C. Hrs	ILOs	Topics	Teaching Procedure	Assessment methods
Week1		1	Syllabus, Course Schedule; Chapter 1: Logic levels and pulse waveforms	Lectures Notes	
Week 2-5		2	Chapter 2: number systems and their conversion	Lectures Notes	HW
Week 6		3	Chapter 3: types of logic gates	Lectures Notes	HW
Week 7-9		4	Chapter 4: Boolean Algebra and logic simplification	Lectures Notes	HW& Quizzes 1 st Exam TBD
Week 10-12		5	Chapter 5: combinational logic	Lectures Notes	HW& Quizzes 2 nd Exam TBD
Week 13-15		6,7	Chapter 6: types of sequential elements and their application	Lectures Notes	
Week 16		8	Chapter 7: memories: types and classification	Lectures Notes	HWs Final Exam (TBD)

References:

Thomas Floyd, Digital Fundamentals, 10th edition, Pearson Education 2009

Assessment Methods:

Methods	Grade	Date
Quizzes	6	TBD
HWs	4	TBD
First Exame	20	TBD
Second Exame	20	TBD
Final Exame	50	TBD

