FUTURE UNIVERSITY IN EGYPT جامعة المستقبل

Faculty of Engineering & Technology

Digital Systems

Information :

Course Code :	ELE 366	**Level :**	Undergraduate	**Course Hours :**	3.00- Hours

Department : Specialization of Mechatronics Engineering

Instructor Information :

Title	Name	Office hours
Lecturer	Mohamed Ali Mohamed Elsayed Torad	1

Area Of Study :

Bytheendofthecoursethestudentswillbeableto:

1) Demonstrate knowledge of the basic understanding of logic gates and digital circuits.
2) Gain the ability to build mechatronics solutions using digital system components such as MUXs, Decoders, PLAs, Counters, etc.
3) Demonstrate the ability to analyze, minimize and synthesize combinational and synchronous sequential logic circuits via applying hardware and software skills through mini design projects.

Description :

Number systems; Codes and coding; Logic gates; Minimization techniques applied to design of logic systems; Combinational circuits; Latches, flip-flops, registers and counters; Synchronous sequential circuit design; State machines; Memory and I/O logic elements; Discussion of microprocessors; Analog/digital and digital/analog converters.

Course outcomes :

a.Knowledge and Understanding: :	
1 -	a1. Identify basic applied and engineering science.
2 -	a2. Apply principles of digital logic and its implementation in various
b.Intellectual Skills: :	
1 -	b1. Define digital circuit and logical design problems in mechanical engineering
c.Professional and Practical Skills: :	
1 -	c1. Design combinational circuits using digital logic circuits.
2 -	c2. Apply gained design skills to solve applications in mechanical and
d.General and Transferable Skills: :	
1 -	d1. Collaborate effectively within multidisciplinary team

Course Topic And Contents :

Topic	No. of hours	Lecture	Tutorial / Practical
Digital Systems and Binary Numbers		2	2
Boolean Algebra and Logic Gates		3	3
Simplification of Boolean Functions: The Karnaugh Map Method		4	4
Combinational Circuits		4	4
Latches and Flip-Flops		2	2
Synchronous Sequential Devices		4	4
Registers and Counters		4	4
Memory and Programmable Logic		3	3
Design Project Presentation		4	2
Midterm Tests		0	2

Teaching And Learning Methodologies :

Interactive Lecturing
Problem solving
Discussion
Experiential learning
Project
Research

Course Assessment :

Methods of assessment	Relative weight %	Week No	Assess What
Final Exam	40.00		
First Midterm	20.00	6	
Participation and Assessments	10.00		
Project	10.00	14	
Second Midterm	20.00	11	

Books :

Book	Author	Publisher
Digital Design	M.Morris Mano	Pearson

Course Notes :

Lecture notes and videos on the course Moodle page, FUE website.

Recommended books :

Jr.C.H. Roth and L.L. Kinney, Fundamentals of Logic Design, Brooks Cole, 2010.