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	5
Lecturer	Mohamed Ali Mohamed Elsayed Torad	5
Assistant Lecturer	Amiraa Sayed Ahmed Abdallah Elhamshary	2
Teaching Assistant	Mohamed Samir Ahmed Mohamed	1
Teaching Assistant	Mostafa Mahmoud Sabry Sadek	

Area Of Study :

Bytheendofthecoursethestudentswillbeableto:

1) Basic understanding of digital circuits
2) Development of the ability to analyze and synthesize combinational and synchronous sequential logic circuits
3) Apply hardware and software skills to mechatronic and engineering problems through some practical design projects.

Description :

Semiconductor devices and switching characteristics, Logic gates and families, Memory elements and types, Timing circuits, Analog/digital and digital/analog converters

Course outcomes :

a.Knowledge and Understanding: :	
1 -	Identifybasicappliedand engineeringscience.
2 -	Identify principles in the of design of mechanical components,differentmaterials,andmanufacturingtechnologies in the field of mechanical power engineering and some other engineering disciplines.
3 -	Identify principles in the fieldofdesignoffluidflow, thermodynamics,gasdynamics,turbo-machinery, heattransferengineering and fundamentals of thermal and fluid processes
4 -	Develop conceptual and detailed design ofconstruction projects and fluid power systems..
b.Intellectual Skills: :	
1 -	Definedigital circuit and logical design problems in mechanical engineeringand evaluate designs, processes, and performance and propose improvements.
c.Professional and Practical Skills: :	
1 -	Design combinational circuits using digital circuits.

2 -	Apply gained design skills to solvediverse applications in mechanical and mechatronics applications.
d.General and Transferable Skills: :	
1 -	Collaborate effectively within multidisciplinary team.
2 -	Share ideas, communicate effectively and work in stressful environmentand within constraints.

Course Topic And Contents :

Topic	No. of hours	Lecture	Tutorial / Practical
Binary Systems and digital codes	4	2	2
Boolean Algebra and Logic Gates	6	4	2
Simplification of Boolean Functions: The Map Method	6	2	4
Combinational Logic: Design of Adders	8	4	4
Finite State Machines, State Tables, State Diagrams	8	4	4
Synchronous Sequential Devices	8	4	4
Registers and Counters	8	4	4
Memory and Programmable Logic	8	4	4
Applications in mechanical engineering	8	4	4

Teaching And Learning Methodologies :

Lectures
Tutorial
Class discussions and activities
Homework and self-study

Course Assessment :

Methods of assessment	Relative weight %	Week No	Assess What
FinalWrittenExam	40.00	16	
FirstAssignment	5.00	4	
MidTermExam	25.00	6	
SecondAssignment	5.00	9	
SecondMidterm	25.00	11	

Recommended books :

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