Faculty of Engineering & Technology

Introduction to Microprocessors

Information :

Course Code :	ELE 410	**Level**	:	Undergraduate	**Course Hours :**	3.00- Hours

Department :	Specialization of Mechatronics Engineering

Instructor Information :

Title	Name	Office hours
Lecturer	Mohamed Ali Mohamed Elsayed Torad	4
Teaching Assistant	Ahmed Mahmoud Mohamed Mahmoud Hegazy	

Area Of Study :

Bytheendofthecoursethestudentswillbeableto:
1) Demonstrateknowledgeofbasic microprocessors hardware and programming models.
2) Be fluent in assembly and C programming of 8051 Microcontroller.
3) Apply hardware and software skills to mechatronic and engineering problems through some practical projects.
4) Shareideasandworkinateaminanefficientandeffectivemannerundercontrolled supervisionorindependently.

Description :

Microprocessor system design; 8051 architecture and organization; Instruction set; Addressing modes; stack and branching; Interrupts and exceptions; Microprocessor support circuits and peripheral interfacing; Assembly programming; C language programming; Applications include data collection and control of pneumatic, hydraulic and machine systems.

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 -	Definemicrocontroller design problems in mechanical engineeringand evaluate designs, processes, and performance and propose improvements.
2 -	Apply gained hardware and software skills to code diverse applications in mechanical and mechatronics applications.

c.Professional and Practical Skills: :

1 -	Write assembly and Cprogramsfor the 8051 microcontroller.

d.General and Transferable Skills: :

1 -	Collaborate effectively within multidisciplinary team.
2 -	Share ideas, communicate effectively and work in stressful environment and within constraints.
3 -	Lead and motivate individuals and work with others according to the rules of the professional Ethics.
4 -	Use digital libraries and/or Learning systems and demonstrate efficient IT capabilities

Course Topic And Contents :

Topic	No. of hours	Lecture	Tutorial / Practical
Introduction to microprocessors and embedded processors.	4	2	2
The 8051 microcontroller overview and programming model and architecture.	10	6	4
The 8051 Assembly language programming and addressing modes.	12	6	6
Arithmetic, logical, and jump instructions.	8	4	4
I/O parallel port programming.	8	4	4
The 8051 C programming.	10	6	4
Timer, serial port, and interrupt programming in Assembly and C.	8	4	4
Design projects.	6	4	2

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
Design Project	15.00	15	
FinalWrittenExam	40.00	16	
FirstAssignment	5.00	4	
MidTermExam	15.00	6	
SecondAssignment	5.00	9	
SecondMidterm	20.00	11	