FUTURE UNIVERSITY IN EGYPT جامعة المستقبل

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 :

ÅEnrich students' knowledge about the characteristics of microprocessors, and its applications.
ÅShowing students the relationship between hardware and software and how they work together to accomplish a task.
ÅEnrich students' knowledge about the major component of a microcontroller-based systems, describe the steps involving in assembling, linking, and executing a program.
ÅTrain students' to write programs in assembly and ñCòlanguages to perform given tasks and run them.

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 -	Discuss issues about the microprocessor performance.
2 -	List the main syntax of assembly and ñCòlanguages.
3 -	Outline fundamentals in computing, including hardware and oper-ating systems.
4 -	Discuss issues of reliability
5 -	Identify and demonstrate usage of tools, practices and methodolo-gies used in the specification, design implementation and critical evaluation of computer software systems.
6 -	Outline current and underlying technologies that support computer processing and inter-computer communication.
b.Intellectual Skills: :	
1 -	Design microprocessor programs in assembly and ñCòlanguages to perform a given task.
2 -	Debug microprocessor programs written in assembly or ñCòlan-guages to perform a given task.
3 -	Modify microprocessor programs written in assembly or ñCòlan-guages to upgrade a given process.
c.Professional and Practical Skills: :	
1 -	Implement programs using the assembly and ñCòlanguages.

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2 -	Use the assembly language to control the different computer units.
3 -	Use the assembly language to write drivers for different computer accessories.
4 -	Identify risks or safety aspects that may be involved in the opera-tion of computing equipment within a given context.
5 -	Operate computing equipment efficiently, taking into account its logical and physical properties.
d.General and Transferable Skills: :	
1 -	Work in stressful environment and within constraints.
2 -	Demonstrate efficient IT capabilities.
3 -	Manage tasks and resources.
4 -	Communicate effectively.
5 -	Mange one's own learning and development, including time man-agement and organizational skills.

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.	8	4	4
The 8051 Assembly language programming and addressing modes.	8	4	4
Arithmetic, logical, and jump instructions.	8	4	4
I/O parallel port programming.	8	4	4
The 8051 C programming.	8	4	4
Timer, serial port, and interrupt programming in Assembly and C.	8	4	4
Design projects.	6	4	2

Teaching And Learning Methodologies :

Interactive Lecturing
Discussion
Experiential learning
Project
Research

Course Assessment :

Methods of assessment	Relative weight %	Week No	Assess What
Assignment	15.00		
Final Exam	40.00	16	
First Midterm Exam	15.00	6	
Laboratory Experiments	10.00		
Quizzes	10.00		
Second Midterm Exam	15.00	11	

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Course Notes :

1. Lecture notes
2. Handouts.

Recommended books :

Recommended Reading: The 8051 Microcontroller: A Systems Approach, Janice Gillispie Mazidi, Muhammad Ali Mazidi, and Rolin D. McKinlay, Pearson, 2012

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