FUTURE UNIVERSITY IN EGYPT جامعة المستقبل

Faculty of Engineering & Technology

Microprocessors and Applications

Information :

Course Code :	CMP 351	**Level :**	Undergraduate	**Course Hours :**	3.00- Hours

Department : Department of Electrical Engineering

Instructor Information :

Title	Name	Office hours
Professor	Ahmed Fahmy Amin Mahros	10
Lecturer	Nermin Mohamed Fawzy Mahmoud Salem	13
Teaching Assistant	Ahmed Mahmoud Mohamed Mahmoud Hegazy	
Teaching Assistant	Mohamed Ibrahim Mohamed Ibrahim	1

Area Of Study :

Enrich studentsôknowledge about micro-architectural features of advanced processors, high-performance, memory design, interfacing techniques and related standards.
Train studentsôto develop microprocessor-based systems.

Description :

Introduction to microprocessors, Architecture, Microprocessor hardware, Assembly language fundamentals, Programming, Microprocessor system connections, Timing in microprocessors, Interrupts and interrupt service procedures, Microprocessor timing specifications, Interfacing, Programmable chips , Data acquisition systems, Applications of closed loop control, I/O hardware alternatives, Developments tools, Troubleshooting case studies.

Course outcomes :

a.Knowledge and Understanding: :	
1 -	Define microprocessor architecture, its instructions and addressing modes.
2 -	Identify microprocessor signals, bus cycles and timing
b.Intellectual Skills: :	
1 -	Design a memory system and I/O circuit interface and interface them to a microprocessor.
2 -	Design a system using an interrupt interface for a microprocessor.
3 -	Analyze a microprocessor program and develop an assembly language programs for applications.
c.Professional and Practical Skills: :	
1 -	Use programmable interface controllers and programmable timers in a digital circuit.
2 -	Use debug tool (DEBUG) microprocessor architecture, software and hardware development.
3 -	Use logic analyser for understanding timing, hardware development, and for exploring the relationship between hardware and software of a microprocessor system.
d.General and Transferable Skills: :	
1 -	Collaborate effectively within multidisciplinary team

2 -	Communicate effectively.
3 -	Demonstrate efficient IT capabilities.
4 -	Effectively manage tasks, time, and resources.

Course Topic And Contents :

Topic	No. of hours	Lecture	Tutorial / Practical
Introduction to Computing	3	2	5
The AVR Microcontrollers history and features	3	2	5
The AVR Architecture and Assembly language	12	8	20
Branch, Call, and Time Delay Loop	3	2	5
AVR I/O Port Programming	3	2	5
Arithmetic and Logic Instructions	6	4	10
AVR Advanced Assembly Programming and AVR Programming in C	9	6	15
AVR Interrupt programming	6	4	10
Experiment#1: Programs including arithmetic and logical operations.			
Experiment#2: Programs including timing processes.			
Experiment#3: Programs including scanned display.			
Experiment#4: Programs including external Interrupt			
Experiment#5: Programs including internal Timers.			
Experiment#6: Programs including ADC			
Experiment#7: Interfacing microcontroller with external devices.			

Teaching And Learning Methodologies :

Lectures
Tutorials
Communication Lab

Course Assessment :

Methods of assessment	Relative weight %	Week No	Assess What
Assignments	5.00		to asses the performance of the students through the overall
Attendance/Performance	5.00		to asses the performance of the students through the overall
Electronic and computer Lab Experiments	10.00		to assess the skills of problem solving, understanding of related topics
Final Exam	40.00	15	to assess the comprehensive understanding of the scientific background of the course, to assess the ability of problem solving with different techniques studied.
Midterm 1	15.00	7	to assess the skills of problem solving, understanding of related topics

Midterm 2	15.00	12	to assess the skills of problem solving, understanding of related topics
Quiz 1	5.00	5	to assess the skills of problem solving, understanding of related topics
Quiz 2	5.00	10	to assess the skills of problem solving, understanding of related topics

Recommended books :

8808 and 8086 Microprocessors: Programming, Interfacing, Software, Hardware, and Applications (4th Edition), Walter A. Triebel and Avtar Singh, ISBN: 0-13-093081-4, Prentice Hall, 2003.