

Course Title:	<i>Microprocessor & Interfacing</i>
Course Code:	CEN-410
Credit Hours Theory:	3
Credit Hours Lab (If Applicable):	1
Pre-requisite course	CEN-203
Instructor Name with Qualification:	Shaftab Ahmed
Course Objectives:	Objective of this course is to introduce the analysis and designing of conventional and advanced microprocessor and microcontroller based systems. A portion of this course comprises on C and assembly language programming to understand the relation of software and hardware in microprocessor and microcontroller based systems.
Course Learning Outcomes	After the completion of this course students will be able to; <ol style="list-style-type: none"> 1. Interface microprocessors to memory and input/output devices 2. Design develop hardware and software based bas microprocessor and based systems 3. Interface devices with computer's standard ports 4. Make IO cards for computers for interfacing purpose 5. Develop standalone microcontroller and microprocessor based system 6. Write programs for stand alone and computer based hardware applications
Contents (Catalog Description):	<p>Microprocessor and Microcontroller Based Systems</p> <ul style="list-style-type: none"> • Standalone minimum component designing using 8088 / 8086 microprocessors and Microcontrollers like intel 8051 and PIC 16F84 etc. <p>Memory Interfacing</p> <ul style="list-style-type: none"> • Hardware and pin-outs • Clock generation, Ready and Reset control • Fetch, Execute, Read and Write Bus Cycles • EPROM and RAM Interfacing <p>IO Interfacing and Programmable IOs</p> <ul style="list-style-type: none"> • Parallel port interfacing • Keyboard and display Interfacing • Timer operations

	<ul style="list-style-type: none"> • Serial data communication • MODEM interfacing and standards • Communication standards • Networked applications <p>Interrupts Structure</p> <ul style="list-style-type: none"> • Hardware and software interrupts • Expansion of hardware interrupts • Timed functions • Event Driven Applications <p>Microprocessor based Data Acquisition and Control</p> <ul style="list-style-type: none"> • Interfacing A/D and D/A converters • Interface with sensors and transducers • Applications
<p>Recommended Text Books:</p>	<ol style="list-style-type: none"> 1. M.A. Mazidi and J. G. Mazidi, “The 8051 Microcontroller and Embedded Systems”, PHI.. 2. Barry B. Brey, “The Intel Microprocessors”, Prentice Hall, 6-Ed. 2003 3. Scott Mackenzie, “The 8051 Microcontroller”, Prentice Hall
<p>Reference Books:</p>	<ol style="list-style-type: none"> 1. Douglas V. Hall, “Microprocessors and Interfacing” McGraw Hill 2. Walter A. Triebel, Avtar Singh, “The 8088 and 8086 Microprocessors”, fourth edition Prentice Hall Inc., 2002 3. A K Ray, K. M. Bhurchandi, “Advanced Microprocessors and Peripherals” Tata McGraw Hill
<p>Helping Web Sites:</p>	
<p>General Instructions for students:</p>	<p>Use the course resources available in Yahoo group http://groups.yahoo.com/MPISpring2014</p> <p>Home Works and Assignments</p> <ul style="list-style-type: none"> • Attendance is mandatory. Every class is important. All deadlines are hard. Under normal circumstances late work will not be accepted. • 75% attendance is mandatory. Latecomers will be marked as absent. • Students are required to take all the tests. No make-up tests will be given under normal circumstances. Any form of cheating on exams/assignments/quizzes is subject to serious penalty

Quiz Tests

Week 3 Quiz 1

Week 5 Quiz 2

Week 7 Quiz 3

Week 9 Quiz 4

Evaluation Criteria

Assignments/projects 20%

Quizzes 10%

Mid-Term 20%

Final Exam 50%

Sixteen Week Lesson Plan	Week # 1.	Microcontroller 8051 Architecture and application programming I
	Week # 2.	Microcontroller 8051 Architecture and application programming II
	Week # 3.	Microcontroller 8051 Architecture and application programming III
	Week # 4.	8051 Hardware connection and Intel Hex file
	Week # 5.	8051 Timer programming in C
	Week # 6.	8051 Serial port programming in C
	Week # 7.	8051 Interrupt Programming in C
	Week # 8.	8051 LCD, KB, DAC, ADC interfacing
	Week # 9.	MID TERM TEST
	Week # 10.	Review of 8088 / 8086 microprocessor architecture Clock, Ready and Reset control
	Week # 11.	8088 / 8086 instruction set Programming in ASM 8088 - I
	Week # 12.	Programming in ASM 8088 - II
	Week # 13.	RAM and EPROM Interfacing, Parallel I/O interfacing (8255)
	Week # 14.	Keyboard and LED / LCD display interfacing
	Week # 15.	Parallel port interfacing and applications like stepper motor control
	Week # 16.	Timer operations (8253)
	Week # 17.	Interrupts Structure (8259); Hardware and software interrupts; Expansion of hardware interrupts
	Week # 18.	FINAL EXAMS

Course Learning Outcomes mapping to Program Learning Objectives

CONTRIBUTION OF COURSE LEARNING OUTCOMES TO PROGRAMME LEARNING OUTCOMES													
SOFTWARE ENGINEERING		Operating Systems											
No.	Program Outcomes	Course Learning Outcomes											
		1	2	3	4	5	6	7	8	9	10	11	12
1	Engineering Knowledge					√							
2	Problem analysis							√					
3	Design/Development of solutions							√					
4	Investigation							√					
5	Modern tool usage						√						
6	Engineer and society												
7	Environment and sustainability												
8	Ethics												
9	Individual and Team work							√					
10	Communication							√					
11	Project Management												
12	Lifelong learning							√		√			

Course Learning Outcomes mapping to Program Learning Objectives

CONTRIBUTION OF COURSE LEARNING OUTCOMES TO PROGRAMME LEARNING OUTCOMES													
SOFTWARE ENGINEERING		SOFTWARE PROJECT MANAGEMENT											
No.	Program Outcomes	Course Learning Outcomes											
		1	2	3	4	5	6	7	8	9	10	11	12
1	Engineering Knowledge						√						
2	Problem analysis							√					
3	Design/Development of solutions							√					
4	Investigation							√					
5	Modern tool usage							√					
6	Engineer and society								√				
7	Environment and sustainability								√				
8	Ethics								√				
9	Individual and Team work									√			
10	Communication									√			
11	Project Management							√					
12	Lifelong learning									√			