

Department of Computer Engineering			
Microcontroller (66428)			
Total Credits	3		
Faculty compulsory			
Prerequisites	P1 : Digital Circuits I (66222)		
Course Contents			
Microcontroller architecture. Address modes and instruction sets. Subroutines and interrupts. Handling software tools including IDE, editor, assembler, simulator and C compiler. Interface techniques including parallel, serial, timer, and analogue peripheral interface.			
Intended Learning Outcomes (ILO's)			Student Outcomes (SO's)
Contribution			
1	The ability to work with, and describe the functionality of the Intel microprocessor and the microchip PIC microcontroller. (Address modes and instruction sets. Subroutines and interrupts. Handling software tools including IDE, editor, assembler, simulator and C compiler)	C	40 %
2	The ability to work with and design the circuits for interfacing different generic I/O peripherals (including parallel, serial, timer, and analogue peripheral interface)	E	40 %
3	The ability to work in a team to apply what has been taught in a hardware project	D	20 %
Textbook and/ or References			
1. The intel Microprocessors 8th edition by Barry B. Brey data sheets from the microchip			
Assessment Criteria		Percent (%)	
First Exam		20 %	
Second Exam		20 %	
Projects		20 %	
Final Exam		40 %	
Course Plan			
Week	Topic		
1	Introduction and overview of Microprocessors and Microcontrollers		
2+3	Minimum Systems the PIC 16 Series (architecture, memory interfacing, and address modes)		
4+5	Parallel Ports, Power Supply, and the Clock Oscillator		
6	Assembler		
7+8	Working with Time: Interrupts, Counters and Timers		
9	Programming, simulating, and debugging the microcontrollers with C		
10+11	The Intel microprocessor (architecture, memory interfacing, and address modes)		
12+13	I/O interfacing		
14+15	Smarter Systems, and the PIC 18FXX2		
16	Contemporary issues		