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Department of Mechanical Engineering	
Special Topics in Mechatronics (67688)	
Total Credits	**3**
Elective	
Prerequisites	-

Course Contents

PIC Architecture, Instruction Set of PIC controllers, Building a Basic PIC Controller, Design Examples, Interfacing Analog Signals, Miscellaneous Issues related to robotics.

	Intended Learning Outcomes (ILO's)	Student Outcomes (SO's)	Contribution
1	The ability to acquire design capabilities of practical microcontroller systems using popular microcontrollers, Interface Microcontrollers to Input and Output devices: LCD, Serial Interface, Analog devices and others.	C E	40 %
2	The ability to identify Architecture of Different Types of Microcontrollers, design and Build a Practical Microcontroller System	C E	40 %
3	The ability to reflect the knowledge learned in the course on a practical teamwork project.	C E G J K	20 %

Textbook and/ or Refrences

The Microchip Manuals for PIC

Assessment Criteria	Percent (%)
First Exam	20 %
Second Exam	20 %
Laboratory Work	20 %
Final Exam	40 %

Course Plan

Week	Topic
1+2	PIC Architecture, MCU architecture, Special Function Registers (SFRs), Data Memory, and program memory
3+4	Instruction Set of PIC controllers.
5+6	Building a Basic PIC Controller
7+8+9	Design Examples
10+11	Interfacing Analog Signals
12	SPI and I2
13	Programming the Internal EEPROM, External Serial EEPROM
14+15+16	Advanced Topics (wireless comm. , sensors interfacing, robots controlling)