Ramgarhia Polytechnic College, Phagwara

Electronics and Communication Engineering Department

Head of Department: Er. Simranjit Singh Kahlon

Name of the Faculty: Er. Inderjeet kaur

Discipline: ECE

Semester: 3rd

Subject: M&ES

Lesson Plan Duration: 16 Weeks

Rationale Embedded systems and Micro-controllers have also assumed a great significance in the electronic and consumer goods industry and are a very vital field. The subject aims to expose students to the embedded systems besides giving them adequate knowledge of Micro controllers.

LEARNING OUTCOMES

After completion of the course, the learner should be able to

CO1. Work on a microcontroller kit

CO2. Describe architecture, instruction set and addressing modes of 8051/8031 microcontroller, introduction of PIC microcontroller

CO3. Write, edit a assembly language program(PC based)

CO4 Write, edit C language program

CO5. Write program for LCD interface, A/D converter, D/A converter, serial data transmission from kit to PC

CO6. Write program to interface different sensors with microcontroller

CO7. Demonstrate applications of microcontroller

PO ⇨ / CO ⇩	PO1	PO2	PO3	PO4	PO5	PO6	PO7
CO1							
CO2							
CO3							
CO4							
CO5							
CO6							
CO7							

Syllabus

Units	Details	Hours
1.	Microcontroller series (MCS) – 51 Overview Architecture of 8051 Microcontroller Pin details I/O Port structure Memory Organization Special Function Registers (SFRs) External Memory	(14 hrs)
2.	Instruction Set; Addressing Modes, Instruction types Timer operation Serial Port operation Interrupts	(14 hrs)
3.	Assembly/C programming(KEIL) for Micro controller Assembler directives Assembler operation Programming Examples	(14 hrs)
4.	Design and Interface Examples like: keypad interface, 7- segment interface, LCD, stepper motor. A/D, D/A, RTC interface.	(12 hrs)
5.	Block diagram and pin details: PIC, ARDUINO	(04hrs)
6.	Application of Micro controllers in Communication System	(06 hrs)

Reference Books:

1. Microcontrollers by Deshmukh, Tata McGraw Hill Education Pvt Ltd, New Delhi
2. Microcontrollers by Ayala
3. Microcontrollers by Mazidi, Pearon Education, Delhi
4. Microcontrollers by Neil Makanzi, Pearon Education, Delhi
5. Embedded GSM Applications
6. Microcontrollers and Embedded Systems by Sangar and Sahdev, Uneek Publications, Jalandhar
7. Embedded Systems Architechture, Programming and design by Raj Kamal, Tata McGraw Hill Education Pvt Ltd, New Delhi

Delivery/Instructional Methodologies

Sr.No.	Description
1.	Chalk and Talk
2.	PowerPoint Presentation

Assessment Methodologies

Sr. No.	Description	Type
1.	Student Assignment	Direct
2.	Test	Direct
3.	Board Examination	Direct
4.	Student Feedback	Direct

Gaps in the syllabus - to meet industry/profession requirements

S.NO.	DESCRIPTION	PROPOSED ACTIONS	PO MAPPING
	N/A	N/A	N/A

Topics beyond syllabus/advanced topics

Units	Details	Hours
N/A	N/A	N/A

Web Source References

Sr. No.	URL
1.	https://nptel.ac.in/

Lesson Plan

Week	Theory		Practical	
	Lecture Day		Practical Day	
1st	1st	Introduction microcontroller & Embedded system	1.	Demonstration of Micro-controller Kit
	2nd	Architecture of 8051 microcontroller		
	3rd	Architecture of 8051 microcontroller		
	4th	Comparison Microprocessor and microcontroller		
2nd	5th	Input \output port structure	2.	Assembly Language Programming
	6th			
	7th	Accumulator explanation		
	8th	PSW explanation		
3rd	9th	Pin Diagram	3.	C Language Programming- (PC Based)
	10th	Pin explanation		
	11th	Alternate function of pins		
	12th	Memory structure explanation		
4th	13th	External memory	4.	Write Program for LCD interface.
	14th	**REVISION**		
	15th	Introduction to		
	16th	Instruction Format		

5th	17th	Addressing mode	5.	Write Program for LCD interface.
	18th	Addressing mode		
	19th	Register addressing mode ,Direct addressing mode/ Register indirect addressing mode		
	20th			
6th	21st	Immediate addressing mode / Index addressin mode	6.	Write Program for A/D converter, result on LCD.
	22nd			
	23rd	Types of instruction		
	24th	**1st Sessional Test(Tentaive)**		
7th	25th	Data transfer instruction	7.	REVISION/VIVA VOICE
	26th	Arithmetic instruction/ Logic instruction		
	27th	Timer operation		
	28th	Seial port operation		
8th	29th	Interrupts	8.	Write Program for D/A converter, result on LCD.
	30th	Test		
	31st	Assembler operation and elements of assembler		
	32nd	Programming of microcontroller		
9th	33rd	Programming of microcontroller	9.	Write a Program for serial data transmission from Kit to PC.
	34th	Assembler Directives		
	35th			
	36th			

10th	37th	Assembler Operations	10.	Write a Program for serial data transmission from Kit to PC.
	38th			
	39th			
	40th	Compiler Operations		
11th	41st		11.	REVISION
	42nd	De bugger		
	43rd			
	44th	Simulator		
12th	45th	Design and Interface	12.	Write a program to Interface Sensors.
	46th	**2nd Sessional Test(Tentative)**		
	47th	Keypad interface		
	48th			
13th	49th	7- segment interface	13.	Write a program to Interface Sensors.
	50th			
	51st	LCD		
	52nd	stepper motor		
14th	53rd	A/D, D/A	14	Pracital Performance Test
	54th			
	55th	RTC interface		
	56th			

15th	57th	Block diagram and pin details: PIC	15.	Pracital Performance Test
	58th	Block diagram and pin details: ARDUINO		
	59th	Application of Micro controllers in Communication System		
	60th			
16th	61st		16.	Pracital Performance Test
	62nd			
	63rd	**PTM**		
	64th	**3rd Sessional Test (Tentative)**		