Lesson Plan

Name of Faculty   : MANDEEP SINGH
Discipline   : ELECTRICAL ENGG. (SIRSA)
Semester   : 5TH
Subject   : PROGRAMMABLE LOGIC CONTROLLERS AND MICROCONTROLLERS
Lesson Plan Duration : 15 Weeks (From 07.09.20 to 24.12.20)
Work Load (Lecture/Practical) per Week (in Hours): **Lecture – 04, Practical - 04**

Week	Theory		Practical
	Lecture Day	**Topic** (including assignment/test)	**Topic**
1st	1	**Chapter-1 introduction to PLC:** What is PLC, concept of PLC, Different programming languages, PLC manufacturer etc.	Components/sub components of a PLC, Learning functions of different modules of a PLC system
	2	Building blocks of PLC	
	3	Functions of various blocks	
	4	limitations of relays. Advantages of PLCs over electromagnetic relays	
2nd	5	Different programming languages, PLC manufacturer etc.	Practical steps in programming a PLC (a)using a Hand-held programmer (b) using computer interface
	6	**CHAPTER-2 WORKING of PLC:** Basic operation	
	7	Principles of PLC	
	8	Architectural details processor	
3rd	9	Memory structures I/O structure	Revision, Viva Voce and File Checking of above experiments.
	10	I/O structure	
	11	Programming terminal, Power supply	
	12	Revision and Assignment Giving	
4th	13	Ist Sessional Test (Tentative)	Demonstration of step 5 programming language, ladder diagram concepts, instruction list syntax.
	14	**CHAPTER-3 Instruction Set:** Basic instructions like latch, master control self-holding relays	
	15	Timer instruction like retentive timers, resetting of timers	
	16	Counter instructions like up counter, down counter, resetting of counters	
5th	17	Arithmetic Instructions (ADD, SUB, DIV, MUL etc.)	Basic Logic operations AND, OR, NOT functions using PLC.
	18	MOV instruction	
	19	RTC (Real Time Clock Function)	
	20	Comparison instructions like equal, not equal, greater, greater than equal, less than, less than equal	
6th	21	Revision and note book checking	Revision, Viva voce and File checking of above two experiments.
	22	**CHAPTER-4 Ladder Diagram Programming:** Programming based on basic instructions	
	23	Programming based on timer instructions	
	24	Programming based on counter instructions	
7th	25	Programming based on sequencer instructions	Logic control systems with time response as applied to clamping operation
	26	Programming based on comparison instructions	

	27	Revision	
	28	**CHAPTER-5 Applications of PLCs:** **-**Assembly -Packing -Process Control -Doorbell Operation	
8th	29	Applications of PLCs -Car Parking -Traffic Light Control - Microwave Oven - Washing Machine -	Sequence control system e.g. in lifting a device for packaging and counting.
	30	Applications of PLCs -Motor in Forward and Reverse Direction -Star-Delta, DOL Starter -Paint Industry -Filling of Bottles -Room Automation	
	31	Revision and Assignment	
	32	2nd Sessional Test (Tentative)	
9th	33	**CHAPTER-6 Introduction to SCADA:** Block diagram and applications of SCADA	Use of PLC for an application (teacher may decide)
	34	**CHAPTER-7 Micro Controller Series (MCS)-51 Over View:** 1.Microprocessor and Microcontroller 2. CISC and RISC Technology	
	35	Architecture of 8051 Microcontroller	
	36	Pin Diagram of 8051 Microcontroller	
10th	37	Program Status Word and Data Pointer Program Status Word (PSW) Stack Pointer (SP)	Revision, Viva voce and File checking of above three experiments.
	38	Internal ROM Internal RAM Counters/Timers	
	39	Input/Output Ports(P0-P3)	
	40	Special Function Registers	
11th	41	I/O Port Structure	Demonstration and study of Microcontrollers (8051) kit.
	42	8051 Memory Organization	
	43	Revision and Assignment G	
	44	**CHAPTER-8 Instruction Set Addressing Modes:** Timer Operation, Timer Mode Control (TMOD)SFR, Timer Control (TCON)SFR	
12th	45	Timer Modes of Operation	Familiarization of Micro Controllers (8051) kit, Testing of general input/output on Micro controller board.
	46	Serial Port Operation	
	47	Serial Data Communication Serial Control SFR	
	48	Interrupts and Their types	
13th	49	**CHAPTER-9 Assembly Language Programming:** Assembler and Assembler Directive	Controlling of LED's using microcontroller program.
	50	Compiler, Debugger and Simulator	
	51	Revision of Chapter 8 & 9	
	52	**CHAPTER-10 Design and Interface:** Keypad Interface	

14th	53	7-SegmentInterface	Revision, Viva voce and File checking of above three experiments.
	54	LCD, Stepper motor Interface	
	55	A/D, D/A, RTC Interface	
	56	Revision	
15th	57	**Chapter -11 Application of Microcontroller:** Radio Control System	Viva Voce of all the experiments of PLC.
	58	Human Body Logger	
	59	Revision and Assignment	
	60	3rd Sessional Test (Tentative)	