ARSD College, University of Delhi

Model Course Handout/Lesson Plan

Course Name :		B.Sc. (Physics Sc.) Electronics				
Semester	Course Code	Course Title	Lecture (L)	Tutorial (T)	Practical (P)	Credit (C)
IV	42514413	Microprocessor and Microcontroller (Lab)	0	0	4	2
Teacher/Instructor(s)		Dr. Rakesh Malik, Dr. Abid Hussain, Dr. Amit Kumar Vishwakarma				
Session		2021-22				

Course Description:

- Sessions on the construction and use of specific measurement instruments and experimental apparatuses used in the lab, including necessary precautions.
- Sessions on the review of experimental data analysis, sources of error and their estimation in detail, writing of scientific laboratory reports including proper reporting of errors. Application to the specific experiments done in the lab.

List of Experiments:

At least 06 experiments each from Section-A and Section-B:

Section-A: Programs using 8085 Microprocessor

1. Addition and subtraction of numbers using direct addressing mode
2. Addition and subtraction of numbers using indirect addressing mode
3. Multiplication by repeated addition.
4. Division by repeated subtraction.
5. Handling of 16-bit Numbers.
6. Use of CALL and RETURN Instruction.
7. Block data handling.
8. Other programs (e.g. Parity Check, using interrupts, etc.).

Section-B: Experiments using 8051 Microcontroller

1. To find that the given numbers is prime or not.
2. To find the factorial of a number.
3. Write a program to make the two numbers equal by increasing the smallest number and decreasing the largest number.
4. Use one of the four ports of 8051 for O/P interfaced to eight LED's. Simulate binary counter (8 bit) on LED's .
5. Program to glow the first four LEDs then next four using TIMER application.
6. Program to rotate the contents of the accumulator first right and then left.
7. Program to run a countdown from 9-0 in the seven segment LED display.
8. To interface seven segment LED display with 8051 microcontroller and display 'HELP' in the seven segment LED display.
9. To toggle '1234' as '1324' in the seven segment LED display.
10. Interface stepper motor with 8051 and write a program to move the motor through a given angle in clock wise or counter clockwise direction.
11. Application of embedded systems: Temperature measurement & display on LCD.

	Details of the Lab Course	
Session	**Name of Experiment**	**Contact Hours**
	Section-A: Programs using 8085 Microprocessor	
1	Addition and subtraction of numbers using direct addressing mode	3.75
2	Addition and subtraction of numbers using indirect addressing mode	3.75
3	Multiplication by repeated addition.	3.75
4	Division by repeated subtraction.	3.75
5	Handling of 16-bit Numbers.	3.75
6	Use of CALL and RETURN Instruction.	3.75
	Section-B: Experiments using 8051 Microcontroller	
1	To find that the given numbers is prime or not.	3.75
2	To find the factorial of a number.	3.75
3	Write a program to make the two numbers equal by increasing the smallest number and decreasing the largest number.	3.75
4	Use one of the four ports of 8051 for O/P interfaced to eight LED's. Simulate binary counter (8 bit) on LED's .	3.75
5	Program to glow the first four LEDs then next four using TIMER application.	3.75
6	Program to rotate the contents of the accumulator first right and then left.	3.75
7	Program to run a countdown from 9-0 in the seven segment LED display.	3.75
8	To interface seven segment LED display with 8051 microcontroller and display 'HELP' in the seven segment LED display.	3.75
9	To toggle '1234' as '1324' in the seven segment LED display.	3.75
10	Interface stepper motor with 8051 and write a program to move the motor through a given angle in clock wise or counter clockwise direction.	3.75
	Total	**60**

Suggested Books:

Sl. No.	Name of Authors/Books/Publishers
1.	Microprocessor Architecture Programming & applications with 8085, 2002, R.S. Goankar, Prentice Hall.
2.	8051 microcontrollers, Satish Shah, 2010, Oxford University Press.

Evaluation Scheme:

No.	Component	Duration	Marks
1.	Internal Assessment • Quiz/Viva • Observation & Record • Attendance • Model Exam		25
2.	End Semester Examination	5 h	25
Total			50