



Sardar Patel Institute of Technology

Bhavan's Campus, Munshi Nagar, Andheri (West), Mumbai-400058-India
(Autonomous Institute Affiliated to University of Mumbai)

Course Code	Course Name	Teaching Scheme (Hrs/week)			Credits Assigned				
		L	T	P	L	T	P	Total	
TEITL503	Micro-controller and Embedded System Lab	--	--	2	--	--	1	1	
		Examination Scheme							Total
		ISE		ESE		Oral	Total		
		40		-				20	60

Pre-requisite Course Codes	IT42 (Computer Organization & Architecture) TEITC503 (Micro-controller and Embedded System)
After successful completion of the course, student will be able to:	
Course Outcomes	CO1 Discuss the basics of embedded systems.
	CO2 Recognize the basics of organizational and architectural issues of a microcontroller.
	CO3 Experiment the programming techniques used in microcontroller.
	CO4 Demonstrate basic concept of ARM processor.
	CO5 Discuss the fundamentals of embedded/real time operating system.
	CO6 Demonstrate the conceptual embedded system design.

Expt. No.	Experiment Description	Ref	Marks
1	Write program in assembly language for 8051 to perform arithmetic operations such as: 1-Addition, a) Prog. for addition of 2-8bit no's b) Prog. for addition of 2-16bit no's c) Prog. for addition of 2-BCD no's 2-Subtraction, 3-Multiplication, 4-Division	5	5
2	Assembly language programs for different addressing modes 1-Transfer the contents of Register A, R0, R1 of Bank0 to Register B, R0,R1 of bank1 using stank operations 2-WAP in assembly language for 8051 to copy of 55H into RAM memory locations 40H to 44H using register indirect addressing mode. 3-Assume that word "TUV" is burned into ROM location starting at 400H and that the Program is burned into ROM location starting at zero. WAP to read this data into Internal RAM locations starting from address 60H	1	5
3	8051 Timer programming 1-Write an assembly language program to generate a square wave with 50% duty cycle on p1	1,2	5



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	2-Write an assembly language program to generate a square wave with 3ms ON time and 10ms OFF time on p1		
4	8051- UART programming for serial communication 1-WAP to transfer message "ENGINEER" serially at baud rate 4800 in mode1	1,2	5
5	Looping programs 1-To write an assembly language program to calculate sum of 'N' numbers. 2-To write a program in Assembly Language for 8051 to find out the largest/ smallest element from a block of data	1,2	5
6.	8051 Interfacing programs 1-To interface and write a program to blink LED connected on Port3.4 { led1.a51 } 2-To Implement parallel interface to 8 LEDs { led8.a51 } 3-Interface 16*2 text to 89c51 microcontroller and write a program to display string on LCD{ lcd_8bit_2.a51 } and a Character{ lcd_8bit_1.a51 }	1,2	5
7	ARM interfacing program and assembly language program 1-steps followed in flash magic to burn ARM program in interfacing board 2-Architecture of ARM 7 processor 3- Write an assembly language program to get gcd of no. for ARM7 processor 4- execute all possible instruction execution from arm7 instruction set	1,2	5
8	Design Case study on 1-Battery operated smart card reader 2-AUTOMATIC METER READING SYSTEM 3- Digital Camera	1,2	5
	Total Marks		40

References:

1. M. A. Mazidi, J. G. Mazidi, R. D., "The 8051 microcontroller & Embedded systems" McKinlay, Pearson.
2. Kenneth J. Ayala, Dhananjay V. Gadre, "The 8051 microcontroller & Embedded systems" Cengage Learning.
3. Laya B. Das, "Embedded systems an integrated approach", Pearson, Third impression, 2013.
4. Andrew N. Sloss, Dominic Symes, Chris Wright, "ARM system developer's guide", Morgan Kaufmann Publishers.
5. Frank Vahid, Tony Givargis, "Embedded system design A Unified hardware/software Introduction", Wiley.
6. ARM Technical Reference manual.