Lovely Professional University, Punjab

Course Code	Course Title	Lectures	Tutorials	Practicals	Credits	
ECE310	FUNDAMENTALS OF MICROPROCESSORS AND MICROCONTROLLERS	3	0	0	3	
Course Weightage	ATT: 5 CA: 25 MTT: 20 ETT: 50					
Course Focus	SKILL DEVELOPMENT,ENTREPRENEURSHIP					

Course Outcomes :Through this course students should be able to

CO1 :: describe the basics of Microprocessor 8085, its internal architecture and functioning

CO2 :: familiar about the architecture and organization of advanced processors

CO3 :: interpret different technique and methods to design a program for 8051 microcontroller

CO4 :: develop different programming methods using 8051

CO5 :: analyze different interfacing module using 8051 microcontroller

CO6 :: understand different interfacing modules using advanced processor ARM

	TextBooks (T)		
Sr No	**Title**	**Author**	**Publisher Name**
T-1	MICROPROCESSOR, ARCHITECTURE, PROGRAMMING, & APPLICATIONS WITH THE 8085	RAMESH. S. GAONKAR	PENRAM INTERNATIONAL PUBLISHING (INDIA) PVT. LTD.

	Reference Books (R)		
Sr No	**Title**	**Author**	**Publisher Name**
R-1	THE 8051 MICROCONTROLLERS AND EMBEDDED SYSTEMS	MUHAMMAD ALI MAZIDI AND JANICE GILLISPIE MAZIDI	PEARSON
R-2	. THE 8051 MICROCONTROLLER ARCHITECTURE, PROGRAMMING AND APPLICATIONS	KENNATH J. AYALA.	CENGAGE LEARNING
R-3	ARM SYSTEM-ON-CHIP ARCHITECTURE	STEVE FURBER	PEARSON

Other Reading (OR)	
Sr No	**Journals articles as Compulsary reading (specific articles, complete reference)**
OR-1	https://embetronicx.com/8051-tutorials/ ,

Relevant Websites (RW)		
Sr No	**(Web address) (only if relevant to the course)**	**Salient Features**
RW-1	https://www.tutorialspoint.com/microprocessor/microprocessor_8085_architecture.htm	8085 website
RW-2	https://www.geeksforgeeks.org/microprocessor-tutorials/	8085website
RW-3	https://www.tutorialspoint.com/microprocessor/microprocessor_8086_overview.htm	8086 website
RW-4	https://www.geeksforgeeks.org/powerpc-architecture/	Power PC
RW-5	https://www.electronicshub.org/arm-tutorial/	ARM
RW-6	https://teguar.com/edge-computer-features/	Edge computing

LTP week distribution: (LTP Weeks)	
Weeks before MTE	7
Weeks After MTE	7
Spill Over (Lecture)	7

Detailed Plan For Lectures

Week Number	Lecture Number	Broad Topic(Sub Topic)	Chapters/Sections of Text/reference books	Other Readings, Relevant Websites, Audio Visual Aids, software and Virtual Labs	Lecture Description	Learning Outcomes	Pedagogical Tool Demonstration/ Case Study / Images / animation / ppt etc. Planned	Live Examples
Week 1	Lecture 1	8085 Microprocessor architecture(RISC & CISC Architecture)	T-1		RISC & CISC Architecture	Student will be able to describe RISC and CISC architecture	PPT and class room discussion	
	Lecture 2	8085 Microprocessor architecture(8085 pin diagram and block diagram)	T-1	RW-1 RW-2	Microprocessor 8085, its internal architecture and functioning	Student will be able to describe the basics of Microprocessor 8085, its internal architecture and functioning	PPT	

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Week 1	Lecture 2	8085 Microprocessor architecture(signal descriptions)	T-1	RW-1 RW-2	Microprocessor 8085, its internal architecture and functioning	Student will be able to describe the basics of Microprocessor 8085, its internal architecture and functioning	PPT	
		8085 Microprocessor architecture(timing and control unit)	T-1	RW-1 RW-2	Microprocessor 8085, its internal architecture and functioning	Student will be able to describe the basics of Microprocessor 8085, its internal architecture and functioning	PPT	
		8085 Microprocessor architecture(Timing diagrams)	T-1	RW-1 RW-2	Microprocessor 8085, its internal architecture and functioning	Student will be able to describe the basics of Microprocessor 8085, its internal architecture and functioning	PPT	
		8085 Microprocessor architecture(status flag)	T-1	RW-1 RW-2	Microprocessor 8085, its internal architecture and functioning	Student will be able to describe the basics of Microprocessor 8085, its internal architecture and functioning	PPT	
	Lecture 3	8085 Microprocessor architecture(8085 pin diagram and block diagram)	T-1	RW-1 RW-2	Microprocessor 8085, its internal architecture and functioning	Student will be able to describe the basics of Microprocessor 8085, its internal architecture and functioning	PPT	
		8085 Microprocessor architecture(signal descriptions)	T-1	RW-1 RW-2	Microprocessor 8085, its internal architecture and functioning	Student will be able to describe the basics of Microprocessor 8085, its internal architecture and functioning	PPT	
		8085 Microprocessor architecture(timing and control unit)	T-1	RW-1 RW-2	Microprocessor 8085, its internal architecture and functioning	Student will be able to describe the basics of Microprocessor 8085, its internal architecture and functioning	PPT	
		8085 Microprocessor architecture(Timing diagrams)	T-1	RW-1 RW-2	Microprocessor 8085, its internal architecture and functioning	Student will be able to describe the basics of Microprocessor 8085, its internal architecture and functioning	PPT	

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Week 1	Lecture 3	8085 Microprocessor architecture(status flag)	T-1	RW-1 RW-2	Microprocessor 8085, its internal architecture and functioning	Student will be able to describe the basics of Microprocessor 8085, its internal architecture and functioning	PPT	
Week 2	Lecture 4	8085 Microprocessor architecture(8085 pin diagram and block diagram)	T-1	RW-1 RW-2	Microprocessor 8085, its internal architecture and functioning	Student will be able to describe the basics of Microprocessor 8085, its internal architecture and functioning	PPT	
		8085 Microprocessor architecture(signal descriptions)	T-1	RW-1 RW-2	Microprocessor 8085, its internal architecture and functioning	Student will be able to describe the basics of Microprocessor 8085, its internal architecture and functioning	PPT	
		8085 Microprocessor architecture(timing and control unit)	T-1	RW-1 RW-2	Microprocessor 8085, its internal architecture and functioning	Student will be able to describe the basics of Microprocessor 8085, its internal architecture and functioning	PPT	
		8085 Microprocessor architecture(Timing diagrams)	T-1	RW-1 RW-2	Microprocessor 8085, its internal architecture and functioning	Student will be able to describe the basics of Microprocessor 8085, its internal architecture and functioning	PPT	
		8085 Microprocessor architecture(status flag)	T-1	RW-1 RW-2	Microprocessor 8085, its internal architecture and functioning	Student will be able to describe the basics of Microprocessor 8085, its internal architecture and functioning	PPT	
	Lecture 5	8085 Microprocessor architecture(8085 pin diagram and block diagram)	T-1	RW-1 RW-2	Microprocessor 8085, its internal architecture and functioning	Student will be able to describe the basics of Microprocessor 8085, its internal architecture and functioning	PPT	
		8085 Microprocessor architecture(signal descriptions)	T-1	RW-1 RW-2	Microprocessor 8085, its internal architecture and functioning	Student will be able to describe the basics of Microprocessor 8085, its internal architecture and functioning	PPT	

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Week 2	Lecture 5	8085 Microprocessor architecture(timing and control unit)	T-1	RW-1 RW-2	Microprocessor 8085, its internal architecture and functioning	Student will be able to describe the basics of Microprocessor 8085, its internal architecture and functioning	PPT	
		8085 Microprocessor architecture(Timing diagrams)	T-1	RW-1 RW-2	Microprocessor 8085, its internal architecture and functioning	Student will be able to describe the basics of Microprocessor 8085, its internal architecture and functioning	PPT	
		8085 Microprocessor architecture(status flag)	T-1	RW-1 RW-2	Microprocessor 8085, its internal architecture and functioning	Student will be able to describe the basics of Microprocessor 8085, its internal architecture and functioning	PPT	
	Lecture 6	8085 Microprocessor architecture(8085 pin diagram and block diagram)	T-1	RW-1 RW-2	Microprocessor 8085, its internal architecture and functioning	Student will be able to describe the basics of Microprocessor 8085, its internal architecture and functioning	PPT	
		8085 Microprocessor architecture(signal descriptions)	T-1	RW-1 RW-2	Microprocessor 8085, its internal architecture and functioning	Student will be able to describe the basics of Microprocessor 8085, its internal architecture and functioning	PPT	
		8085 Microprocessor architecture(timing and control unit)	T-1	RW-1 RW-2	Microprocessor 8085, its internal architecture and functioning	Student will be able to describe the basics of Microprocessor 8085, its internal architecture and functioning	PPT	
		8085 Microprocessor architecture(Timing diagrams)	T-1	RW-1 RW-2	Microprocessor 8085, its internal architecture and functioning	Student will be able to describe the basics of Microprocessor 8085, its internal architecture and functioning	PPT	
		8085 Microprocessor architecture(status flag)	T-1	RW-1 RW-2	Microprocessor 8085, its internal architecture and functioning	Student will be able to describe the basics of Microprocessor 8085, its internal architecture and functioning	PPT	

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Week 3	Lecture 7	8085 programming, 8086 and advanced processors (Addressing mode, Instruction set, Instruction type of 8085)	T-1	RW-3 RW-4	Addressing mode, Instruction set, Instruction type of 8085 and 8086	Students will come to know the addressing modes, instruction set of 8085 and 8086	PPT and discussion	
		8085 programming, 8086 and advanced processors (8086 architecture and pin diagram)	T-1	RW-3 RW-4	Addressing mode, Instruction set, Instruction type of 8085 and 8086	Students will come to know the addressing modes, instruction set of 8085 and 8086	PPT and discussion	
		8085 programming, 8086 and advanced processors (register organization)	T-1	RW-3 RW-4	Addressing mode, Instruction set, Instruction type of 8085 and 8086	Students will come to know the addressing modes, instruction set of 8085 and 8086	PPT and discussion	
		8085 programming, 8086 and advanced processors (Comparison of 8085 and 8086)	T-1	RW-3 RW-4	Addressing mode, Instruction set, Instruction type of 8085 and 8086	Students will come to know the addressing modes, instruction set of 8085 and 8086	PPT and discussion	
		8085 programming, 8086 and advanced processors (power PC)	T-1	RW-3 RW-4	Addressing mode, Instruction set, Instruction type of 8085 and 8086	Students will come to know the addressing modes, instruction set of 8085 and 8086	PPT and discussion	
		8085 programming, 8086 and advanced processors (introduction to system-on-a-Chip)	T-1	RW-3 RW-4	Addressing mode, Instruction set, Instruction type of 8085 and 8086	Students will come to know the addressing modes, instruction set of 8085 and 8086	PPT and discussion	
	Lecture 8	8085 programming, 8086 and advanced processors (Addressing mode, Instruction set, Instruction type of 8085)	T-1	RW-3 RW-4	Addressing mode, Instruction set, Instruction type of 8085 and 8086	Students will come to know the addressing modes, instruction set of 8085 and 8086	PPT and discussion	
		8085 programming, 8086 and advanced processors (8086 architecture and pin diagram)	T-1	RW-3 RW-4	Addressing mode, Instruction set, Instruction type of 8085 and 8086	Students will come to know the addressing modes, instruction set of 8085 and 8086	PPT and discussion	
		8085 programming, 8086 and advanced processors (register organization)	T-1	RW-3 RW-4	Addressing mode, Instruction set, Instruction type of 8085 and 8086	Students will come to know the addressing modes, instruction set of 8085 and 8086	PPT and discussion	
		8085 programming, 8086 and advanced processors (Comparison of 8085 and 8086)	T-1	RW-3 RW-4	Addressing mode, Instruction set, Instruction type of 8085 and 8086	Students will come to know the addressing modes, instruction set of 8085 and 8086	PPT and discussion	
		8085 programming, 8086 and advanced processors (power PC)	T-1	RW-3 RW-4	Addressing mode, Instruction set, Instruction type of 8085 and 8086	Students will come to know the addressing modes, instruction set of 8085 and 8086	PPT and discussion	

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Week 3	Lecture 8	8085 programming, 8086 and advanced processors (introduction to system-on-a-Chip)	T-1	RW-3 RW-4	Addressing mode, Instruction set, Instruction type of 8085 and 8086	Students will come to know the addressing modes, instruction set of 8085 and 8086	PPT and discussion	
	Lecture 9	8085 programming, 8086 and advanced processors (Addressing mode, Instruction set, Instruction type of 8085)	T-1	RW-3 RW-4	Addressing mode, Instruction set, Instruction type of 8085 and 8086	Students will come to know the addressing modes, instruction set of 8085 and 8086	PPT and discussion	
		8085 programming, 8086 and advanced processors (8086 architecture and pin diagram)	T-1	RW-3 RW-4	Addressing mode, Instruction set, Instruction type of 8085 and 8086	Students will come to know the addressing modes, instruction set of 8085 and 8086	PPT and discussion	
		8085 programming, 8086 and advanced processors (register organization)	T-1	RW-3 RW-4	Addressing mode, Instruction set, Instruction type of 8085 and 8086	Students will come to know the addressing modes, instruction set of 8085 and 8086	PPT and discussion	
		8085 programming, 8086 and advanced processors (Comparison of 8085 and 8086)	T-1	RW-3 RW-4	Addressing mode, Instruction set, Instruction type of 8085 and 8086	Students will come to know the addressing modes, instruction set of 8085 and 8086	PPT and discussion	
		8085 programming, 8086 and advanced processors (power PC)	T-1	RW-3 RW-4	Addressing mode, Instruction set, Instruction type of 8085 and 8086	Students will come to know the addressing modes, instruction set of 8085 and 8086	PPT and discussion	
		8085 programming, 8086 and advanced processors (introduction to system-on-a-Chip)	T-1	RW-3 RW-4	Addressing mode, Instruction set, Instruction type of 8085 and 8086	Students will come to know the addressing modes, instruction set of 8085 and 8086	PPT and discussion	
Week 4	Lecture 10	8085 programming, 8086 and advanced processors (Addressing mode, Instruction set, Instruction type of 8085)	T-1	RW-3 RW-4	Addressing mode, Instruction set, Instruction type of 8085 and 8086	Students will come to know the addressing modes, instruction set of 8085 and 8086	PPT and discussion	
		8085 programming, 8086 and advanced processors (8086 architecture and pin diagram)	T-1	RW-3 RW-4	Addressing mode, Instruction set, Instruction type of 8085 and 8086	Students will come to know the addressing modes, instruction set of 8085 and 8086	PPT and discussion	
		8085 programming, 8086 and advanced processors (register organization)	T-1	RW-3 RW-4	Addressing mode, Instruction set, Instruction type of 8085 and 8086	Students will come to know the addressing modes, instruction set of 8085 and 8086	PPT and discussion	
		8085 programming, 8086 and advanced processors (Comparison of 8085 and 8086)	T-1	RW-3 RW-4	Addressing mode, Instruction set, Instruction type of 8085 and 8086	Students will come to know the addressing modes, instruction set of 8085 and 8086	PPT and discussion	

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Week 4	Lecture 10	8085 programming, 8086 and advanced processors (power PC)	T-1	RW-3 RW-4	Addressing mode, Instruction set, Instruction type of 8085 and 8086	Students will come to know the addressing modes, instruction set of 8085 and 8086	PPT and discussion	
		8085 programming, 8086 and advanced processors (introduction to system-on-a-Chip)	T-1	RW-3 RW-4	Addressing mode, Instruction set, Instruction type of 8085 and 8086	Students will come to know the addressing modes, instruction set of 8085 and 8086	PPT and discussion	
	Lecture 11	8085 programming, 8086 and advanced processors (Addressing mode, Instruction set, Instruction type of 8085)	T-1	RW-3 RW-4	Addressing mode, Instruction set, Instruction type of 8085 and 8086	Students will come to know the addressing modes, instruction set of 8085 and 8086	PPT and discussion	
		8085 programming, 8086 and advanced processors (8086 architecture and pin diagram)	T-1	RW-3 RW-4	Addressing mode, Instruction set, Instruction type of 8085 and 8086	Students will come to know the addressing modes, instruction set of 8085 and 8086	PPT and discussion	
		8085 programming, 8086 and advanced processors (register organization)	T-1	RW-3 RW-4	Addressing mode, Instruction set, Instruction type of 8085 and 8086	Students will come to know the addressing modes, instruction set of 8085 and 8086	PPT and discussion	
		8085 programming, 8086 and advanced processors (Comparison of 8085 and 8086)	T-1	RW-3 RW-4	Addressing mode, Instruction set, Instruction type of 8085 and 8086	Students will come to know the addressing modes, instruction set of 8085 and 8086	PPT and discussion	
		8085 programming, 8086 and advanced processors (power PC)	T-1	RW-3 RW-4	Addressing mode, Instruction set, Instruction type of 8085 and 8086	Students will come to know the addressing modes, instruction set of 8085 and 8086	PPT and discussion	
		8085 programming, 8086 and advanced processors (introduction to system-on-a-Chip)	T-1	RW-3 RW-4	Addressing mode, Instruction set, Instruction type of 8085 and 8086	Students will come to know the addressing modes, instruction set of 8085 and 8086	PPT and discussion	
	Lecture 12	8085 programming, 8086 and advanced processors (Addressing mode, Instruction set, Instruction type of 8085)	T-1	RW-3 RW-4	Addressing mode, Instruction set, Instruction type of 8085 and 8086	Students will come to know the addressing modes, instruction set of 8085 and 8086	PPT and discussion	
		8085 programming, 8086 and advanced processors (8086 architecture and pin diagram)	T-1	RW-3 RW-4	Addressing mode, Instruction set, Instruction type of 8085 and 8086	Students will come to know the addressing modes, instruction set of 8085 and 8086	PPT and discussion	
		8085 programming, 8086 and advanced processors (register organization)	T-1	RW-3 RW-4	Addressing mode, Instruction set, Instruction type of 8085 and 8086	Students will come to know the addressing modes, instruction set of 8085 and 8086	PPT and discussion	

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Week 4	Lecture 12	8085 programming, 8086 and advanced processors (Comparison of 8085 and 8086)	T-1	RW-3 RW-4	Addressing mode, Instruction set, Instruction type of 8085 and 8086	Students will come to know the addressing modes, instruction set of 8085 and 8086	PPT and discussion	
		8085 programming, 8086 and advanced processors (power PC)	T-1	RW-3 RW-4	Addressing mode, Instruction set, Instruction type of 8085 and 8086	Students will come to know the addressing modes, instruction set of 8085 and 8086	PPT and discussion	
		8085 programming, 8086 and advanced processors (introduction to system-on-a-Chip)	T-1	RW-3 RW-4	Addressing mode, Instruction set, Instruction type of 8085 and 8086	Students will come to know the addressing modes, instruction set of 8085 and 8086	PPT and discussion	
Week 5	Lecture 13				Test 1			
	Lecture 14	8051 Microcontroller Architecture(Microprocessor Vs Microcontroller)	R-1 R-2	OR-1	8051 pin diagram, Architecture and Memory organization	student will come to know 8051 pin diagram, Architecture and Memory organization	PPT and class room discussion	
		8051 Microcontroller Architecture(8051 Architecture)	R-1 R-2	OR-1	8051 pin diagram, Architecture and Memory organization	student will come to know 8051 pin diagram, Architecture and Memory organization	PPT and class room discussion	
		8051 Microcontroller Architecture(Registers used)	R-1 R-2	OR-1	8051 pin diagram, Architecture and Memory organization	student will come to know 8051 pin diagram, Architecture and Memory organization	PPT and class room discussion	
		8051 Microcontroller Architecture(Pin diagram)	R-1 R-2	OR-1	8051 pin diagram, Architecture and Memory organization	student will come to know 8051 pin diagram, Architecture and Memory organization	PPT and class room discussion	
		8051 Microcontroller Architecture(I/O ports functions)	R-1 R-2	OR-1	8051 pin diagram, Architecture and Memory organization	student will come to know 8051 pin diagram, Architecture and Memory organization	PPT and class room discussion	
		8051 Microcontroller Architecture(Internal Memory organization)	R-1 R-2	OR-1	8051 pin diagram, Architecture and Memory organization	student will come to know 8051 pin diagram, Architecture and Memory organization	PPT and class room discussion	

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Week 5	Lecture 15	8051 Microcontroller Architecture(Microprocessor Vs Microcontroller)	R-1 R-2	OR-1	8051 pin diagram, Architecture and Memory organization	student will come to know 8051 pin diagram, Architecture and Memory organization	PPT and class room discussion	
		8051 Microcontroller Architecture(8051 Architecture)	R-1 R-2	OR-1	8051 pin diagram, Architecture and Memory organization	student will come to know 8051 pin diagram, Architecture and Memory organization	PPT and class room discussion	
		8051 Microcontroller Architecture(Registers used)	R-1 R-2	OR-1	8051 pin diagram, Architecture and Memory organization	student will come to know 8051 pin diagram, Architecture and Memory organization	PPT and class room discussion	
		8051 Microcontroller Architecture(Pin diagram)	R-1 R-2	OR-1	8051 pin diagram, Architecture and Memory organization	student will come to know 8051 pin diagram, Architecture and Memory organization	PPT and class room discussion	
		8051 Microcontroller Architecture(I/O ports functions)	R-1 R-2	OR-1	8051 pin diagram, Architecture and Memory organization	student will come to know 8051 pin diagram, Architecture and Memory organization	PPT and class room discussion	
		8051 Microcontroller Architecture(Internal Memory organization)	R-1 R-2	OR-1	8051 pin diagram, Architecture and Memory organization	student will come to know 8051 pin diagram, Architecture and Memory organization	PPT and class room discussion	
Week 6	Lecture 16	8051 Microcontroller Architecture(Microprocessor Vs Microcontroller)	R-1 R-2	OR-1	8051 pin diagram, Architecture and Memory organization	student will come to know 8051 pin diagram, Architecture and Memory organization	PPT and class room discussion	
		8051 Microcontroller Architecture(8051 Architecture)	R-1 R-2	OR-1	8051 pin diagram, Architecture and Memory organization	student will come to know 8051 pin diagram, Architecture and Memory organization	PPT and class room discussion	
		8051 Microcontroller Architecture(Registers used)	R-1 R-2	OR-1	8051 pin diagram, Architecture and Memory organization	student will come to know 8051 pin diagram, Architecture and Memory organization	PPT and class room discussion	

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Week 6	Lecture 16	8051 Microcontroller Architecture(Pin diagram)	R-1 R-2	OR-1	8051 pin diagram, Architecture and Memory organization	student will come to know 8051 pin diagram, Architecture and Memory organization	PPT and class room discussion	
		8051 Microcontroller Architecture(I/O ports functions)	R-1 R-2	OR-1	8051 pin diagram, Architecture and Memory organization	student will come to know 8051 pin diagram, Architecture and Memory organization	PPT and class room discussion	
		8051 Microcontroller Architecture(Internal Memory organization)	R-1 R-2	OR-1	8051 pin diagram, Architecture and Memory organization	student will come to know 8051 pin diagram, Architecture and Memory organization	PPT and class room discussion	
	Lecture 17	8051 Microcontroller Architecture(Microprocessor Vs Microcontroller)	R-1 R-2	OR-1	8051 pin diagram, Architecture and Memory organization	student will come to know 8051 pin diagram, Architecture and Memory organization	PPT and class room discussion	
		8051 Microcontroller Architecture(8051 Architecture)	R-1 R-2	OR-1	8051 pin diagram, Architecture and Memory organization	student will come to know 8051 pin diagram, Architecture and Memory organization	PPT and class room discussion	
		8051 Microcontroller Architecture(Registers used)	R-1 R-2	OR-1	8051 pin diagram, Architecture and Memory organization	student will come to know 8051 pin diagram, Architecture and Memory organization	PPT and class room discussion	
		8051 Microcontroller Architecture(Pin diagram)	R-1 R-2	OR-1	8051 pin diagram, Architecture and Memory organization	student will come to know 8051 pin diagram, Architecture and Memory organization	PPT and class room discussion	
		8051 Microcontroller Architecture(I/O ports functions)	R-1 R-2	OR-1	8051 pin diagram, Architecture and Memory organization	student will come to know 8051 pin diagram, Architecture and Memory organization	PPT and class room discussion	
		8051 Microcontroller Architecture(Internal Memory organization)	R-1 R-2	OR-1	8051 pin diagram, Architecture and Memory organization	student will come to know 8051 pin diagram, Architecture and Memory organization	PPT and class room discussion	

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Week 6	Lecture 18	8051 Microcontroller Architecture(Microprocessor Vs Microcontroller)	R-1 R-2	OR-1	8051 pin diagram, Architecture and Memory organization	student will come to know 8051 pin diagram, Architecture and Memory organization	PPT and class room discussion	
		8051 Microcontroller Architecture(8051 Architecture)	R-1 R-2	OR-1	8051 pin diagram, Architecture and Memory organization	student will come to know 8051 pin diagram, Architecture and Memory organization	PPT and class room discussion	
		8051 Microcontroller Architecture(Registers used)	R-1 R-2	OR-1	8051 pin diagram, Architecture and Memory organization	student will come to know 8051 pin diagram, Architecture and Memory organization	PPT and class room discussion	
		8051 Microcontroller Architecture(Pin diagram)	R-1 R-2	OR-1	8051 pin diagram, Architecture and Memory organization	student will come to know 8051 pin diagram, Architecture and Memory organization	PPT and class room discussion	
		8051 Microcontroller Architecture(I/O ports functions)	R-1 R-2	OR-1	8051 pin diagram, Architecture and Memory organization	student will come to know 8051 pin diagram, Architecture and Memory organization	PPT and class room discussion	
		8051 Microcontroller Architecture(Internal Memory organization)	R-1 R-2	OR-1	8051 pin diagram, Architecture and Memory organization	student will come to know 8051 pin diagram, Architecture and Memory organization	PPT and class room discussion	
Week 7	Lecture 19	8051 Microcontroller Architecture(Microprocessor Vs Microcontroller)	R-1 R-2	OR-1	8051 pin diagram, Architecture and Memory organization	student will come to know 8051 pin diagram, Architecture and Memory organization	PPT and class room discussion	
		8051 Microcontroller Architecture(8051 Architecture)	R-1 R-2	OR-1	8051 pin diagram, Architecture and Memory organization	student will come to know 8051 pin diagram, Architecture and Memory organization	PPT and class room discussion	
		8051 Microcontroller Architecture(Registers used)	R-1 R-2	OR-1	8051 pin diagram, Architecture and Memory organization	student will come to know 8051 pin diagram, Architecture and Memory organization	PPT and class room discussion	

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Week 7	Lecture 19	8051 Microcontroller Architecture(Pin diagram)	R-1 R-2	OR-1	8051 pin diagram, Architecture and Memory organization	student will come to know 8051 pin diagram, Architecture and Memory organization	PPT and class room discussion	
		8051 Microcontroller Architecture(I/O ports functions)	R-1 R-2	OR-1	8051 pin diagram, Architecture and Memory organization	student will come to know 8051 pin diagram, Architecture and Memory organization	PPT and class room discussion	
		8051 Microcontroller Architecture(Internal Memory organization)	R-1 R-2	OR-1	8051 pin diagram, Architecture and Memory organization	student will come to know 8051 pin diagram, Architecture and Memory organization	PPT and class room discussion	
		SPILL OVER						
Week 7	Lecture 20				Spill Over			
	Lecture 21				Spill Over			
		MID-TERM						
Week 8	Lecture 22	Instruction Set and it's Programming(Addressing Modes)	T-1	OR-1	addressing modes, and instruction set; 8051 programming	students will come to learn about the programming of 8051	KEIL software, PPT	
		Instruction Set and it's Programming(Instruction set)	T-1	OR-1	addressing modes, and instruction set; 8051 programming	students will come to learn about the programming of 8051	KEIL software, PPT	
		Instruction Set and it's Programming(Stack and Subroutine instructions)	T-1	OR-1	addressing modes, and instruction set; 8051 programming	students will come to learn about the programming of 8051	KEIL software, PPT	
		Instruction Set and it's Programming(Assembly language program examples on subroutine and involving loops)	T-1	OR-1	addressing modes, and instruction set; 8051 programming	students will come to learn about the programming of 8051	KEIL software, PPT	
		Instruction Set and it's Programming(Delay subroutine)	T-1	OR-1	addressing modes, and instruction set; 8051 programming	students will come to learn about the programming of 8051	KEIL software, PPT	
		Instruction Set and it's Programming(Addition of 8 bit numbers)	T-1	OR-1	addressing modes, and instruction set; 8051 programming	students will come to learn about the programming of 8051	KEIL software, PPT	

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Week 8	Lecture 22	Instruction Set and it's Programming(Interfacing simple switch and LED to I/O ports to switch on/off LED with respect to switch status)	T-1	OR-1	addressing modes, and instruction set; 8051 programming	students will come to learn about the programming of 8051	KEIL software, PPT	
	Lecture 23	Instruction Set and it's Programming(Addressing Modes)	T-1	OR-1	addressing modes, and instruction set; 8051 programming	students will come to learn about the programming of 8051	KEIL software, PPT	
		Instruction Set and it's Programming(Instruction set)	T-1	OR-1	addressing modes, and instruction set; 8051 programming	students will come to learn about the programming of 8051	KEIL software, PPT	
		Instruction Set and it's Programming(Stack and Subroutine instructions)	T-1	OR-1	addressing modes, and instruction set; 8051 programming	students will come to learn about the programming of 8051	KEIL software, PPT	
		Instruction Set and it's Programming(Assembly language program examples on subroutine and involving loops)	T-1	OR-1	addressing modes, and instruction set; 8051 programming	students will come to learn about the programming of 8051	KEIL software, PPT	
		Instruction Set and it's Programming(Delay subroutine)	T-1	OR-1	addressing modes, and instruction set; 8051 programming	students will come to learn about the programming of 8051	KEIL software, PPT	
		Instruction Set and it's Programming(Addition of 8 bit numbers)	T-1	OR-1	addressing modes, and instruction set; 8051 programming	students will come to learn about the programming of 8051	KEIL software, PPT	
		Instruction Set and it's Programming(Interfacing simple switch and LED to I/O ports to switch on/off LED with respect to switch status)	T-1	OR-1	addressing modes, and instruction set; 8051 programming	students will come to learn about the programming of 8051	KEIL software, PPT	
	Lecture 24	Instruction Set and it's Programming(Addressing Modes)	T-1	OR-1	addressing modes, and instruction set; 8051 programming	students will come to learn about the programming of 8051	KEIL software, PPT	
		Instruction Set and it's Programming(Instruction set)	T-1	OR-1	addressing modes, and instruction set; 8051 programming	students will come to learn about the programming of 8051	KEIL software, PPT	
		Instruction Set and it's Programming(Stack and Subroutine instructions)	T-1	OR-1	addressing modes, and instruction set; 8051 programming	students will come to learn about the programming of 8051	KEIL software, PPT	
		Instruction Set and it's Programming(Assembly language program examples on subroutine and involving loops)	T-1	OR-1	addressing modes, and instruction set; 8051 programming	students will come to learn about the programming of 8051	KEIL software, PPT	

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Week 8	Lecture 24	Instruction Set and it's Programming(Delay subroutine)	T-1	OR-1	addressing modes, and instruction set; 8051 programming	students will come to learn about the programming of 8051	KEIL software, PPT	
		Instruction Set and it's Programming(Addition of 8 bit numbers)	T-1	OR-1	addressing modes, and instruction set; 8051 programming	students will come to learn about the programming of 8051	KEIL software, PPT	
		Instruction Set and it's Programming(Interfacing simple switch and LED to I/O ports to switch on/off LED with respect to switch status)	T-1	OR-1	addressing modes, and instruction set; 8051 programming	students will come to learn about the programming of 8051	KEIL software, PPT	
Week 9	Lecture 25	Instruction Set and it's Programming(Addressing Modes)	T-1	OR-1	addressing modes, and instruction set; 8051 programming	students will come to learn about the programming of 8051	KEIL software, PPT	
		Instruction Set and it's Programming(Instruction set)	T-1	OR-1	addressing modes, and instruction set; 8051 programming	students will come to learn about the programming of 8051	KEIL software, PPT	
		Instruction Set and it's Programming(Stack and Subroutine instructions)	T-1	OR-1	addressing modes, and instruction set; 8051 programming	students will come to learn about the programming of 8051	KEIL software, PPT	
		Instruction Set and it's Programming(Assembly language program examples on subroutine and involving loops)	T-1	OR-1	addressing modes, and instruction set; 8051 programming	students will come to learn about the programming of 8051	KEIL software, PPT	
		Instruction Set and it's Programming(Delay subroutine)	T-1	OR-1	addressing modes, and instruction set; 8051 programming	students will come to learn about the programming of 8051	KEIL software, PPT	
		Instruction Set and it's Programming(Addition of 8 bit numbers)	T-1	OR-1	addressing modes, and instruction set; 8051 programming	students will come to learn about the programming of 8051	KEIL software, PPT	
		Instruction Set and it's Programming(Interfacing simple switch and LED to I/O ports to switch on/off LED with respect to switch status)	T-1	OR-1	addressing modes, and instruction set; 8051 programming	students will come to learn about the programming of 8051	KEIL software, PPT	
	Lecture 26	Instruction Set and it's Programming(Addressing Modes)	T-1	OR-1	addressing modes, and instruction set; 8051 programming	students will come to learn about the programming of 8051	KEIL software, PPT	
		Instruction Set and it's Programming(Instruction set)	T-1	OR-1	addressing modes, and instruction set; 8051 programming	students will come to learn about the programming of 8051	KEIL software, PPT	

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Week 9	Lecture 26	Instruction Set and it's Programming(Stack and Subroutine instructions)	T-1	OR-1	addressing modes, and instruction set; 8051 programming	students will come to learn about the programming of 8051	KEIL software, PPT	
		Instruction Set and it's Programming(Assembly language program examples on subroutine and involving loops)	T-1	OR-1	addressing modes, and instruction set; 8051 programming	students will come to learn about the programming of 8051	KEIL software, PPT	
		Instruction Set and it's Programming(Delay subroutine)	T-1	OR-1	addressing modes, and instruction set; 8051 programming	students will come to learn about the programming of 8051	KEIL software, PPT	
		Instruction Set and it's Programming(Addition of 8 bit numbers)	T-1	OR-1	addressing modes, and instruction set; 8051 programming	students will come to learn about the programming of 8051	KEIL software, PPT	
		Instruction Set and it's Programming(Interfacing simple switch and LED to I/O ports to switch on/off LED with respect to switch status)	T-1	OR-1	addressing modes, and instruction set; 8051 programming	students will come to learn about the programming of 8051	KEIL software, PPT	
	Lecture 27	Instruction Set and it's Programming(Addressing Modes)	T-1	OR-1	addressing modes, and instruction set; 8051 programming	students will come to learn about the programming of 8051	KEIL software, PPT	
		Instruction Set and it's Programming(Instruction set)	T-1	OR-1	addressing modes, and instruction set; 8051 programming	students will come to learn about the programming of 8051	KEIL software, PPT	
		Instruction Set and it's Programming(Stack and Subroutine instructions)	T-1	OR-1	addressing modes, and instruction set; 8051 programming	students will come to learn about the programming of 8051	KEIL software, PPT	
		Instruction Set and it's Programming(Assembly language program examples on subroutine and involving loops)	T-1	OR-1	addressing modes, and instruction set; 8051 programming	students will come to learn about the programming of 8051	KEIL software, PPT	
		Instruction Set and it's Programming(Delay subroutine)	T-1	OR-1	addressing modes, and instruction set; 8051 programming	students will come to learn about the programming of 8051	KEIL software, PPT	
		Instruction Set and it's Programming(Addition of 8 bit numbers)	T-1	OR-1	addressing modes, and instruction set; 8051 programming	students will come to learn about the programming of 8051	KEIL software, PPT	
		Instruction Set and it's Programming(Interfacing simple switch and LED to I/O ports to switch on/off LED with respect to switch status)	T-1	OR-1	addressing modes, and instruction set; 8051 programming	students will come to learn about the programming of 8051	KEIL software, PPT	

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Week 10	Lecture 28	Timers, Serial Port and interrupts(8051 Timers and Counters)	R-1 R-2	OR-1	8051 programming	students will learn 8051 programming	PPT	
		Timers, Serial Port and interrupts(Operation and language programming to generate a pulse using Mode-1)	R-1 R-2	OR-1	8051 programming	students will learn 8051 programming	PPT	
		Timers, Serial Port and interrupts(8051 interrupts and its programming)	R-1 R-2	OR-1	8051 programming	students will learn 8051 programming	PPT	
	Lecture 29	Timers, Serial Port and interrupts(8051 Timers and Counters)	R-1 R-2	OR-1	8051 programming	students will learn 8051 programming	PPT	
		Timers, Serial Port and interrupts(Operation and language programming to generate a pulse using Mode-1)	R-1 R-2	OR-1	8051 programming	students will learn 8051 programming	PPT	
		Timers, Serial Port and interrupts(8051 interrupts and its programming)	R-1 R-2	OR-1	8051 programming	students will learn 8051 programming	PPT	
	Lecture 30	Timers, Serial Port and interrupts(8051 Timers and Counters)	R-1 R-2	OR-1	8051 programming	students will learn 8051 programming	PPT	
		Timers, Serial Port and interrupts(Operation and language programming to generate a pulse using Mode-1)	R-1 R-2	OR-1	8051 programming	students will learn 8051 programming	PPT	
		Timers, Serial Port and interrupts(8051 interrupts and its programming)	R-1 R-2	OR-1	8051 programming	students will learn 8051 programming	PPT	
Week 11	Lecture 31	Timers, Serial Port and interrupts(8051 Timers and Counters)	R-1 R-2	OR-1	8051 programming	students will learn 8051 programming	PPT	
		Timers, Serial Port and interrupts(Operation and language programming to generate a pulse using Mode-1)	R-1 R-2	OR-1	8051 programming	students will learn 8051 programming	PPT	
		Timers, Serial Port and interrupts(8051 interrupts and its programming)	R-1 R-2	OR-1	8051 programming	students will learn 8051 programming	PPT	

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Week 11	Lecture 32	Timers, Serial Port and interrupts(8051 Timers and Counters)	R-1 R-2	OR-1	8051 programming	students will learn 8051 programming	PPT	
		Timers, Serial Port and interrupts(Operation and language programming to generate a pulse using Mode-1)	R-1 R-2	OR-1	8051 programming	students will learn 8051 programming	PPT	
		Timers, Serial Port and interrupts(8051 interrupts and its programming)	R-1 R-2	OR-1	8051 programming	students will learn 8051 programming	PPT	
	Lecture 33				Test 2			
Week 12	Lecture 34	Advanced processors (ARM)(embedded system software and hardware)	R-3	RW-5	ARM Architecture and embedded system software and hardware	student will learn ARM architecture and programming	PPT	
		Advanced processors (ARM)(ISA's and ARM history)	R-3	RW-5	ARM Architecture and embedded system software and hardware	student will learn ARM architecture and programming	PPT	
	Lecture 35	Advanced processors (ARM)(embedded system software and hardware)	R-3	RW-5	ARM Architecture and embedded system software and hardware	student will learn ARM architecture and programming	PPT	
		Advanced processors (ARM)(ISA's and ARM history)	R-3	RW-5	ARM Architecture and embedded system software and hardware	student will learn ARM architecture and programming	PPT	
	Lecture 36	Advanced processors (ARM)(embedded system software and hardware)	R-3	RW-5	ARM Architecture and embedded system software and hardware	student will learn ARM architecture and programming	PPT	
		Advanced processors (ARM)(ISA's and ARM history)	R-3	RW-5	ARM Architecture and embedded system software and hardware	student will learn ARM architecture and programming	PPT	
Week 13	Lecture 37				Project			
	Lecture 38	Futuristic microprocessor technologies(low-power microprocessor design for IoT devices)		RW-6	IoT and Edge computing	students will come to learn basic of IoT and edge computing	PPT	
		Futuristic microprocessor technologies(introduction to edge computing and Microprocessor requirements for edge devices)		RW-6	IoT and Edge computing	students will come to learn basic of IoT and edge computing	PPT	
	Lecture 39	Futuristic microprocessor technologies(low-power microprocessor design for IoT devices)		RW-6	IoT and Edge computing	students will come to learn basic of IoT and edge computing	PPT	

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Week 13	Lecture 39	Futuristic microprocessor technologies(introduction to edge computing and Microprocessor requirements for edge devices)		RW-6	IoT and Edge computing	students will come to learn basic of IoT and edge computing	PPT	
Week 14	Lecture 40	Futuristic microprocessor technologies(low-power microprocessor design for IoT devices)		RW-6	IoT and Edge computing	students will come to learn basic of IoT and edge computing	PPT	
		Futuristic microprocessor technologies(introduction to edge computing and Microprocessor requirements for edge devices)		RW-6	IoT and Edge computing	students will come to learn basic of IoT and edge computing	PPT	
		SPILL OVER						
Week 14	Lecture 41				Spill Over			
	Lecture 42				Spill Over			
Week 15	Lecture 43				Spill Over			
	Lecture 44				Spill Over			
	Lecture 45				Spill Over			

Scheme for CA:

CA Category of this Course Code is:C010102 (Total 3 tasks, 1 compulsory and out of remaining 1 best out of 2 to be considered)

Component	Iscompulsory	Weightage (%)	Mapped CO(s)
Project	NO	50	CO1, CO2, CO3, CO4, CO5, CO6
Test 1	NO	50	CO1, CO2
Test 2	Yes	50	CO2, CO3, CO4, CO5

Details of Academic Task(s)

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Academic Task	Objective	Detail of Academic Task	Nature of Academic Task (group/individuals)	Academic Task Mode	Marks	Allottment / submission Week
Test 1	Student will be able to describe the basics of Microprocessor 8085, its internal architecture and programming	Class test 1	Individual	Offline	30	4 / 5
Test 2	to evaluate the understanding of students on 8051 microcontroller	Test 2 (myPerfectice/cocubes)	Individual	Online	30	10 / 11
Project	Student will be able to analyze different interfacing module using 8051 microcontroller	Project on 8051 Gamification	Individual	Offline	30	8 / 13

MOOCs/ Certification etc. mapped with the Academic Task(s)

Academic Task	Name Of Certification/Online Course/Test/Competition mapped	Type	Offered By Organisation
Project	MICROPROCESSORS AND MICROCONTROLLERS	MOOCs	NPTEL

Where MOOCs/ Certification etc. are mapped with Academic Tasks:
1. Students have choice to appear for Academic Task or MOOCs etc.
2. The student may appear for both, In this case best obtained marks will be considered.