EC313: Microprocessor and Interfacing

Course Title	Course Structure			Pre-Requisite
	L	T	P	
Microprocessor and Interfacing	3	0	2	Digital Design-I (Digital Electronics)

Course Objective: To introduce the basic architecture of microprocessors, assembly language programming, and interfacing with peripherals like USART, Priority Interrupt Controller, Programmable Timers, Memory, etc.

Course Outcomes: CO1: Understand Microprocessor Fundamentals: focusing on the 8-bit microprocessor (8085) architecture, instruction sets, and addressing modes. Develop, basic assembly language programs for microprocessor-based applications. CO2: Comprehend the architecture, memory segmentation, and bus cycles of the 8086 microprocessors. Apply addressing modes and develop assembly language programs for the 8086 microprocessor. CO3: Analyze and use programmable devices like 8257 (DMA), 8255 (PPI), 8251 (USART), and 8259 (Programmable Priority Controller) in system design. CO4: Understand the operation and interfacing of the Programmable Interval Timer (8253/8254), ADC and DAC interfacing, and its applications. CO5: Gain knowledge about advanced microprocessors such as 80186/80286, and the transition to 32-bit and 64-bit processors.

S. No.	Content	Contact Hours
Unit 1	Introduction to the microprocessor, history of computers, timing, and control,memory devices-semiconductor memory organization, category of memory, 8-bit microprocessor (8085): Architecture, Instruction set, Addressing mode, assembly language programming	10
Unit 2	16-bit microprocessor (8086): architecture, physical address, segmentation, memory organization, bus cycle, addressing modes, assembly language programming of 8086.	12
Unit 3	Data transfer scheme: introduction, types of transmission, 8257(DMA),8255(PPI), serial data transfer (USART 8251), programmable priority controller (8259).	10

Unit 4	Programmable interval timer/ counter (8253/8254): introduction, Operating modes, interfacing of 8253, application. ADC/DAC: introduction ADC IC (0808/0809), DAC and ADC interfacing and applications.	6
Unit 5	Introduction to 80186/80286, Advance microprocessor: introduction to32-bit and 64-bit microprocessor.	4
	Total	42

Books:-

S. No	Name of Books/Authors/Publisher
1	Microprocessor Architecture, Programming and Applications with 8085/Gaonkar Ramesh S/Penram International Publishing, 6th edition, Jan 2013
2	Microprocessor interfacing/D.V. Hall/TMH,Third edition, July 2017
3	Microcomputer systems: the 8086/8088 family architecture programming and design/ Y C Liu and G. A. Gibson/Pearson 2nd edition, 2009
4	The Intel Microprocessor 8086/8088. 80186, 80286, 80386 and 80486 Architecture Programming and Interfacing/ Barry B Brey/ Pearson, 8th Edition January 2012.
5	Digital system design and microprocessors/John P. Hayes/McGraw Hill publication/ January 2005