



National Institute of Technology Meghalaya
An Institute of National Importance

CURRICULUM

Programme	Bachelor of Technology in Electronics and Communication Engineering	Year of Regulation	2018-19
Department	Electronics and Communication Engineering	Semester	IV

Course Code	Course Name	Credit Structure				Marks Distribution				
		L	T	P	C	INT	MID	END	Total	
EC 206	Microprocessors and Microcontrollers	3	0	0	3	50	50	100	200	
Course Objectives	To understand principles and microlevel operation of processors/controllers	Course Outcomes	CO1	Ability to understand the basic concepts of processors, controllers and instruction execution.						
	To develop the skills for programme the processors with low and high level programming languages		CO2	Ability to apply assembly and high level languages to program processors and controllers						
			CO3	Ability to apply interfacing processor/controller with peripherals like, I/O, A/D, D/A, timer etc						
			CO4	Ability to design real time applications using different microcontrollers						
			CO5							
			CO6							

No.	COs	Mapping with Program Outcomes (POs)												Mapping with PSOs		
		PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
1	CO1	3	3	-	2	3	-	1	-	-	-	-	-	-	-	-
2	CO2	3	2	-	2	3	-	1	-	-	-	-	-	-	-	-
3	CO3	3	1	-	2	3	-	1	-	-	-	-	-	-	-	-
4	CO4	3	1	-	2	3	-	1	-	-	-	-	-	-	-	-
5	CO5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
6	CO6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

SYLLABUS

No.	Content	Hours	COs
I	Introduction to Microprocessors 8085 Internal Architecture, Addressing Modes, Bus Timings, ASM Programming, Memory organization, overview of I/O interfacing and advanced microprocessors.	8	CO1
II	Microcontroller: 8051 Architecture Introduction to embedded systems, Overview of the 8051 family, Architectural Enhancements of PIC, AVR and ARM-based micro-controllers, 8051 architecture, memory organization, I/O ports, addressing modes, Assembly instructions, timing and instruction execution,	9	CO1
III	8051 Programming Programming examples on bit processing, Arithmetic instructions, program flow control, look up table and array processing, programming through C.	7	CO1, CO2
IV	Concepts of Hardware Interfacing System Design and Troubleshooting, Concepts and Programming of I/O ports, timer/counter, Serial communication (RS-232/422), Interrupt.	9	CO2, CO3
V	Interfacing with External devices Sensors and calibration methods, ADC/DAC, Relays, Opto-couplers, Stepper motor, DC motors, External memory, RTC, I2C, SPI, USB, VGA etc.,	5	CO3, CO4
Total Hours		38	

Essential Readings

1. Gaonkar R. S., "Microprocessor Architecture, Programming and Applications with 8085", Penram International, Fifth edition 1999
2. M. A. Mazidi, J. G. Mazidi and R. D. Mckinlay others, "The 8051 Microcontroller and Embedded Systems", Prentice Hall of India. Second Edition, 2007

Supplementary Readings

1. M.K. Patel "The 8051 Microcontrollers based Embedded Systems", MCGraw Hill, 2014
2. Hall D., "Microprocessors and Interfacing : Programming and Hardware", Tata McGraw-Hill, 1992
3. Wilmshurst, T. "Designing Embedded Systems With PIC Microcontrollers : Principles and Applications", Elsevier (Newnes) Second Edition, 201