



## ACADEMIC LESSION PLAN FOR SUMMER - 2024

Dept. of Electronics & Telecommunication, Govt. Polytechnic, Balasore

Name of the Faculty: Yogasakti Yogamaya (Lecturer, E&TC)

### MICROPROCESSOR & MICROCONTROLLER (TH-3)

Theory : 5 P/W  
 Total Period s : 75 P/ Sem  
 Examination : 3 Hours  
 Sem : 4th E&TC

Internal Assessment : 20 Marks  
 End Semester Exam : 80marks  
 TOTAL MARKS : 100 Marks  
 Start of Class : 16/01/2024

WEEK	PERIOD	TOPIC
1st	1 <sup>st</sup>	<b>Microprocessor (Architecture and Programming-8085-8-bit) :</b> Introduction to Microprocessor and Microcomputer & distinguish between them.
	2 <sup>nd</sup>	Concept of Address bus, Data bus, Control bus & System Bus
	3 <sup>rd</sup>	General Bus structure Block diagram
	4 <sup>th</sup>	Basic Architecture of 8085 (8 bit) Microprocessor
	5 <sup>th</sup>	Basic Architecture of 8085 (8 bit) Microprocessor
2 <sup>nd</sup>	1 <sup>st</sup>	5 Signal Description (Pin diagram) of 8085 Microprocessor
	2 <sup>nd</sup>	5 Signal Description (Pin diagram) of 8085 Microprocessor
	3 <sup>rd</sup>	Register Organizations,
	4 <sup>th</sup>	Status Flag
	5 <sup>th</sup>	Distinguish between SPR & GPR
3 <sup>rd</sup>	1 <sup>st</sup>	Timing & Control Module
	2 <sup>nd</sup>	Stack, Stack pointer & Stack top
	3 <sup>rd</sup>	Interrupts:-8085 Interrupts
	4 <sup>th</sup>	Masking of Interrupts RIM
	5 <sup>th</sup>	SIM
4 <sup>th</sup>	1 <sup>st</sup>	<b>Instruction Set and Assembly Language Programming</b> Addressing data & Differentiate between one-byte, two-byte & three-byte instructions with examples
	2 <sup>nd</sup>	Addressing modes in instructions with suitable examples.
	3 <sup>rd</sup>	Instruction Set of 8085: Data Transfer group
	4 <sup>th</sup>	Arithmetic, Logical group
	5 <sup>th</sup>	Branching group ,Stack& I/O , Machine Control instruction
5 <sup>th</sup>	1 <sup>st</sup>	Simple Assembly Language Programming of 8085: Addition & Subtraction
	2 <sup>nd</sup>	Logic Operations (AND, OR, Complement 1's & 2's) & Masking of bits
	3 <sup>rd</sup>	Code conversion, BCD Arithmetic
	4 <sup>th</sup>	16 Bit data Operation, Block Transfer
	5 <sup>th</sup>	Compare between two numbers
6 <sup>th</sup>	1 <sup>st</sup>	Array Handling (Largest number & smallest number in the array)
	2 <sup>nd</sup>	Looping, Counting & Indexing (Call/JMP etc).
	3 <sup>rd</sup>	Stack & Subroutine programe
	4 <sup>th</sup>	Memory & I/O Addressing,
	5 <sup>th</sup>	Counters & Time delay (Single Register, Register Pair, More than Two Register)
7 <sup>th</sup>	1 <sup>st</sup>	<b>TIMING DIAGRAMS. :</b> Define opcode, operand, T-State, Fetch cycle, Machine Cycle, Instruction cycle & discuss the concept of timing diagram.
	2 <sup>nd</sup>	Draw timing diagram for memory read

	3 <sup>rd</sup>	Draw timing diagram for memory write
	4 <sup>th</sup>	Draw timing diagram for I/O read
	5 <sup>th</sup>	Draw timing diagram for I/O write
8 <sup>th</sup>	1 <sup>st</sup>	Timing diagram for 8085 instruction MOV
	2 <sup>nd</sup>	Timing diagram for 8085 instruction MVI
	3 <sup>rd</sup>	Timing diagram for 8085 instruction LDA
	4 <sup>th</sup>	<b>Microprocessor Based System Development Aids: Concept of interfacing , Define Mapping &amp; Data transfer mechanisms - Memory mapping &amp; I/O Mapping</b>
	5 <sup>th</sup>	Concept of Memory Interfacing:- Interfacing EPROM & RAM Memories, Concept of Address decoding for I/O devices
9 <sup>th</sup>	1 <sup>st</sup>	Programmable Peripheral Interface: 8255
	2 <sup>nd</sup>	Programmable Peripheral Interface: 8255
	3 <sup>rd</sup>	ADC & DAC with Interfacing.
	4 <sup>th</sup>	Interfacing Seven Segment Displays, Generate square waves on all lines of 8255
	5 <sup>th</sup>	Design Interface a traffic light control system using 8255
10 <sup>th</sup>	1 <sup>st</sup>	Design interface for stepper motor control using 8255.
	2 <sup>nd</sup>	Basic concept of other Interfacing DMA controller
	3 <sup>rd</sup>	Basic concept of USART
	4 <sup>th</sup>	<b>Microprocessor (Architecture and Programming-8086-16 bit):</b> Internal architecture of 8086
	5 <sup>th</sup>	Register Organisation of 8086
11 <sup>th</sup>	1 <sup>st</sup>	Signal Description of 8086
	2 <sup>nd</sup>	General Bus Operation
	3 <sup>rd</sup>	Physical Memory Organisation
	4 <sup>th</sup>	Minimum Mode & Timings,
	5 <sup>th</sup>	Maximum Mode & Timings,
12 <sup>th</sup>	1 <sup>st</sup>	Interrupts and Interrupt Service Routines, Interrupt Cycle, Non-Maskable Interrupt, Maskable Interrupt
	2 <sup>nd</sup>	8086 Instruction Set & Programming: Addressing Modes,
	3 <sup>rd</sup>	Instruction Set,
	4 <sup>th</sup>	Assembler Directives and Operators,
	5 <sup>th</sup>	Simple Assembly language programming using 8086 instructions
13 <sup>th</sup>	1 <sup>st</sup>	<b>Microcontroller (Architecture and Programming-8 bit):-</b> Distinguish between Microprocessor & Microcontroller, 8 bit & 16 bit microcontroller, CISC & RISC processor
	2 <sup>nd</sup>	Architecture of 8051 Microcontroller
	3 <sup>rd</sup>	Architecture of 8051 Microcontroller
	4 <sup>th</sup>	Signal Description of 8051 Microcontrollers
	5 <sup>th</sup>	Memory Organisation-RAM structure, SFR
14 <sup>th</sup>	1 <sup>st</sup>	Registers, timers, interruptsof8051Microcontrollers
	2 <sup>nd</sup>	Addressing Modes of 8051
	3 <sup>rd</sup>	Simple 8051 Assembly Language Programming :Arithmetic & Logic Instructions , JUMP, LOOP, CALL Instructions, I/O Port Programming
	4 <sup>th</sup>	Programming
	5 <sup>th</sup>	Programming
15 <sup>th</sup>	1 <sup>st</sup>	Interrupts
	2 <sup>nd</sup>	Timer
	3 <sup>rd</sup>	Counters
	4 <sup>th</sup>	Serial Communication
	5 <sup>th</sup>	Microcontroller Interrupts and Interfacing to 8255

21/12/24

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