The Maharaja Sayajirao University of Baroda Polytechnic Diploma in Electronics & Communication Engg. (HPP)			ACADEMIC YEAR 2023-24	
Year	III	**MICROCONTROLLER AND EMBADED SYSTEM(ELE3523)**	Lecture /Lab Hrs per week	4/2
Semester	I		Max marks	100

Pre-Requisite: digital electronics and Microprocessor 8085	
CO1	Explain the 8051 architecture, pin functions, registers, flag bits, SFRs, and memory organization.
CO2	Develop assembly programs using data transfer, arithmetic, logic, branching, call, delay.
CO3	Use addressing modes and hardware connections to access I/O bits, RAM locations, and external devices.
CO4	Implement C and assembly programs for I/O, logic, conversion, ROM access, serialization.
CO5	Interface serial ports, timers, interrupts, and peripherals (LCD, ADC, keypad, sensor, RTC, stepper motor).
BT	**1. Remember 2. Understand 3. Application 4. Analysis 5. Evaluation 6. Creation**

COURSE CONTENT/SYLLABUS

Unit	Unit Name	Hrs	Weightage	CO
1	Microcontrollers and embedded processors, Overview of the 8051 family. Architecture, Pin description, flag bits and the PSW register, SFR, Memory Organization.	6	12	**CO1, CO3**
2	ASSEMBLY LANGUAGE PROGRAMMING Assembling and running program, Data types and Directives, Data transfer operation, Loop and jump instructions, Call instructions time delay calculation. Arithmetic instructions, Logic and Compare instructions.	12	22	**CO1, CO3**
3	ADDRESSING MODES AND HARDWARE CONNECTION Immediate and register addressing modes, accessing memory using various addressing modes, Bit addresses for I/O and RAM, Hardware connection.	6	10	**CO4, CO3**
4	PROGRAMMING WITH C AND IN ASSEMBLY LANGUAGE Data types and time delay, I/O programming, Logic operations, Data conversion programs, Accessing code ROM space, Data serialization.	12	22	**CO5, CO2, CO4**
5	SERIAL PORT, TIMERS, AND INTERRUPTS PROGRAMMING Basics of serial communication, Connection to RS232, Serial port programming, Interrupts programming, Timer interrupts, Programming external hardware interrupts, Programming the serial communication interrupt, Interrupt priority in microcontroller.	8	14	**CO5, CO2, CO4**
6	INTERFACING CIRCUITS LCD, ADC, Keypad and Sensor, RTC, Stepper Motor.	12	20	**CO5, CO3, CO4**
		56	100	

REFERENCE BOOKS:

1.	The 8051 Microcontroller and Embedded Systems Using Assemble and C by M A Mazidi, J G Mazidi, R D McKinlay,
2.	The 8051 Microcontroller by Kenneth Ayala