18ECOE03	MICROCONTROLLERS AND ITS APPLICATIONS	L	T	P	C
		3	0	0	3

Course Objectives:

1.	To Understand the basic architecture of 8051 microcontroller.
2.	To Understand the interrupt system of 8051 and the use of interrupts.
3.	To develop skill in simple applications development with programming 8051.

Unit I	8051 ARCHITECTURE	9	+	0

8051 Microcontroller - 8051 Architecture- Registers - Pin diagram - I/O ports functions - Internal Memory organization - External Memory (ROM & RAM) interfacing.

Unit II	8051 INSTRUCTION SET	9	+	0

Addressing Modes - Data Transfer instructions - Arithmetic instructions - Logical instructions - Branch instructions - Bit manipulation instructions - Simple Assembly language program examples (without loops) to use these instructions.

Unit III	ASSEMBLY LANGUAGE PROGRAMMING Of 8051	9	+	0

Assembly language programming - Jump Loop and Call Instructions - I/O Port Programming - Addressing Modes - Arithmatical and Logical Instructions.

Unit IV	8051 TIMERS AND SERIAL PORT	9	+	0

8051 Timers and Counters – Operation and Assembly language programming to generate a L1, L2, L3 pulse using Mode-1 and a square wave using Mode - 2 on a port pin - 8051 Serial Communication - Basics of Serial Data Communication - RS-232 standard - 9 pin RS232 signals - Simple Serial Port programming in Assembly and C to transmit a message and to receive data serially.

Unit V	8051 INTERRUPTS AND INTERFACING APPLICATIONS	9	+	0

8051 Interrupts - 8051 Assembly language programming to generate an external interrupt using a switch - 8051 C programming to generate a square waveform on a port pin using a Timer interrupt - Interfacing 8051 to ADC-0804 - LCD and Stepper motor and their 8051 Assembly language interfacing programming.

	Total (L+T)= 45 Periods

Course Outcomes:

Upon completion of this course, the students will be able to:

CO1	:	Knowledge on architecture and programming concepts 8051 Microcontroller.
CO2	:	Knowledge on peripheral interfacing concepts.
CO3	:	Classify and understand assembly language instructions and skills for assembly language programming.
CO4	:	Apply assembly language programming to interface develop microcontroller applications.

Text Books:

1.	"The 8051 Microcontroller and Embedded Systems – using assembly and C", Muhammad Ali Mazidi and Janice Gillespie Mazidi and Rollin D. McKinlay; PHI, 2006 / Pearson, 2006.
2.	"The 8051 Microcontroller", Kenneth J. Ayala, 3rd Edition, Thomson/Cengage Learning.

Reference Books:

1.	John Uffenbeck, The 80x86 Family, Design, Programming and Interfacing,3rd Edition. Pearson Education, 2002.
2.	A.K. Ray and K.M.Burchandi, "Intel Microprocessors Architecture Programming and Interfacing", McGraw Hill International Edition, 2000
3.	Manish K Patel, "The 8051 Microcontroller Based Embedded Systems", McGraw Hill, 2014, ISBN: 978-93-329-0125-4.
4.	Raj Kamal,"Microcontrollers: Architecture, Programming, Interfacing and System Design", , Pearson Education, 2005

E-References:

1.	http://www.nptel.ac.in/courses/Webcourse-contents/IISc-BANG/Microprocessors%20and%20Microcontrollers/New_index1.html
2	https://www.eit.edu.au/cms/resources/technical-resourses/types-and-applications-of-microcontrollers
3	https://www.edgefx.in/8051-microcontroller-architecture/