

**MICROCONTROLLERS AND PROGRAMMABLE DIGITAL SIGNAL PROCESSORS
LABORATORY**

V Semester: ECE								
Course Code	Category	Hours / Week			Credits	Maximum Marks		
BESB10	Core	L	T	P	C	CIA	SEE	Total
		-	-	3	2	30	70	100
Contact Classes: Nil	Tutorial Classes: Nil	Practical Classes: 42			Total Classes: 42			
<p>OBJECTIVES: The course should enable the students to: I. Demonstrate Keil IDE tool for development of Embedded system. II. Program the interfacing of various devices with ARM using Embedded C. III. Develop program for implementation of interrupts and serial communications. IV. Implementation of digital signal processing algorithms in MATLAB and C. V. Understand the real-time operation of digital filters</p> <p>COURSE LEARNING OUTCOMES (CLOs):</p> <p>CLO1 Study the LED toggling. CLO2 Design the clock real time alteration using the PLL modules. CLO3 Understand the controlling intensity of an LED using PWM. CLO4 Design the control an LED using switch by polling method CLO5 Performing the UART Echo Test. CLO6 Understand the concept of take analog readings on rotation of rotary potentiometer connected to an ADC channel. CLO7 Implement the temperature indication on an RGB LED. CLO8 Study the working principle of light sensor. CLO9 Analyze the various sleep modes by putting core in sleep and deep sleep modes CLO10 Study the concepts of System reset using watchdog timer CLO11 Analysis of Sample sound using a microphone and display sound levels on LEDs. CLO12 Determine and developing an assembly code and C code to compute Euclidian distance between any two points CLO13 Developing the assembly code and study the impact of parallel, serial and mixed execution CLO14 Understand the assembly and C code for implementation of convolution operation. CLO15 Design and implement filters in C to enhance the features of given input sequence/signal</p>								

LIST OF EXPERIMENTS	
Week-1	Blink an LED with software delay, delay generated using the SysTick timer
Write an Embedded C program to blinky led with software delay, delay generated using SysTick timer	
Week-2	System clock real time alteration using the PLL modules
Generation of System clock real time alteration using the PLL modules	
Week-3	Control intensity of an LED using PWM implemented in software and hardware
Write an embedded C program to control intensity of a led using pwm implemented in software.	
Week-4	Control an LED using switch by polling method, by interrupt method and flash the LED once
Design an LED using switch by polling method, by interrupt method and flash the LED once	
Week-5	Take analog readings on rotation of rotary potentiometer connected to an ADC channel
Write an embedded C program to take analog readings on rotation of rotary potentiometer	
Week-6	Temperature indication on an RGB LED
To write an embedded C program for Temperature indication on an RGB LED and to Verify the output in the Cortex-M3 kit	
Week-7	Evaluate the various sleep modes by putting core in sleep and deep sleep modes
Design an embedded C program for evaluate the various sleep modes by putting core in sleep and deep sleep modes	
Week-8	System reset using watchdog timer in case something goes wrong
Generation of system reset function by using watchdog timer and verifies it.	
Week-9	Sample sound using a microphone and display sound levels on LEDs
To generate a real time Sample sound using a microphone and display sound levels on LEDs	
Week-10	To develop an assembly code and C code to compute Euclidian distance between any two points
Calculate the Euclidian distance between any two points Using DSK Code composer studio	
Week 11	To develop assembly and C code for implementation of convolution operation.
Verify the convolution operation Using DSK Code composer studio	
Week 12	To design and implement filters in C to enhance the features of given input sequence/signal.
To performance of the fitters and implement filters in C to enhance the features of given input sequence/signal	