

ADVANCED MICROPROCESSORS AND INTERFACING LABORATORY

II Semester: ES								
Course Code	Category	Hours / Week			Credits	Maximum Marks		
BESC23	Core	L	T	P	C	CIA	SEE	Total
		-	-	4	2	30	70	100
Contact Classes: Nil	Tutorial Classes: Nil	Practical Classes: 36			Total Classes: 36			
I. COURSE OVERVIEW: Processor and Controller cores are the key components in most of the modern embedded and system-on-chip designs. This course outlines the ARM architecture, programming model and its interfacing with peripherals. It also covers the ARM cortex processor, memory management, programming model and interfacing peripherals with ARM processor. The applications include Calculators, Accounting system, Games machine, Complex industrial controllers, Military applications, Defense systems, Computation systems etc.								
II. COURSE OBJECTIVES: The students will try to learn: I. The architecture of ARM series microprocessors and its programming models. II. The memory management in ARM processors III. The peripherals interfacing with ARM processors using high and low level languages.								
III. COURSE OUTCOMES: After successful completion of the course, students should be able to:								
CO 1	Make use of Led blinking to toggle all the led to port and with some time delay. .						Apply	
CO 2	Demonstrate Interfacing of LCD to ARM7 for displaying message on screen.						Apply	
CO 3	Demonstrate interfacing keypad with ARM 7 for key pressed on PC terminal using UART communication.						Understand	
CO 4	Identify Interface LED with ARM7 for illustrating low power applications.						Apply	
CO 5	Make use of INTERFACING OF STEPPER MOTOR for investigating the reaction Small robotics.						Apply	
CO 6	Distinguish the performance characteristics of on-chip ADCs and DACs. for Data Acquisition.						Analyze	
LIST OF EXPERIMENTS								
PROGRAMMES ON ARM7 (LPC2148)								
Week-1	LED BLINKING							
Program to toggle all the led to port and with some time delay.								
Week-2	INTERFACING OF LCD							

Interface LCD to ARM7 and display message on screen.	
Week-3	INTERFACING OF KEYPAD
Interface keypad with ARM7.	
Week-4	INTERFACING OF LED
Interface LED with ARM7.	
Week-5	INTERFACING OF STEPPER MOTOR
Stepper motor interfacing.	
Week-6	INTERFACING OF DC MOTOR
DC motor interfacing.	
PROGRAMMES ON PSOC (CY8C29466,24X1)	
Week-7	PROGRAMMABLE GAIN AMPLIFIER
Study and characterization of the Programmable Gain Amplifier (PGA): Gain Bandwidth Product.	
Week-8	FILTERS
Realization of Low pass, High pass and Band pass filters and their characterization.	
Week-9	ADC AND DAC
Experiments with on-chip ADC's and DAC's.	
Week-10	DIGITAL FUNCTION IMPLEMENTATION
Digital Function Implementation using Digital Blocks. <ol style="list-style-type: none"> Timer experiment Counter for blinking LED PWM experiment Digital buffer and digital inverter. 	
Week-11	ALU OPERATIONS
Logical/Arithmetic function implementation using Microcontroller.	
Week-12	TIMER
Timer operation in different Modes.	
Reference Books:	
<ol style="list-style-type: none"> Michael J. Pont, "Embedded C", Pearson Education, 2nd Edition, 2008. Nigel Gardner, "The Microchip PIC in CCS C". Ccs Inc, 2nd Revision Edition, 2002. 	

SOFTWARE AND HARDWARE REQUIREMENTS FOR 18 STUDENTS

SOFTWARE:

System Software: Microsoft windows/ Linux.

Programming Languages: Keil Embedded C.

HARDWARE:

20 numbers of Intel Desktop Computers with 2 GB RAM

Dot matrix Printers: 02