

Course Number and Name												
BEC502 - MICROPROCESSOR AND MICROCONTROLLER												
Credits and Contact Hours												
3 and 45												
Course Coordinator's Name												
Ms S.Philomina												
Text Books and References												
TEXT BOOKS.												
1. Muhammad Ali Mazidi and Janice Gillispie Mazidi, "The 8051 -Microcontroller and Embedded systems", 7th Edition, Pearson Education, 2004.												
2. Douglas.V.Hall, "Microprocessor and Interfacing : Programming and Hardware", Revised 2nd edition, McGraw Hill, 1992												
3. Steve Furber, "ARM System On Chip Architecture", Second Edition,Pearson Education, 2000.												
4. K. Ray and K. M. Bhurchandi, "Advanced Microprocessors and Peripherals – Architectures, Programming and Interfacing", Tata McGraw Hill, 2002 Reprint												
5. Design with PIC microcontroller by John B Peatman.												
REFERENCES												
1. Kenneth.J.Ayala, "8051 Microcontroller Architecture, Programming and Applications", 3rd edition, Thomson, 2007.												
2. nuvoTon Cortex M0 (Nu-LB-NUC100/140) Driver and Processor Reference Manual;												
3. www.nuvoton.com												
Course Description												
<ul style="list-style-type: none"> • The objective of this course is to become familiar with the architecture and the instruction set of an Intel microprocessor • Assembly language programming will be studied as well as the design of various types of digital and analog interfaces • Understand the architecture of 8085 and 8051 												
Prerequisites						Co-requisites						
Principles of Digital Electronics						Nil						
required, elective, or selected elective (as per Table 5-1)												
Required												
Course Outcomes (COs)												
CO1 Design and implement programs on 8086,ARM, PIC.												
CO2 Design I/O circuits.												
CO3 The program prepares students to successfully compete for employment in Electronics, Manufacturing and Embedded fields.												
CO4 Design Memory Interfacing circuits.												
CO5 Design and implement 8051 microcontroller based systems.												
CO6 Describe the architecture and instruction set of ARM microcontroller												
Student Outcomes (SOs) from Criterion 3 covered by this Course												
	COs/SOs	a	b	c	d	e	f	g	h	i	j	k
	CO1	M	H		H		M			H	M	
	CO2	M	L	H		M				L		
	CO3	M										
	CO4	M			H	H				M	M	
	CO5	M	H			H				M		
	CO6					M	H					

List of Topics Covered**UNIT I MICROPROCESSOR 8086****9**

Register Organization -Architecture-Signals-Memory Organization-Bus Operation-I/O Addressing-Minimum Mode-Maximum Mode-Timing Diagram-Interrupts - Service Routines – I/O and Memory Interfacing concepts.

UNIT II PROGRAMMING OF 8086**9**

Addressing Modes-Instruction format-Instruction set-Assembly language programs in 8086. RISC architecture – introduction to ARM Programming register configuration and instruction set - introduction to PIC Programming register configuration and instruction set – sample program.

UNIT III-INTERFACING DEVICES**9**

Programmable Peripheral Interface (8255) - Programmable Interval Timer (8254) - Programmable Interrupt Controller (8259A) - Programmable DMA Controller (8257) - Programmable Communication Interface (8251A) – Programmable Keyboard and Display Controller (8279).

UNIT IV-MICROCONTROLLER-8051**9**

Register Set-Architecture of 8051 microcontroller- I/O and memory addressing-Interrupts-Instruction set- Addressing modes. Timer-Serial Communication-Interrupts Programming-Interfacing to External Memory-Interfacing to ADC, LCD, DAC, Keyboard and stepper motor.

UNIT-V-SYSTEM DESIGN USING MICROPROCESSOR & MICROCONTROLLER**9**

Case studies – Traffic light control, washing machine control, RTC Interfacing using I2C Standard-Motor Control- Relay, PWM, DC & Stepper Motor.