

GANPAT UNIVERSITY									
FACULTY OF TECHNOLOGY									
Programme	Bachelor of Technology				Branch/Spe c.	Computer Science and Engineering (CBA/MA/BDA)			
Semester	IV				Version	1.0.0.0			
Effective from Academic Year			2018-19		Effective for the batch Admitted in			July 2017	
Subject code	2CSE404		Subject Name		Microprocessor & Microcontroller				
Teaching scheme					Examination scheme (Marks)				
(Per week)	Lecture(DT)		Practical(Lab.)		Total		CE	SEE	Total
	L	TU	P	TW					
Credit	3	0	1	0	4	Theory	40	60	100
Hours	3	0	2	0	5	Practical	30	20	50
Pre-requisites:									
Digital Electronics, Computer Organization									
Learning Outcome:									
Upon the successful completion of this course, a student should able to									
<ul style="list-style-type: none"> Understand the 8085 Microprocessor and 8051 microcontroller and their architectures Being able to write an assembly level and C programs for interfacing Being able to design a hardware interfacing circuit comprising microcontrollers and supporting ICs to construct a useful real time application working as electronic embedded system. 									
Theory syllabus									
Unit	Content								Hrs
1	Introduction of 8085 microprocessor : Architectural Block Diagram, Schematic and Pin diagrams, Pin functions, Bus Organization, Internal operations and registers, Externally initiated operations, Serial interrupt and I/O Control, Timing and Control Unit, Microprocessor communication, Multiplexing of address / data bus, Generation of control signals, Memory interfacing – Absolute Vs partial Decoding, Timing diagrams and 8085 machine cycles								10
2	Introduction to Instruction set of 8085 : Data Transfer Instructions, Arithmetic Instructions, Logical Instructions, Branching Instructions, Machine Control Instructions and application programs								10
3	Introduction to 8051 Architecture : Comparing Microprocessors and Microcontrollers -The 8051 Architecture- Hardware- Oscillator and clock-program counter –data pointer-registers-stack and stack pointer-special function registers- memory organization-program memory-data memory -Input / Output Ports –External memory counter and timer-serial data Input / output-Interrupts								6
4	8051 Programming in Assembly and 'C' : Basics of 8051 Assembly Language Programming-Structure of Assembly language- Basics of 8051 C Language Programming-Structure of C language, Assembling and running an 8051 program-Addressing modes-Accessing memory using various addressing modes- Arithmetic operations and Programs-Logical operations and Programs -Branching - I/O Port Programs - Single bit instructions and Programs –Timer and counter - and Programs								8
5	Interfacing with 8051 : Microcontroller Interfacing - interfacing 8031/8051 with ROM/EPROM/RAM , Key Board – Displays interfacing - Pulse Measurement - D/A and A/D conversion- DC & Stepper Motor module interfacing with 8051								6

6	Introduction to Advance Microprocessors and Controllers: 8086,80286,80486,Pentium 4, Intel quad core, ARM 7, PIC	5
Self Study Topics :		
Microcomputer Systems, RAM / ROM, Memory mapped I/O vs I/O mapped I/O. Difference between Microcontroller and Microprocessor.		
Practical content		
<ul style="list-style-type: none"> • The practical based on syllabus contents should be properly designed • Implement with an attempt to develop different types of practical skills so that students are able to acquire the competencies. • Practical list may be revised by the concerned faculty looking at the student development for meeting the current demand of industries. 		
Suggested List of Practicals :		
<ul style="list-style-type: none"> • Introduction to Microprocessor Programming kit and Learning Simple Programming. • Learning programs using Data transfer and Arithmetic instructions. • Learning programs using Arithmetic instructions. • Learning programs on BLOCK TRANSFER of data. • Write an assembly program to blink LED using 8085. • Introduction to Microcontroller Programming using Keil and introduction to Proteus software for circuit design and simulation. • Learning programs based on various Addressing modes of 8051. Learning to create hex file, loading it into hardware and observe the output on real hardware. Observing the same in the Proteus software. • Learning to Interface Seven Segment Displays with 8051. • Programs based on Data Transfer and Logical instructions. • Learning advanced programming using Jumps and CALLs. • Learning application programs based on Timers. • Interfacing DC motor with 8051. • Design binary and seven segment counter. • InterfaceLCD with 8051. • Write an assembly language program of UART with 8051. 		
Text Books :		
1	Microprocessor Architecture, Programming, and Applications with the 8085, By RomeshGaonkar, Penram International Publishing (India) LTD	
2	The 8051 Microcontrollers Architecture, Programming & Applications Kenneth J. Ayala	
Reference Books :		
1	The 8051 Microcontrollers and Embedded Systems: Muhammed Ali Mazidi	
2	Embedded Systems, Shibu K, Tata McGraw Hill Publishing, New Delhi 2009	
3	Programming and Customizing the 8051 Micro-controller, MykePredko, Tata McGraw-Hill Edition	