

GANPAT UNIVERSITY									
FACULTY OF ENGINEERING & TECHNOLOGY									
Programme		Bachelor of Technology			Branch/Spec.		Biomedical Engineering		
Semester		VII			Version		2.0.0.0		
Effective from Academic Year			2017-18		Effective for the batch Admitted in			July 2017	
Subject code		2BM705		Subject Name		Embedded System Design			
Teaching scheme					Examination scheme (Marks)				
(Per week)		Lecture(DT)		Practical(Lab.)		Total		Total	
	L	TU	P	TW		CE	SEE		
Credit	3	-	1	-	4	Theory	40	60	100
Hours	3	-	2	-	5	Practical	25	25	50
Pre-requisites: Good Knowledge of Digital Electronics, Microprocessors & Microcontrollers.									
<b>Learning Outcome:</b> The educational objectives of the course are to educate students to attain the following:									
<ul style="list-style-type: none"> <li>• Students have knowledge about the basic functions &amp; structure of embedded systems</li> <li>• Students have knowledge about the basic concepts &amp; applications of embedded systems</li> <li>• Students have knowledge about the development of embedded software</li> </ul>									
Theory syllabus									
Unit	Content								Hrs.
1	<b>INTRODUCTION TO EMBEDDED SYSTEM :</b> Introduction to functional building blocks of embedded systems, representation for each category, Application in real world, Software Readability, Software Maintainability.								6
2	<b>ARCHITECTURE OF PIC MICROCONTROLLER:</b> Block diagram of PIC, Reset Circuit, crystal circuit and power supply circuit, Memory types, Pin Configuration of PIC, Study of status register, option register, different register banks, Memory Paging, Addressing modes, Study of different ports and TRIS register, BYTE oriented file register, BIT oriented file register, Literal and control Operations, Watchdog timer, Interrupts, Timers/ counter, USART Serial Communications Ports, Parallel Communication Ports								8
3	<b>APPLICATION OF PIC MICROCONTROLLER :</b> LED interfacing, 8-bit LCD interfacing, 4-bit LCD interfacing, Seven segment interfacing Relay interfacing, DC motor interfacing and speed control, IR sensors interfacing, Liner Keypad Interfacing, Matrix Keypad interfacing ,Stepper motor interfacing,I2c, RTC, Serial EEPROM, Hashing , Waveform Encoding and Decoding								8
4	<b>INTRODUCTION TO ARM PROCESSOR:</b> Introduction to embedded system and ARM Processor, ARM related Companies and its Opportunities, ARM processor family, Application of ARM Processor, Compiler, Emulation and Debugging, Difference between RISC&CISC.								8
5	<b>LPC2148 MICROCONTROLLER:</b> LPC2148 ARM7 microcontroller, Features of LPC2148, Block diagram of LPC2148, Pin diagram o fLPC2148, Architectural overview, Programming.								7
6	<b>MSP430 MICROCONTROLLER:</b> MSP430 Microcontroller family, Hardware user interface, MSP430 Board, Software introduction, Fundamental Programming in MSP 430 using Code composer studio, Application of DSP Processor								8
Practical content: <b>Term Work and Practical shall be based on the above syllabus.</b>									
Text Books:									
1	Pic Microcontroller And Embedded Systems: Using Assembly and C for Pic18" by Muhammad Ali Mazidi, Rolin D. McKinlay, Danny Causey, Pub: Neunes								
2	ARM System-on-Chip Architecture" 2nd edition by Steve Furber, Pub: Pearson								
Reference Books									
1	MSP430 Microcontroller Basics" by John H. Davies, Pub: Neunes								
2	Advanced PIC Microcontroller Projects in C: From USB to RTOS with the PIC" By Dogan Ibrahim, Pub: Neunes								
3	PIC Microcontrollers: Know It All" by Lucio Di Jasio, Tim Wilmshurst, Dogan Ibrahim, John Morton, Martin P. Bates, Jack Smith, David W Smith, Chuck Hellebuyck Pub: Neunes								