

SEMESTER	2
Paper Number	MCMS 4211
Paper Title	Microcontroller and Embedded Systems
No. of credits	6
Theory / Composite	Composite
No. of periods assigned	Th: 4 Pr: 4
Name of faculty member(s)	
Course description / objectives	<p>On completion of this course, the students will be able to:</p> <ol style="list-style-type: none"> 1. identify a detailed s/w & h/w structure of the microcontroller 2. illustrate how the different peripherals are interfaced with microcontroller 3. distinguish and analyse the properties of microcontrollers 4. analyse the data transfer information through serial & parallel ports 5. train their practical knowledge through laboratory experiments 6. have a basic idea provides on the embedded system
Syllabus	<p>Theory – 60 marks</p> <p>Introduction to embedded systems, definition of embedded system, classification of embedded systems, Overview of Embedded System Architecture, skills required for an embedded system designer, processor in the system, memories and I/O Interfaces, Linking and interfacing buses (GPIO (IEEE 488)) Link, software embedded into a system, Real Time O.S. & embedded system, embedded system on-chip (SOC) and in VLSI circuit. Application areas (exemplary cases). Recent trends in embedded systems. Brief introduction to embedded microcontroller cores CISC, RISC, ARM and DSP.</p> <p>Introduction to Microprocessors, Microcontrollers and Embedded Processors, Microcontrollers survey-four bit, eight bit, sixteen bit, thirty two bit Microcontrollers, Comparing Microprocessors and Microcontrollers-Overview of the 8051 family.</p> <p>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.</p> <p>8051 Assembly Language Programming, Structure of Assembly language Assembling and running an 8051 program-Addressing modes, accessing memory using various addressing modes, Instruction set, Arithmetic operations and Programs, Logical operations and programs, Jump and Call instructions and Programs -I /O Port, Single bit instructions, Timer and counter, delay Programs.</p> <p>8051 Serial Communication, Serial Communication Programming, Interrupts Programming.</p> <p>Microcontroller Interfacing, Peripherals: Keyboard, Displays, Basic concept of PIC microcontroller, PIC16F Family.</p> <p>Lab - 40 marks</p>
Reading/Reference Lists	<ol style="list-style-type: none"> 1. Ray, Bhurchandi, Advanced Microprocessors and Peripherals, Tata Mc Graw Hill. 2. Mazidi, McKinlay, The 8051 Microcontroller and Embedded
Evaluation	<p>Total – 100 (Theory – 60, Practical – 40)</p> <p>Theory – CIA – 10 Semester Examination – 50</p>