GUJARAT TECHNOLOGICAL UNIVERSITY

Power Electronics

M.E. Semester: II

Subject Name: **Embedded & Real Time System (Major Elective –III)**

Sr. No.	Course Content
1.	**Introduction:** Overview, design challenges, optimizing design metrics, processor technology, IC technology & design technology and trade-off.
2.	Custom single-purpose processor, General -purpose processor, standard single-purpose processor ; its basic architecture, operation and design.
3.	**8051 micro-controller:** Assembly language programming and C programming, instruction set, interrupts, timers, memory, I/O ports, serial communication, interfacing, keyboard, LED display, external memory, ADC,DAC,LCD,RTC
4.	**Real Time system:** Introduction, interrupt driven system, context switching, scheduling, round robin primitive rate monotonic foreground and background systems, intertask communication, buffering data, semaphores-deadlock-process stack management, dynamic allocation, response time calculation, interrupt latency.
5.	RISC concepts, PIC (16F72) processor- architecture, elementary programming, interrupts, timers ,memory, I/O ports, SPI, I^2C bus, A/D converter, USART, PWM, interfacing.
6.	**Application:** DC motor speed control, speed measurement, temperature control, stepper motor control, PID control etc.

Reference Books:

1. Embedded systems design using 8051 microcontroller by Mazidi and Mazidi.(Pearson)
2. Embedded system design by Frank Vahid and Tony Givargis.(Wiley –India)
3. Real time system design and analysis by Philip a.Laplante (PHI).
4. Relevant Data book.