



CS 432

EMBEDDED SYSTEMS LAB

1. Use of 8-bit and 32-bit Microcontrollers (such as 8051 Microcontroller, ARM2148 / ARM2378, LPC 2141/42/44/46/48), Microcontroller and C –compiler (Keil, Ride etc.) to:

- I. Interface Input – Output and other units such as: Relays, LEDs, LCDs, Switches, keypads, Stepper Motors, Sensors, ADCs, Timers.
- II. Demonstrate Communications: RS232, IIC and CAN protocols,
- III. Develop Control Applications such as: Temperature controller, Elevator controller, Traffic Controller.

2. Development and Porting of Real time applications on to Target machines such as Intel or other Computers using any RTOS.

- I. Understanding Real Time Concepts using any RTOS through demonstration of:
 - a) Timing
 - b) Multi-tasking
 - c) Semaphores
 - d) Message Queues
 - e) Round-Robin Task Scheduling
 - f) Preemptive Priority based Task Scheduling
 - g) Priority Inversion
 - h) Signals
- II. Applications development using any RTOS:
 - a) Any RTOS Booting.
 - b) Application Development under any RTOS.