CS 551

EMBEDDED SYSTEMS

UNIT-I

Introduction to Embedded Systems, Characteristics and quality attributes of Embedded Systems Challenges in Embedded System Design, Application and Domain specific Embedded Systems.

UNIT –II

Embedded System Architecture: Instruction Set Architecture, CISC and RISC instruction set architecture, Basic Embedded Processor/Microcontroller Architecture, C1SE Examples- Motorola (68HCI1), RISC Example- ARM, DSP Processors, Harvard Architecture Microcontroller Example - PIC.

UNIT -III

Embedded Hardware Design and Development : VLSI and Integrated Circuit Design, EDA tools, usage of ED A tools and PCB layout. Embedded firmware and Design and Development : Embedded Firmware Design Approaches and Development languages and Programming in Embedded in C.

UNIT -IV

Operating System for Embedded System: Real Time Operating Systems Based Embedded System Design, Introduction to Embedded Systems Design with Micro C/OS- II and Yx Works. Performance Issues of an Embedded System: CPU Performance, Analysis and Optimization of CPU Power Consumption, Program Execution Time, Energy and Power, Program Size. .

UNIT-V

Embedded Systems Development Environment : IDE, Cross Compilation, Disassembler, Simulators, Emulators and Debugging, Target Hardware Debugging, Boundary Scan. Product Enclosure Design and Development Tools, Embedded Product Development Life Cycle- Different phases and Approaches' of EDLC.Trends in Embedded Industry.

Suggested Reading:

1. Shibu K V "Introduction to Embedded Systems" , Tata McGraw HilI,2010.
2. Raj Kamal, "Embedded Systems Architecture, Programming & Design", Tata McGraw Hill, 2010.
3. Dr K.V.K.K. Prasad, "Embedded/Real time Systems: Concepts, Design and Programming". Dreamtech Press, 2004.