EMBEDDED SYSTEMS
( Elective-III )

Course Code: 13EC1133
L T P C
4 0 0 3

Pre requisites: Digital logic design, computer organization.

Course Educational Objectives:

✤ To familiarize student with the various technologies used in embedded system design
✤ To learn about advanced models used in describing embedded systems,
✤ To understand the need for communication interfaces,
4. To gain knowledge of hardware – software co-design.

Course Outcomes:
Student will be able to

✤ differentiate between embedded system and desktop system and the design challenges posed to the designer, optimize design metrics which compete with each other
✤ identify the best technology suitable for an application
✤ improve productivity through an unified view of software and hardware design

UNIT-I (10 Lectures)

INTRODUCTION:
Embedded systems overview, design challenge, processor technology, IC technology, Design Technology, Trade-offs. Single purpose processors RT-level combinational logic, sequential logic (RTlevel), custom single purpose processor design (RT-level), optimizing custom single purpose processors.
UNIT-II

GENERAL PURPOSE PROCESSORS:
Basic architecture, operation, Pipelining, Programmer’s view, development environment, Application Specific Instruction-Set Processors (ASIPs) – Micro Controllers and Digital Signal Processors.

UNIT-III

STATE MACHINE AND CONCURRENT PROCESS MODELS:
Introduction, Models vs. Languages, finite state machines with data path model (fsmd), using state machines, program state machine model (psm), concurrent process model, concurrent processes, communication among processes, synchronization among processes, implementation, data flow model, real-time systems.

UNIT-IV

COMMUNICATION INTERFACE:
Need for communication interfaces, RS232 / UART, RS422 / RS485, USB, Infrared, IEEE 1394 Firewire, Ethernet, IEEE 802.11, Blue tooth.

UNIT-V

DESIGN TECHNOLOGY:

Text BOOKS:

REFERENCES: