

MC313 EMBEDDED SYSTEMS
ELECTIVE– IV

Objectives of the Course:

The course lays

- *Emphasis on Comprehensive treatment of Embedded Hardware and Real Time Operating systems along with case studies in tune with the requirements of Industry. Will put students.*
- *The example-driven approach puts you on a fast track to understand embedded-system programming and applying what they learn to their projects.*

UNIT - I (12 Hrs)

Introduction to Embedded Systems: Applications of ES, Embedded Hardware Units and Devices , Embedded Software, Examples of Embedded Systems, Design Metrics in ES, Challenges in ES Design.

UNIT - II (14 Hrs)

Introduction, 8051 Micro controller Hardware, Input/Output Ports and Circuits, External Memory, Counter and Timers, Serial data Input/Output, Interrupts.

UNIT - III (10 Hrs)

Data Transfer and Logical Instructions: Arithmetic Operations, Decimal Arithmetic. Jump and Call Instructions, Further Details on Interrupts.

UNIT - IV (14 Hrs)

Introduction to Real Time Operating Systems: Time Operating Systems, Tasks and Task States, Tasks and Data, Semaphores, and Shared Data; Message Queues, Mailboxes and Pipes, Timer Functions, Events, Memory Management, Interrupt Routines in an RTOS Environment.

UNIT - V (10 Hrs)

Principles Basic Design Using a Real-Time Operating System: Embedded Software Development Tools: Host and Target machines, Linker/Locators for Embedded Software, Getting Embedded Software into the Target System.

Text Books:

1. Embedded Systems, Raj Kamal, 2/e, TMH.
2. The 8051 Microcontroller, Third Edition, Kenneth J. Ayala, Thomson.
3. An Embedded Software Primer, David E. Simon, Pearson Education.

Reference Books:

1. Computers as Components-principles of Embedded computer system design, Wayne Wolf, Elsevier
2. Embedding system building blocks, Labrosse, via CMP publishers.
3. Micro Controllers, Ajay V Deshmukhi, TMH.
4. Embedded System Design, Frank Vahid, Tony Givargis, John Wiley.
5. Microcontrollers, Raj kamal, Pearson Education.