

# EMBEDDED SYSTEM DESIGN

Written by Administrator  
Sunday, 08 November 2009 04:39 -

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Subject Code

:

**06EC82**

IA Marks

:

25

No. of Lecture Hrs/ Week

:

04

Exam Hrs

:



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Single-Purpose Processors,  
Design of custom single purpose processors.

## 4 Hours

**Unit - 2** [Placeholder text]

**Single-Purpose Processors:** Hardware, Combinational Logic, Sequential Logic, RT level  
Combinational and Sequential Components, Optimizing single-purpose processors.  
Single-Purpose Processors: Software, Basic Architecture,  
  
Operation, Programmer's View,  
  
Development Environment, ASIPS.

## 6 Hours

**Unit - 3** [Placeholder text]

Standard Single-Purpose Peripherals, Timers, Counters, UART, PWM, LCD Controllers,  
Keypad controllers, Stepper Motor Controller, A to D Converters, Examples.

## 6 Hours

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**Unit - 4** Introduction to Embedded Systems, History and Development of Embedded Systems, Microprocessors and Microcontrollers, Memory Organization and Interfacing, Bus Structures, Data Formats and Communication, Real-time Systems, Interrupts and Exception Handling.

**Memory:** Introduction, Common memory Types, Compulsory memory, Memory Hierarchy and Cache, Advanced RAM. Interfacing, Communication Basics, Microprocessor Interfacing, Arbitration, Advanced Communication Principles, Protocols – Serial, Parallel and Wireless.

**8 Hours**

## PART - B

**Unit - 5** Introduction to Real-time Systems, Real-time Scheduling, Real-time Operating Systems, Real-time Database Systems, Real-time Programming, Real-time Systems Architectures, Real-time Systems Design.

**Interrupts** : Basics - Shared Data Problem - Interrupt latency. Survey Of Software Architecture, Round Robin, Round Robin with Interrupts - Function Queues - scheduling - RTOS architecture.

**8 Hours**

**Unit - 6** Introduction to Operating Systems, Process Management, System Calls, File Management, Security, System Performance, System Configuration, System Administration.

**Introduction to RTOS** : Tasks - states - Data - Semaphores and shared data. More operating systems services - Message Queues - Mail Boxes -Timers  
– Events - Memory Management.



### Reference Books:

1. **Embedded Systems: Architecture and Programming** – Raj Kamal, TMH.
2. **Embedded Systems Architecture** – Tammy Noergaard
3. **Comprehensive Guide for Engineer and Programmers** – Elsevier Publication, 2005
4. **Embedded C programming** – Barnett, Cox & O’cull , Thomson (2005).