

Elective 2

Written by Administrator
Saturday, 07 November 2009 06:08 -

Operating Systems

Subject Code		:	
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IA Marks		:	25
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No. of Lecture Hrs/Week		:	04
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Exam Hours		:	03
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Total no. of Lecture Hrs.		:	52
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Exam Marks		:	100
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PART - A

Unit - 1

Elective 2

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PATTERN RECOGNITION

Subject Code		:	
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IA Marks		:	25
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No. of Lecture Hrs/Week		:	04
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Exam Hours		:	03
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Total no. of Lecture Hrs.		:	52
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Exam Marks		:	100
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PART - A

Unit - 1

Elective 2

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Reference BOOKS:

1. “**Pattern Recognition and Image Analysis**”, Eart Gose, Richard Johnsonburg and Steve Joust, Prentice-Hall of India-2003.
2. “**Pattern recognition (Pattern recognition a scene analysis)**” Duda and Hart.
3. “**Pattern recognition: Statistical, Structural and neural approaches**”, Robert J Schalkoff, John Wiley.

Artificial Neural Networks

Subject Code		:
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IA Marks		: 25
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No. of Lecture Hrs/Week		: 04
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Exam Hours		: 03
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Reference Books:

1. **Artificial Neural Networks**, R. Schalkoff, MGH, 1997.
2. **Introduction to Artificial Neural Systems**, J. Zurada, Jaico, 2003.
3. **Neural Networks**, Haykins, Pearson Edu., 1999.

CAD for VLSI

Subject	Code	:
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Elective 2

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ATM Networks

Subject Code		:
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IA Marks		: 25
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No. of Lecture Hrs/Week		: 04
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Exam Hours		: 03
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Total no. of Lecture Hrs.		: 52
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Exam Marks		: 100
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Reference Books:

1. **ATM Networks**, Rainer Handel, Manfred. N. Huber, Stefan Schroder, 3rd Edition, Pearson Education Asia, 2006
2. **Sourcebook of ATM and IP Internetworking**, Khalid Ahmed, Wiley inter science, 2002

Image Processing

Subject Code		:
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IA Marks		: 25
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Text Book:

1. **“Digital Image Processing”**, Rafael C.Gonzalez and Richard E. Woods,
Pearson Education, 2001, 2nd edition.

Reference Books:

1. **“Fundamentals of Digital Image Processing”**, Anil K. Jain, Pearson Edun, 2001.
2. **“Digital Image Processing and Analysis”**, B. Chanda and D. Dutta Majumdar, PHI,
2003.

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APPLIED EMBEDDED SYSTEM DESIGN

Subject Code		:	
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IA Marks		:	25
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No. of Lecture Hrs/Week		:	04
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Exam Hours		:	03
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Exam Marks		:	100
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PART A

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UNIT - 1

INTRODUCTION TO THE EMBEDDED SYSTEMS

An embedded system, Processor embedded into a system, Embedded hardware units and devices in a system, Embedded software in a system, Examples of embedded systems,

Embedded system-on-chip (soc) and use of vlsi circuits design technology, Complex systems design and processors, Design process in embedded system, Formalism of system design, Design process and design examples, Classification of embedded systems, Skills required for an embedded system designer.

7 Hours

UNIT - 2

8051 and Advanced PROCESSOR Architectures

8051 Architecture, Real world interfacing, Introduction to advanced architectures, Processor and Memory organisation, Instruction Level Parallelism, Performance Metrics, Memory types and addresses, Processor
Selection, Memory
Selection.

3 Hours

Elective 2

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UNIT - 3

Devices AND Communication Buses for Devices Network

I/O Types and Examples, Serial Communication Devices , Parallel Port Devices ,
Sophisticated Interfacing Features in Device Ports,

Wireless Communication Devices, Timer and Counting Devices , Watchdog Timers , Real Time
Clocks,
Networking of Embedded Systems, Serial Bus Protocols,

Internet Enabled Systems

Network Protocols,
Parallel bus device protocols-

parallel communication network using the isa, pci, pci-x and advanced buses, Wireless and
Mobile System Protocols.

6 Hours

UNIT - 4

DEVICE DRIVERS AND INTERRUPTS SERVICING MECHANISM

Port or device access without interrupt servicing mechanism, Interrupt service routine, Thread
and device driver concept, Interrupt sources, Interrupt servicing (handling) mechanism, Multiple
interrupts, Context and the periods for context-switching, interrupt latency and deadline,
Classification of processors interrupt service mechanism from context saving angle, Direct
memory access. Device driver programming, Parallel port device drivers in a system. Serial
port device drivers in a system, Timer devices and

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devices interrupts, Context and the periods for context-switching, interrupt latency and deadline, C classification of processors interrupt service mechanism from context saving angle, Direct memory access, Device driver programming, Parallel port device drivers in a system, Serial port device drivers in a system, Timer devices and devices interrupts.

7 Hours

PART B

UNIT - 5

PROGRAMMING CONCEPTS AND EMBEDDED PROGRAMMING IN C, C++ and Java

Software programming in assembly language (alp) and in high level language 'C', 'C' program elements: header and source files and preprocessor directives, Program elements: macros and functions, Program elements: data types, data structures, modifiers, statements, loops and pointers. Ojected oriented programming, Embedded programming

in C++ , Embedded programming in java, O
timization of memory needs.

6 Hours

UNIT - 6

Elective 2

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PROGRAM MODELING CONCEPTS

Program models, Data flow graph models, State machine programming models for event controlled programs, Modeling of multiprocessor systems, UML modeling.

REAL TIME OPERATING SYSTEMS

Multiple processes in an application, Multiple threads in an application, Task

Tasks and states, Tasks and data, Clear cut distinction between Functions, ISRs and Tasks by their Characteristics, Concept of semaphores, Shared data, Inter process communication, Signals, Semaphores,

Message Queues, Mailboxes,

Pipes

Sockets. Remote Procedure Calls (RPCs).

8 Hours

Elective 2

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UNIT - 7

REAL TIME OPERATING SYSTEMS

Process Management, Timer Functions , Event Functions, Memory management, Device, File, and IO Subsystems Management, Interrupt Routines in RTOS environment and handling of interrupt source calls by RTOS, Introduction to Real Time Operating System,

Basic Design Using a Real Time Operating System,

RTOS Task Scheduling Models, Latency, Response Times, Deadline as Performance

Metric,

Latency and Deadlines as Performance Metric in Scheduling Models For Periodic, Sporadic and Aperiodic Tasks,

CPU Load as Performance Metric

, Sporadic Task Model

Performance Metric

. OS SECURITY ISSUES,

IEEE Standard POSIX 1003.1b Functions for Standardisation of RTOS and Inter Process Communication Functions.

RTOS PROGRAMMING

MicroC/OS-II and VxWorks, Types of real- time operating systems, RTOS mC/OS-II, RTOS VxWorks.

8 Hours

UNIT - 8

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Design Examples and Case Studies of PROGRAM MODELING AND Programming with RTOS - 1

Case study of coding for an automatic chocolate vending machine using mucos rtos Case study of digital camera case study of coding for sending application layer byte streams on a tcp/ip network using rtos vxworks.

Design Examples and Case Studies of PROGRAM MODELING AND Programming with RTOS - 1

Case study of orchestra playing robots, Case study of an embedded system for an adaptive cruise control system in a car, Case study of an embedded system for a smart card, Case study of a mobile phone.

7 Hours

Elective 2

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Text Book:

1. Embedded Systems : Architecture, Programming, and Design,

Raj Kamal, 2nd Edn. TMH, 2008.

Reference books:

1. **Bank Vahid Embedded System Design – A certified Hardware / Software Introduction,** John Wiley & Sons, 2002.
2. **An embedded Software Primer** by David E Simon, Pearson Edition 1999.

Elective 2

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Video Engineering

Subject Code		:	
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IA Marks		:	25
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No. of Lecture Hrs/Week		:	04
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Exam Hours		:	03
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Total no. of Lecture Hrs.		:	52
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Exam Marks		:	100
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PART - A

Elective 2

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Unit - 3

NTSC and PAL digital encoding – decoding: NTSC & PAL encoding, luminance, Y processing, color difference processing, C modulation, analog C generation, analog composite video, clear encoding, NTSC & PAL decoding.

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10 Hours

Unit - 4

Video conferencing standards: (H.261 & H.263) - H.261, video coding layers, DCT, IDCT, video bit stream, block layer, still image transmission, H.263, video coding layer, GOB layer, MB layer, optional H.263 modes.

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6 Hours

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PART - B

Unit - 5 & 6

MPEG 1, 2, 4 and H.261: Introduction, MPEG vs JPEG, Quality issues, audio overview, video coding layer, I P B, D frames, video bit stream, video decoding, real world issues.

MPEG 2: Introduction, audio overview, video overview, video coding layer, enhances TV programming, IPMP.

MPEG 4 over MPEG 2, H.264 over MPEG 2, SMPTEVC-9 over MPEG 2, Data broad casting, decoder consideration. MPEG 4 & H.264: Introduction, audio overview, visual overview, Graphic overview, visual layer, object description frame work, scene description, syndronigation of elementary streams, multiplexing, IPMP, MPEG 4 part 10 (H.264) video.

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15 Hours

Unit - 7 & 8

Digital video interfaces: Pre video component interfaces, consumer component interfaces, consumer transport interfaces.

