Written by Administrator Saturday, 07 November 2009 07:55 -
Data Structure Using C++
Data Structure Using C++
Subject Code
06EC761 IA Marks
25
No. of Lecture Hrs/ Week
04

Written by Administrator

PART A

Saturday, 07 November 2009 07:55 -
Exam Hrs
03
Total no. of Lecture Hrs.
52
Exam Marks
100

Written by Administrator Saturday, 07 November 2009 07:55 -

Introduction: Functions and parameters, Dynamic memory allocation classis, Testing and debugging. Data Representation, Introduction, Linear lists, Formula-based representation linked representation, Indirect addressing simulating pointers
9 Hours
Unit - 200000000000000000000000000000000000
Arrays And Matrics: Arrays, Matrices, Special matrices spare matrices.
6 Hours
Unit - 3
Stacks: The abstract data types, Derived classed and inheritance, Formula-based representation, Linked representation, Applications.
5 Hours

Written by Administrator Saturday, 07 November 2009 07:55 -

Queues: The abstract data types, Derived classes and inheritance, Formula-based representation, Linked Linked representation, Applications.

PART - B

Skip Lists And Hashing: Dictionaries, Linear representation, Skip list presentation, Hash table representation.

6 Hours

Binary And Other Trees: Trees, Binary trees, Properties and representation of binary trees, Common binary tree operations, Binary tree traversal the ADT binary tree, ADT and class extensions.

6 Hours

Written by Administrator Saturday, 07 November 2009 07:55 -
Unit - 7 0000000000000000000000000000000000
Priority Queues: Linear lists, Heaps, Leftist trees.
6 Hours
Unit - 8 0000000000000000000000000000000000
Search Trees: Binary search trees, B-trees, Applications.
8 Hours
Text Book:
1. Data structures, Algorithms, and applications in C++ – Sartaj Sahni, McGraw Hill.2000.
Reference Books:

Written by Administrator Saturday, 07 November 2009 07:55 -

- 1. **Object** oriented programming in C++ Balaguruswamy. TMH, 1995.
- 2. **Programming** in C++ Balaguruswamy. TMH, 1995 Litivin, Vikas Publication, 2003.

Real-Time Systems

Written by Administrator Saturday, 07 November 2009 07:55 -**Subject Code** \Box 06EC762 IA Marks 25 No. of Lecture Hrs/ Week \Box 04 Exam Hrs : 03 Total no. of Lecture Hrs.

Written by Administrator Saturday, 07 November 2009 07:55 -
52
Exam Marks
100
PART - A
Unit - 1 0000000000000000000000000000000000
Introduction to Real-time systems: Historical background, RTS Definition, Classification of Real-time Systems, Time constraints, Classification of Programs.
6 Hours
Unit - 2 00000000000000000000000000000000000

Written by Administrator Saturday, 07 November 2009 07:55 -

Concepts of Computer Control: Introduction, Sequence Control, Loop control, Supervisory control, Centralised computer control, Distributed system, Human-computer interface, Benefits of computer control systems.

6 Hours

Computer hardware requirements for RTS: Introduction, General-purpose computer, Single chip microcontroller, Specialized processors, Process-related Interfaces, Data transfer techniques, Communications, Standard Interface.

6 Hours

Languages for Real-time Applications: Introduction, Syntax layout and readability, Declaration and Initialization of Variables and Constants, Modularity and Variables, Compilation, Data types, Control Structure, Exception Handling, Low-level facilities, Co routines, Interrupts and Device handling, Concurrency, Real-time support, Overview of real-time languages.

8 Hours

PART - B

Written by Administrator Saturday, 07 November 2009 07:55 -

Operating Systems: Introduction, Real-time multi-tasking OS, Scheduling strategies, Priority Structures, Task management, Scheduler and real-time clock interrupt handles, Memory Management,

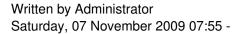
Code sharing, Resource control, Task co-operation and communication, Mutual exclusion, Data transfer, Liveness, Minimum OS kernel, Examples.

12 Hours

Design of RTSs: General Introduction: Introduction, Specification documentation, Preliminary design, Single-program approach, Foreground/background, Multi-tasking approach, Mutual exclusion, Monitors.

8 Hours

RTS Development Methodologies: Introduction, Yourdon Methodology, Requirement definition for Drying Oven, Ward and Mellor Method, Hately and Pirbhai Method.





Text Books:

1. **Real - Time Computer Control- An Introduction** – Stuart Bennet,, 2nd Edn. Pearson Education.

2005.

Reference Books:

- 1. **Real-time** systems design and analysis Phillip. A. Laplante, second edition, PHI, 2005.
 - 2. **Real-Time** Systems Development Rob Williams, Elsevier. 2006.
 - 3. **Embedded** systems Raj Kamal, Tata Mc Graw Hill, India, 2005.

Exam Hrs

 \Box

Written by Administrator Saturday, 07 November 2009 07:55 -

Radio Frequency Integrated Circuits
Subject Code
06EC763 IA Marks
25
No. of Lecture Hrs/ Week
04

ELECTIVE – 3 (Group C) Written by Administrator Saturday, 07 November 2009 07:55 -03 Total no. of Lecture Hrs. \Box 52 Exam Marks : 100 PART - A

Overview of Wireless Principles: A brief history of wireless systems, Noncellular wireless applications, Shannon, Modulations & Alphabet Soup, Propagation. Passive RLC Networks: Introduction, Parallel RLC Tank, Series RLC Networks, Other RLC networks, RLC Networks as

Written by Administrator Saturday, 07 November 2009 07:55 -

impedance Transformers.

7 Hours

Characteristics of passive IC components: Introduction, Interconnect at radio frequencies: Skin effect, resisters, Capacitors, Inductors, Transformers, Interconnect options at high frequency.

7 Hours

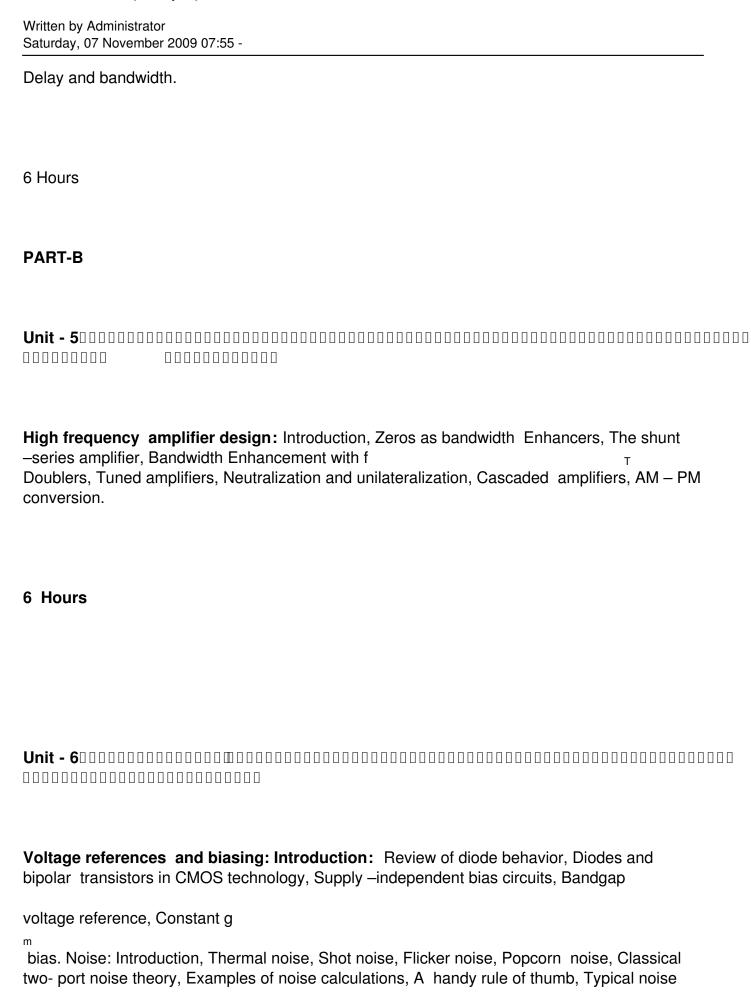
A review of MOS device physics: Introduction, A little history, FETs, MOSFET physics, The long – channels approximation, operation in weak inversion (sub threshold), MOS device physics in the short – channel regime, Other effects. Distributed

systems: Introduction, Link between lumped and distributed regimes driving-point impedance of iterated structures, Transmission lines in more detail, Behavior of Finite – length transmission lines, summary of transmission line equations, artificial lines.

6 Hours

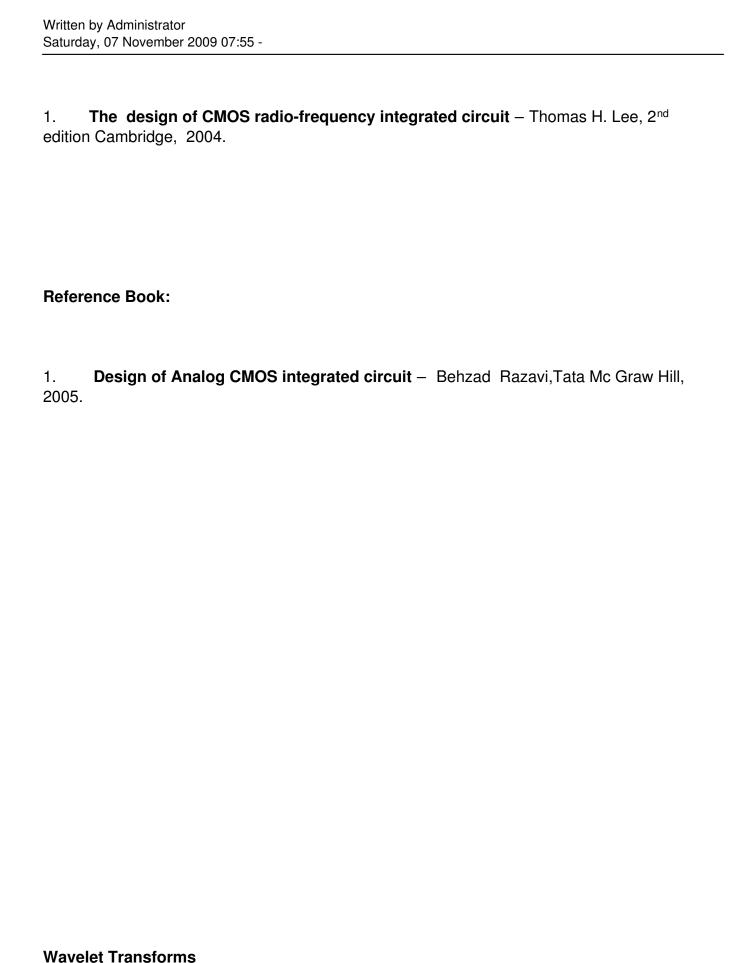
The switch chart and S-parameters: Introduction, The switch chart, S-parameters, Band Width Estimation Techniques,

Introduction, The method of open – circuit time constant, The method of short circuit time constant, Risetime,



Written by Administrator

Saturday, 07 November 2009 07:55 -
performance.
6 Hours
Unit - 700000000000000000000000000000000000
Low noise amplifier DESIGN: Introduction, Derivation of intrinsic MOSFET two-port noise parameters, LNA topologies: Power match versus noise match, Power-constrained noise optimization, Design examples, linearity and large signal performance, Spurious – free Dynamic range. Mixers: Introduction, Mixer fundamental, Nonlinear systems as linear mixers.
7 Hours
UNIT - 800000000000000000000000000000000000
Multiplier: based mixers, Sub sampling mixers, Diode ring mixers, RF power amplifiers, Introduction, general considerations, Class A, AB, B and C power amplifier, Class D amplifiers, Class E amplifiers
7 Hours
Text book:



Written by Administrator Saturday, 07 November 2009 07:55 -

Subject Code : O6EC764 IA Marks : 25 No. of Lecture Hrs/ Week : O4 Exam Hrs :		
: O6EC764 IA Marks : 25 No. of Lecture Hrs/ Week : O4 Exam Hrs	ı	Subject Code
O6EC764 IA Marks : 25 No. of Lecture Hrs/ Week : 04 Exam Hrs		
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No. of Lecture Hrs/ Week : 04 Exam Hrs	\Box	
: 04 Exam Hrs	25	
04 Exam Hrs	No. of	Lecture Hrs/ Week
Exam Hrs	:	
	04	
	Exam	Hrs
	:	
03	03	

Written by Administrator Saturday, 07 November 2009 07:55 -Total no. of Lecture Hrs. 52 Exam Marks 100 PART - A Continuous Wavelet Transform: Introduction, C-T wavelets, Definition of CWT, The CWT as a correlation. Constant Q-Factor Filtering Interpolation and time frequency resolution, the CWT as an operator, inverse CWT. 5 Hours

Written by Administrator Saturday, 07 November 2009 07:55 -

Introduction to Discrete Wavelet Transform And Orthogonal Wavelet Decomposition: Introduction. Approximation

of vectors in nested linear vector spaces, (i) example of approximating vectors in nested subspaces of a finite dimensional liner vector space, (ii) Example of approximating vectors in nested subspaces of an infinite dimensional linear vector space. Example

MRA. (i) Bases for the approximations subspaces and Harr scaling function, (ii) Bases for detail subspaces and Haar wavelet.

8 Hours

Mra, Ortho Normal Wavelets And Their Relationship To Filter Banks: Introduction, Formal definition of an MRA. Construction of a general orthonormal MRA, (i) scaling function and subspaces, (ii) Implication of dilation equation and orthogonality, a wavelet basis for MRA. (i) Two scale relations for (t), (ii) Basis for the detail subspace (iii) Direct sum decomposition, Digital filtering interpolation (i) Decomposition filters, (ii) reconstruction, the signal.

8 Hours

Written by Administrator Saturday, 07 November 2009 07:55 -

Examples of Wavelets: Examples of orthogonal basis generating wavelets, (i) Daubechies D₄ scaling function and wavelet. (ii) band

limited wavelets, Interpreting orthonormal MRAs for Discrete time MRA, (iii) Basis functions for DTWT.

5 Hours

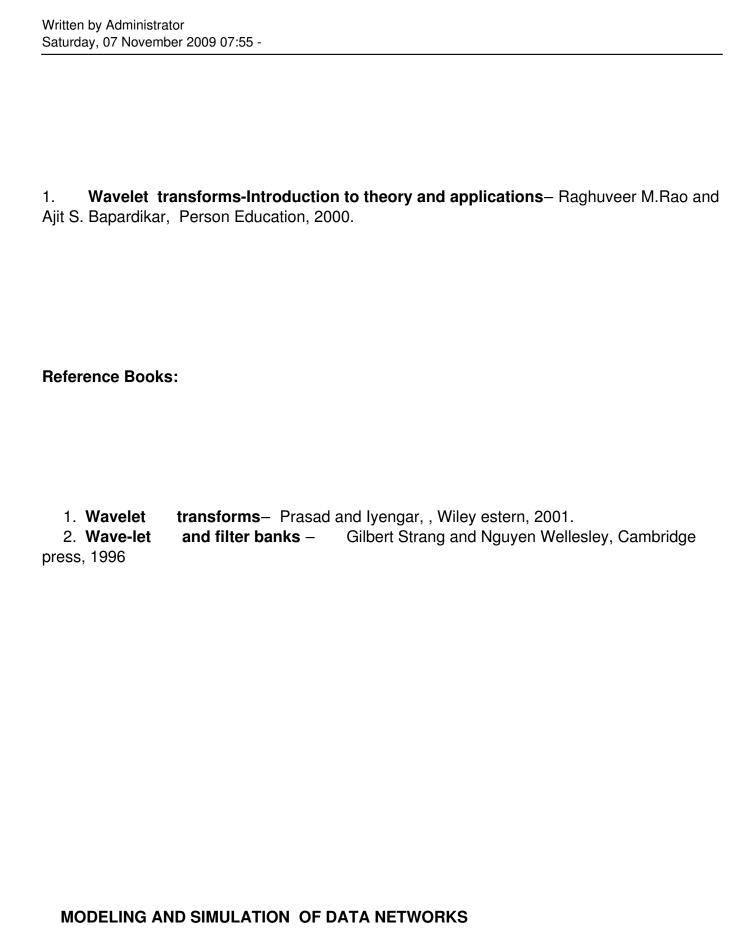
PART - B

Alternative Wavelet Representations: Introduction, Bi-orthogonal wavelet bases, Filtering relationship for bi-orthogonal filters, Examples of bi-orthogonal scaling functions and wavelets. 2-D wavelets.

8 Hours

Introduction, transform coding, DTWT for image compression (i) Image compression using DTWT and run-length encoding.

Written by Administrator Saturday, 07 November 2009 07:55 -
6 Hours
Unit -7 0 0000000000000000000000000000000000
(i) Embedded tree image coding (ii) compression with JPEG audio compression (iii) Audio masking, (iv) wavelet based audio coding.
6 Hours
Unit - 8 0000000000000000000000000000000000
Construction Of Simple Wavelets: Construction of simple wavelets like Harr and DB1.
Other Applications of Wavelet Transforms: Introduction, wavelet de-noising, speckle removal, edge detection and object isolation, Image fusions, Object detection by wavelet transforms of projections.
6 Hours
Text book:



Written by Administrator Saturday, 07 November 2009 07:55 -Subject Code \Box 06EC765 IA Marks : 25 No. of Lecture Hrs/ Week \Box 04 Exam Hrs \Box 03 Total no. of Lecture Hrs.

ELECTIVE – 3 (Group C) Written by Administrator Saturday, 07 November 2009 07:55 -52 Exam Marks $\begin{bmatrix} \vdots \end{bmatrix}$ 100 PART - A **Delay Models in Data Networks:** Queuing Models, M/M/1, M/M/m, M/M/¥, M/M/m/m and other Markov System, M/G/1 System, Networks of Transmission Lines, Time Reversibility, Networks of Queues. 14 Hours Unit - 3 & 4 Multi-access Communication: Slotted Multi-access and the Aloha System, Splitting Algorithms, Carrier Sensing, Multi-access Reservations, Packet Radio Networks.

12 Hours

Written by Administrator
Saturday, 07 November 2009 07:55 -

PART - B

Unit - 5, 6

Routing in Data Networks: Introduction, Network Algorithms and Shortest Path Routing, Broadcasting Routing Information: Coping with Link Failures, Flow models, Optimal Routing, and Topological Design, Characterization of Optimal Routing, Feasible Direction Methods for Optimal Routing, Projection Methods for Optimum Routing, Routing in the Codex Network.

14 Hours

Unit - 7 & 8

Flow Control: Introduction, Window Flow Control, Rate Control Schemes, Overview of Flow Control in Practice, Rate Adjustment Algorithms.

12 Hours

Written by Administrator	
Saturday, 07 November 2009 07:55	

- 1. **Data Networks** Dimitri Bertsekas and Robert Gallager,2nd edition, Prentice Hall of India, 2003.
- 2. **High-Speed Networks and Internets** William Stallings,Pearson Education (Asia) Pte. Ltd, 2004.

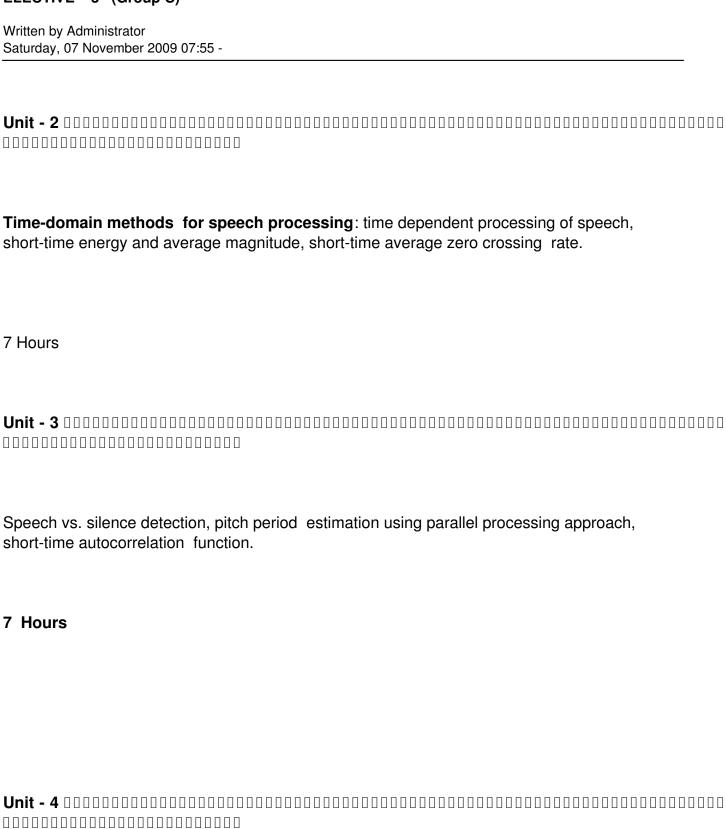
References BOOK:

1. **High Performance Communication Networks**– J. Walrand and P. Varaya,2nd edition, Harcourt India Pte. Ltd. & Morgan Kaufman, 2000.

Speech Processing

Written by Administrator Saturday, 07 November 2009 07:55 -
Subject Code
06EC766 IA Marks
25
No. of Lecture Hrs/ Week
04
Exam Hrs
03

Written by Administrator Saturday, 07 November 2009 07:55 -Total no. of Lecture Hrs. \Box 52 Exam Marks 100 PART - A Unit - 1 Production and classification of speech sounds: introduction, mechanism of speech production. Acoustic phonetics: vowels, diphthongs, semivowels, nasals, fricatives, stops and affricates. 7 Hours



Brief Applications of temporal processing of speech signals in synthesis, enhancement, hearing applications and clear speech.

Written by Administrator Saturday, 07 November 2009 07:55 -

5 Hours

PART - B

Frequency domain methods for speech processing: introduction, definitions and properties: Fourier transforms interpretation and linear filter interpretation, sampling rates in time and frequency.

8 Hours

Filter bank summation and overlap add methods for short-time synthesis of speech, sinusoidal and harmonic plus noise method of analysis/synthesis.

6 Hours

Written by Administrator Saturday, 07 November 2009 07:55 -

Homomorphic speech processing: Introduction, homomorphic system for convolution, the complex cepstrum of speech, homomorphic vocoder.

7 Hours

Applications of speech processing: Brief applications of speech processing in voice response systems hearing aid design and recognition systems.

5 Hours

Text book:

1. **Digital processing of speech signals** – L. R. Rabiner and R. W. Schafer, , Pe arson Education Asia. 2004.

Written by Administrator Saturday, 07 November 2009 07:55 -

Reference Books:

1. Discrete	time speech signal processing— T. F. Quatieri, , Pearson Education Asia,
2004.	

2. Speech and audio signal processing: processing and perception of speech and music — B. Gold and N.

Morgan, , John Wiley, 2004.

Human Resource Management

Subject Code

:

06EC767

Written by Administrator Saturday, 07 November 2009 07:55 -
IA Marks
25
No. of Lecture Hrs/ Week
04
Exam Hrs
03
Total no. of Lecture Hrs.
52

ELECTIVE – 3 (Group C) Written by Administrator Saturday, 07 November 2009 07:55 -Exam Marks 100 PART - A Understanding the Nature and Scope of HRM, Context of HRM, Integrating HR Strategy with **Business Strategy** .000000 8 Hours 000000000000000

Human Resource Planning, Analysing Work and Designing Jobs, Recruiting Human Resources, Selecting Human Resources.

12 Hours

Written by Administrator Saturday, 07 November 2009 07:55 -

Unit - 4 0000000000000000000000000000000000
Training, Development and Career Management, Appraising and Managing
Performance, Managing Basic Remuneration.
6 Hours
PART B
Unit - 500000000000000000000000000000000000
Incentives and Performance based. Payments, Managing Employee benefits and services.
□ □ 6 Hours

ELECTIVE – 3 (Group C) Written by Administrator Saturday, 07 November 2009 07:55 -Managing Betterment work, Safe and Healthy Environment. 6 Hours 00000000 Industrial Relations, Trade Unions. 6 Hours□□□□

Managing Ethical Issues in HRM, Evaluating HRM Effectiveness, Contemporary issues in HRM, International issues in HRM Case studies to be included in all chapters.

Written by Administrator Saturday, 07 November 2009 07:55 -		
8 Hours		
Text BOOK:		
 Human Resource Management – K. Ashwathappa, Text and Cases. Fifth Edition (2008) Tata McGraw-Hill Publishing Company Ltd., New Delhi. 		
Reference Book:		
1. Human Resource Management – Gary Dessler, , Tenth Edition (Indian subcontinent adaptation 2008), Pearson Education, Inc.		

Written by Administrator Saturday, 07 November 2009 07:55 -		
RT SYSTEMS TECHNOLOGY		
/ W eek		

Written by Administrator

PART - A

Saturday, 07 November 2009 07:55 -
Exam Hours
03
Total No. of Lecture Hrs.
52
Exam Marks
100

Written by Administrator Saturday, 07 November 2009 07:55 -

UNIT - 1

Introduction to micro and smart systems:

What are smart-material systems? Evolution of smart materials, structures and systems. Components of a smart system. Application areas. Commercial products.

What are microsystems? Feynman's vision. Micromachined transducers. Evolution of micro-manufacturing. Multi-disciplinary aspects. Applications areas. Commercial products.

6 Hours

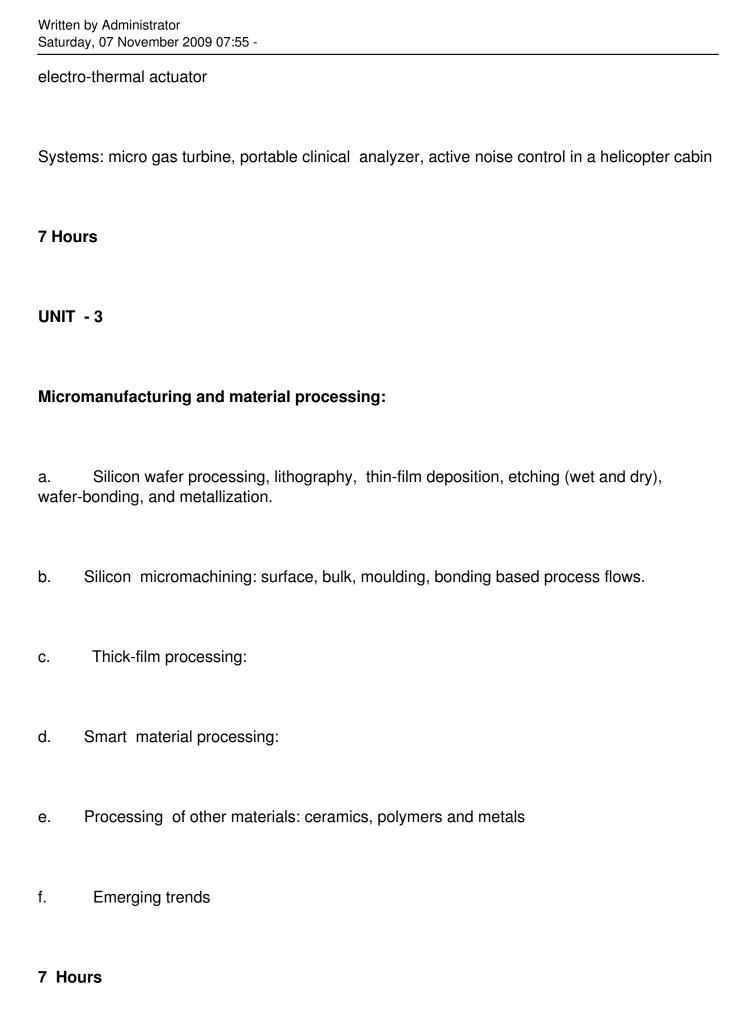
UNIT - 2

Micro and smart devices and systems: principles and materials:

Definitions and salient features of sensors, actuators, and systems.

Sensors: silicon capacitive accelerometer, piezo-resistive pressure sensor, blood analyzer, conductometric gas sensor, fiber-optic gyroscope and surface-acoustic-wave based wireless strain sensor.

Actuators: silicon micro-mirror arrays, piezo-electric based inkjet print-head, electrostatic comb-drive and micromotor, magnetic micro relay, shape-memory-alloy based actuator,



Written by Administrator Saturday, 07 November 2009 07:55 -**UNIT - 4** Modeling: Scaling issues. a. Elastic deformation and stress analysis of beams and plates. Residual stresses and stress gradients. Thermal loading. Heat transfer issues. Basic fluids issues. Electrostatics. Coupled electromechanics. Electromagnetic actuation. Capillary electro-phoresis. Piezoresistive modeling. Piezoelectric modeling. Magnetostrictive actuators. 6 Hours PART - B

Written by Administrator Saturday, 07 November 2009 07:55 -

Computer-aided simulation and design:

Background to the finite element element method. Coupled-domain simulations using Matlab. Commercial software.

6 Hours

UNIT - 6

Electronics, circuits and control:

Carrier concentrations, semiconductor diodes, transistors, MOSFET amplifiers, operational amplifiers. Basic Op-Amp circuits. Charge-measuring circuits. Examples from microsystems. Transfer function, state-space modeling, stability, PID controllers, and model order reduction. Examples from smart systems and micromachined accelerometer or a thermal cycler.

7 Hours

UNIT - 7

Integration and packaging of microelectro mechanical systems:

Written by Administrator Saturday, 07 November 2009 07:55 -

Integration of microelectronics and micro devices at wafer and chip levels. Microelectronic packaging: wire and ball bonding, flip-chip. Low-temperature-cofired-ceramic (LTCC) multi-chip-module technology. Microsystem packaging examples.

' Hours
JNIT - 8
Case studies:
BEL pressure sensor, thermal cycler for DNA amplification, and active vibration control of a peam.
6 Hours
Part - C
JNIT - 9
lini-projects and class-demonstrations (not for Examination)
cAD lab (coupled field simulation of electrostatic-elastic actuation with fluid effect)

Written by Administrator Saturday, 07 November 2009 07:55 -

b.	BEL pressure sensor
C.	Thermal-cycler for PCR
d.	Active control of a cantilever beam
9 Hoi	urs
Text b	books and a CD-supplement:
1.	MEMS & Microsystems: Design and Manufacture, Tai-Ran Tsu, Tata Mc-Graw-Hill.
Refer	ence books:
	Animations of working principles, process flows and processing techniques, A applement with Matlab codes, photographs and movie clips of processing machinery and ag devices.
2. contro	Laboratory hardware kits for (i) BEL pressure sensor, (ii) thermal-cycler and (iii) active of a cantilever beam.

Written by Administrator Saturday, 07 November 2009 07:55 -

- 3. **Microsystems Design,** S. D. Senturia, 2001, Kluwer Academic Publishers, Boston, USA. ISBN 0-7923-7246-8.
- 4. **Analysis and Design Principles of MEMS Devices,** Minhang Bao, Elsevier, Amsterdam, The Netherlands, ISBN 0-444-51616-6.
- 5. **Design and Development Methodologies,** Smart Material Systems and MEMS: V. Varadan, K. J. Vinoy, S. Gopalakrishnan, Wiley.
- 6. **MEMS-** Nitaigour Premchand Mahalik, TMH 2007